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INVITATION FOR BIDS (IFB)
CONTRACTOR SERVICES

LILY POND PARK IMPROVEMENTS

17-19 North Liberty Street, 36 Lily Street, 8 Wesco Place

Bid No. 2026-LB-05

NANTUCKET LAND BANK

IMPORTANT DATES

All times in this document are local time in Nantucket, Massachusetts.

IFB ISSUANCE Available on http://www.biddocsonline.com	Wednesday, June 24, 2026
SITE VISIT	Tuesday, July 7, 2026, at 11:00 a.m.
INQUIRIES/QUESTIONS DEADLINE	Thursday, July 9, 2026
ADDENDA DATE	Monday, July 13, 2026 (if any)
IFB DUE DATE	**Wednesday, July 22, 2026, at 10:00 a.m.**

NANTUCKET ISLANDS LAND BANK
22 BROAD STREET
NANTUCKET, MA 02554

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BID SUBMISSION REQUIREMENTS:

- Bid Response Forms, signed by authorized individual(s)
- Form entitled "Certifications Required by Law for Public Construction Contracts", signed by authorized individual(s)
- Certificate of Corporate Authority (if Contractor is a Corporation) or LLC Certificate if Limited Liability Company
- 5% Bid Deposit
- Statement of Qualifications with Reference list
- Signature page from the Agreement, signed by an authorized individual as a good faith statement that the contractor is willing to enter into the Land Bank's standard contract form.
- Addendum Acknowledgment Form(s), if applicable

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PROJECT:
Nantucket Land Bank
Lily Pond Park Improvements
Project No. 2026-LB-05

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SECTION 00 02 00

INVITATION FOR BIDS

Nantucket Land Bank is requesting bids for the following:

LILY POND PARK IMPROVEMENTS

THIS PROJECT IS BEING ELECTRONICALLY BID AND HARD COPY BIDS WILL NOT BE ACCEPTED. Please review the instructions in the bid documents on how to register as an electronic bidder. The bids are to be prepared and submitted at http://www.biddocsonline.com. Tutorials and instructions on how to complete the electronic bid documents are available online.

The NANTUCKET LAND BANK, acting by and through its Commission as the Awarding Authority, invites sealed bids from General Contractors for the LILY POND PARK IMPROVEMENTS project located at 17-19 North Liberty Street, 36 Lily Street, 8 Wesco Place, **in the TOWN OF NANTUCKET, MASSACHUSETTS, in accordance with the documents prepared by the HORSLEY WITTEN GROUP, INC. (HW) dated JUNE 2026.**

The work to be performed under the Bid of this contract includes, but is not limited to earthwork, off island disposal of soil, wetland restoration, water quality and drainage improvements (installation of constructed wetland, bioretention and water quality units), park improvements (parking lot, walkways, boardwalks), planting, invasive species management and all associated work.

The majority of work will be conducted on land owned and controlled by the Nantucket Land Bank with some improvements within the street right-of-way that are owned and controlled by the Town of Nantucket. A portion of the funding is available through a state grant. All bidding shall be conducted pursuant to applicable state and local bidding laws. References in these specifications to "Owner" shall mean the Nantucket Land Bank and references to "Engineer" shall mean Horsley Witten Group, Inc. (HW) unless otherwise noted.

Construction is scheduled to begin after the anticipated Notice of Proceed on September 8. 2026. The work must be completed in full by May 27, 2027, and adhere to all Phasing requirements as outlined, including a Summer Shutdown period from June 14th, 2027, to September 6th, 2027.

A Prebid meeting will be held on site on **Tuesday July 7, 2026, at 11:00am.**

General Bids will be received until **July 22, 2026, at 10:00AM** and publicly opened, forthwith online.
All Bids shall be submitted electronically online at http://www.biddocsonline.com and received no later than the date and time specified above.

Bidders must submit a bid deposit of five percent (5%) of the amount of the base bid. Bid deposit may be in the form of a certified check; a bank, treasurers or cashier's check; or a bid bond from a surety company. **IMPORTANT NOTICE:** If the bidder elects to make a bid deposit in the form of "cash" or "check", the Bidder must have the cash or check physically delivered to the office of the Nantucket Islands Land Bank, 22 Broad Street, Nantucket, MA 02554 ***prior to the date and time of bid opening at 10:00AM EST on July 22, 2026. Please include Bid No. 2026-LB-05 on the envelope.*** Bid deposits of responders not awarded the contract will be returned.

A performance bond in an amount equal to 100 percent (100%) of the total amount of the contract price with a surety company qualified to do business in the Commonwealth of Massachusetts will be required for the faithful performance of the contract.

The successful bidder must furnish a Payment Bond in the amount of fifty percent (50%) of the Contract Price with a surety company acceptable to the Land Bank.

All bids for this project are subject to applicable public bidding laws of Massachusetts, including, but not limited to G.L. c.30, §39M.

Attention is directed to the minimum wage rates to be paid as determined by the Commissioner of Labor and Workforce Development and the weekly payroll record submittal requirements under the provisions of Massachusetts General Laws, Chapter 149, Section 26 through 27D inclusive.

Selection of the contractor will be based upon bidder qualifications, including evidence of past performance in similar projects, and bid price. The contract will be awarded to the bidder deemed by the awarding authority to be the lowest responsible and eligible bidder.

The bidder agrees that its bid shall be good and may not be withdrawn for a period of 30 days, Saturdays, Sundays and legal holidays excluded, after the opening of the bids.

The Land Bank reserves the right to waive any informalities, to accept or reject, in whole or in part any or all bids, or take whatever other action may be deemed to be in the best interest of the Land Bank.

The Nantucket Islands Land Bank

By:_____, Executive Director
Rachael Freeman

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NANTUCKET ISLANDS LAND BANK BACKGROUND

The Land Bank is a governmental body established by Chapter 669, of the 1983 Acts of the Commonwealth of Massachusetts, as amended. It exists for the purpose of acquiring and maintaining public conservation, recreation, and agricultural land in Nantucket County, Massachusetts. Land Bank revenue is derived primarily from a 2% transfer fee which is imposed on the sale of all real property in Nantucket County, subject to certain exemptions.

The Land Bank Act ("Act") provides inherent safeguards which protect Land Bank property from ever being sold, developed or otherwise used for alternative purposes. For example, if the Land Bank ceases to exist someday, or otherwise becomes insolvent, ownership of all Land Bank property reverts to the Town of Nantucket, thereby ensuring that it remains forever public. In addition, any alteration of Land Bank property from its natural state must be approved by the Massachusetts Secretary of the Executive Office of Energy and Environmental Affairs, under strict standards of review outlined in our enabling legislation. In light of these restrictions, Land Bank properties are essentially permanently protected in perpetuity.

The Land Bank is governed by a five-member, publicly-elected Commission comprised of year-round residents of Nantucket. We have fifteen year-round employees and several more are hired every spring to provide additional property management support for the summer season.

Currently the Land Bank owns 3,500± acres of land, most of which is protected open space. We also own the island's only two public golf courses—Miacomet Golf Course which is an 18-hole facility, and the historic 'Sconset Golf Course, a 9-hole facility. In addition, we hold several agricultural leases and licenses which are aimed at preserving and expanding local agriculture and contribute to the availability of fresh produce throughout the local food system.

Contact Information:

Eleanor Weller Antonietti
Special Projects Coordinator
22 Broad Street
Nantucket, MA 02554
Email: eantonietti@nantucketlandbank.org
Phone: (508) 228-7240 Ext: 102

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SECTION 00 05 00

INSTRUCTIONS TO BIDDERS

1. Receipt and Opening of Bids

The Nantucket Land Bank, herein called the Owner, acting by and through its Commission, will receive sealed Bids for the project known as the LILY POND PARK IMPROVEMENTS.

General bids shall be prepared and submitted electronically at:
http://www.biddocsonline.com
Bids will be received until **July 22, 2026, at 10:00AM** and publicly opened, forthwith online.

Any bid may be withdrawn prior to the above scheduled time for the opening of bids or authorized postponement thereof. Any bid received after the time and date specified will not be considered. The bidder agrees that its bid shall be good and may not be withdrawn for a period of 30 days, Saturdays, Sundays, and legal holidays excluded, after the opening of bids.

2. Location and Work to be Done

The work to be performed under the Bid of this contract includes, but is not limited to earthwork, off island disposal of soil, wetland restoration, water quality and drainage improvements (installation of constructed wetland, bioretention and water quality units), park improvements (parking lot, walkways, boardwalks), planting, invasive species management and all associated work. The subject property known as Lily Pond Park is located at 17-19 North Liberty Street, 36 Lily Street, and 8 Wesco Place.

Additional drawings and photographic exhibits showing details in accordance with which the Work is to be done may be furnished by addendum from time to time during the bidding period by the Owner or its designee, and shall then become a part of the Contract Documents.

The Contractor shall furnish all labor, services, materials, equipment, plant, machinery, apparatus, appliances, tools, supplies, and all other things necessary to do all work required for the completion of each item of the Work and as herein specified.

The Work to be done and paid for under any item shall not be limited to the exact extent mentioned or described but shall include all incidental work necessary or customarily done for the completion of that item.

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3. Preparation of Bid

THIS PROJECT IS BEING ELECTRONICALLY BID AND HARD COPY BIDS WILL NOT BE ACCEPTED. Please review the instructions in the bid documents on how to register as an electronic bidder. The bids are to be prepared and submitted at http://www.biddocsonline.com

4. Bid Opening Procedure

The following list of requirements shall apply to each filed bid. Bids not meeting all the requirements for timeliness and security will be rejected; bids not meeting signature and addenda requirements will be rejected prior to checking of bid amounts.

All Bids shall be submitted electronically online at http://www.biddocsonline.com and received no later than the date and time specified in Receipt and Opening of Bids, above.

Bidders MUST submit proof of a bid deposit of five percent (5%) of the amount of the base bid. Bid deposit may be in the form of a certified check; a bank, treasurers or cashier's check; or a bid bond from a surety company. ***Original bid deposits MUST be received*** at the office of the Nantucket Islands Land Bank ("Land Bank"), 22 Broad Street, Nantucket, MA 02554 ***within five (5) business days of the July 22, 2026, bid opening. Please include Bid No. 2026-LB-05 on the envelope.*** Bid deposits of responders not awarded the contract will be returned.

Bid signatures will be checked.

All prospective bidders having registered on the BidDocs website bid postings page will be notified by email if any changes are made to this IFB and any addenda are issued. All bidders shall include with their bids the written acknowledgment form provided in Section 00100, FORM OF GENERAL BID.

The total dollar amount of each bid will be read, and the three apparent lowest bids will be selected for further consideration. These three apparent low bids will be read aloud for the benefit of the other bidders and the bid opening procedure will be closed. All those present at the bid opening may examine all bids after the bid opening and after the reading of the three apparent low bids.

5. Modification

Any bidder may modify his bid by written communication at any time prior to the scheduled closing time for receipt of bids. Any telegraphic communication must be received by the Owner prior to the closing time, and, provided further, the Owner must be satisfied that a written confirmation of the telegraphic modification over the signature of the bidder was mailed prior to the closing time. If written confirmation is not received within two days

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from the closing time, no consideration will be given to a telegraphic communication.

The communication shall not reveal the bid price but shall provide the addition or subtraction or other modification so that the final prices or terms will not be known by the Owner until the sealed bid is opened.

6. Ability and Experience of Bidder

No award will be made to any bidder who cannot satisfy the Owner that he has sufficient ability and experience in this class of work and sufficient capital and plant to enable him to prosecute and complete the work successfully within the time named. The Owner's decision or judgment on these matters will be final, conclusive, and binding.

The Owner may make such investigations as it deems necessary, and the bidder shall furnish to the Owner, under oath if so required, all such information and data for this purpose as the Owner may request.

7. Conditions of Work

Each bidder must familiarize himself fully with the conditions relating to the construction of the project and the employment of labor thereon. Failure to do so will not relieve a successful bidder of his obligation to furnish all material and labor necessary to carry out the provisions of his contract. Insofar as possible the Contractor, in carrying out his work, must employ such methods or means as will not cause any interruption of or interference with the work of any other Contractor.

8. Addenda and Interpretations

No interpretation of the meaning of the plans, specifications or other prebid documents will be made to any bidder orally. All information given to bidders other than by means of the plans, specifications, or by addenda, as described below, is given informally and shall not be used as the basis of a claim against the Owner.

Every request for such interpretation should be submitted on the BidDocs website and to be given consideration must be received **no later than July 9, 2026**. Any and all such interpretations and any supplemental instructions will be in the form of written addenda to the specifications which, when issued, will be posted on the BidDocs website (on the project page) and emailed to all companies and individuals having registered per the instructions above. Failure of any bidder to receive any such addendum or interpretation shall not relieve such bidder from any obligation under his bid as submitted. All addenda so issued shall become part of the Contract Documents.

Each responder shall acknowledge receipt of any and all addendum issued via BidDocs website. **Failure to do so may cause rejection of the submittal as being unresponsive**.

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9. Security for Faithful Performance

Simultaneously with his delivery of the executed Contract, the Contractor shall furnish a surety bond or bonds as security for faithful performance of this contract and for the payment of all persons performing labor and materials under this contract. The surety on such bond or bonds shall be a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Owner. The bonds shall remain in force for one year after final acceptance of the work by the Owner, unless the Owner, in writing, releases the Contractor from the obligation sooner.

10. Power of Attorney

Attorneys-in-fact who sign Contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

11. Laws and Regulations

The bidder's attention is directed to the fact that all applicable State laws, municipal ordinances or bylaws, and the rules and regulations of all authorities having jurisdiction over construction of the project shall apply to the contract throughout, and they will be deemed to be included in the Contract the same as though written out in full.

12. Liquidated Damages for Failure to Enter into Contract

The successful bidder, upon his failure or refusal to execute and deliver the Contract and bonds required within 10 days after presentation thereof by the Owner, shall forfeit to the Owner, as liquidated damages for such failure or refusal, the security deposited with his/her bid, but the amount forfeited shall not exceed the difference between his/her bid price and the bid price of the next lowest responsible and eligible bidder. In case of death, disability, bona fide clerical or mechanical error of a substantial nature, or other similar unforeseen circumstances affecting the bidder, his/her bid deposit will be returned.

13. Obligation of Bidder

At the time of the opening of bids, each bidder will be presumed to be thoroughly familiar with the Contract Documents (including all addenda). The failure or omission of any bidder to examine any form, instrument, or document shall in no way relieve any bidder from any obligation in respect of his bid.

14. Information Not Guaranteed

All information given in the Contract Documents relating to subsurface and other conditions, natural phenomena, existing pipes, and other structures is from the best sources

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at present available to the Owner. All such information is furnished only for the information and convenience of bidders and is not guaranteed.

It is agreed and understood that the Owner does not warrant or guarantee that the subsurface or other conditions, natural phenomena, existing pipes, or other structures encountered during construction will be the same as those indicated in the Contract Documents. It is further agreed and understood that no bidder or Contractor shall use or be entitled to use any of the information made available to him or obtained in any examination made by him in any manner as a basis of or ground for any claim or demand against the Owner or Designee, arising from or by reason of any variance which may exist between the information made available and the actual subsurface or other structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.

15. Bid Security

Each bid and sub-bid must be accompanied by bid security in the form of a certified check, a bid bond, cash, or a treasurer's or cashier's check, payable to the Owner, in the amount of five (5) percent of the value of the bid. Such security of general bidders will be returned to all except the three lowest responsible and eligible bidders within five days, Saturdays, Sundays, and legal holidays excluded, after the opening of bids, and the remaining securities will be returned promptly after the Owner and the accepted bidder have executed the Contract, or if no notice of intent to award has been presented to the selected contractor within 30 days, Saturdays, Sundays and holidays excluded, after the date of the opening of bids, upon demand of the bidder at any time thereafter.

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16. Right to Reject Bid

The Owner reserves the right to waive any informalities in bids and to reject any and all bids, should the Owner deem it to be in the public interest to do so.

The Owner may also reject bids which in its sole judgment are either incomplete, conditional, obscure or not responsive or which contain additions not called for, erasures not properly initialed, alterations, or similar irregularities.

17. Time for Completion

The successful general bidder must agree to commence work within ten (10) days of the date of the Notice to Proceed and to fully complete the project within the time limit stated in Section 00100, FORM OF GENERAL BID.

18. Comparison of Bids

Bids will be compared on the basis of prices set forth in the bid forms.
In the event that there is a discrepancy between the lump sum or unit prices written in words and figures, the prices written in words will govern.

19. Award of Contract

The Contract will be awarded to "the lowest responsible and eligible bidder" pursuant to General Laws Chapter 30, Section 39M, as amended. Such a bidder(s) shall possess the skill, ability and integrity necessary for the faithful performance of the work, shall be able to furnish labor that can work in harmony with all other elements of labor employed, or to be employed, in the work, and shall otherwise comply with all applicable provisions of law. Contract award shall be subject to availability of an appropriation for funding.

In the event of a tie of two vendors, the vendors will be invited to the procurement office for a coin toss to break the tie.

After the Contract award, work cannot commence unless and until a Notice to Proceed has been issued by the Land Bank.

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20. Basis of Compensation

Lump sum contract.

NOTE: Per MA State Mandate, the Land Bank does not pay any form of deposit or pre-payment in order for work to begin.

21. Statutes Regulating Competitive Bidding

Any bid which does not comply with the provisions of Massachusetts General Laws Chapter 30, Section 39M, as amended, need not be accepted and the Owner may reject every such bid.

22. Wage Rates

Prevailing Wage Rates as determined by the Commissioner of Department of Labor and Workforce Development under the provision of the Massachusetts General Laws, Chapter 149, Section 26 to 27G, as amended, apply to this project. It is the responsibility of the bidder, before bid opening, to request any additional information on Prevailing Wage Rates for those tradespeople who may be employed for the proposed work under this contract.

23. Contractor Records

The Contractor shall comply with the provisions of Massachusetts General Laws, Chapter 30, Section 39R concerning Contractor records.

24. INSURANCE

The Contractor shall carry and continuously maintain until completion of the Contract, insurance as specified in Agreement and in such form as shall protect him performing work covered by this Contract, and the Land Bank and its employees, agents and officials, from all claims and liability for damages for bodily injury, including accidental death, and for property damage, which may arise from operations under this Contract. The Land Bank shall be named as an additionally insured. The Contractor covenants and agrees to hold the Land Bank and its employees, agents and officials harmless from loss or damage due to claims for bodily injury or death and/or property damage arising from, or in connection with, operations under this Contract.

25. PROJECT MANAGER

The Owner may utilize the services of a project manager, whose duties shall be as set forth in an Agreement for Project Manager Services.

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SECTION 00 10 00

BID FORMS

Bidder's Name _____

To the Nantucket Land Bank, herein called the Owner, for the Construction of **Lily Pond Park Improvements,** in Nantucket, Massachusetts.

The Undersigned, as bidder, herein referred to as the Contractor, declares as follows:

(1) The only parties interested in this BID as Principals are named herein;

(2) this BID is made without collusion with any other person, firm, or corporation;

(3) no officer, agent, or employee of the Owner is directly or indirectly interested in this BID;

(4) The Contractor has carefully examined the site of the proposed Work and fully informed and satisfied himself as to the conditions there existing, the character and requirements of the proposed Work, the difficulties attendant upon its execution and the accuracy of all estimated quantities stated in this BID, and the Contractor has carefully read the Specifications and examined the Drawings, and annexed proposed AGREEMENT and the Specifications and other Contract Documents therein referred to and knows and understands the terms and provisions thereof;

(5) The Contractor understands that information relative to subsurface and other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) has been furnished only for their information and convenience without any warranty or guarantee, expressed or implied, that the subsurface and/or other conditions, natural phenomena, existing pipes and other structures (surface and/or subsurface) actually encountered will be the same as those shown on the Drawings or in any of the other Contract Documents.

(6) and the Contractor understands that the quantities of work tabulated in this BID or indicated on the Drawings or in the Specifications or other Contract Documents are only approximate and are subject to increase or decrease as deemed necessary by the Engineer; and the Contractor agrees that, if this BID is accepted the Contractor will contract with the Owner, as provided in the copy of the Contract Documents deposited in the office of Owner or online, this BID form being part of said Contract Documents, and that the Contractor will perform all the work and furnish all the materials and equipment, and provide all labor, services, plant, machinery, apparatus, appliances, tools, supplies and all other necessities required by the Contract Documents in the manner and within the time therein prescribed and according to the requirements of the Engineer as therein set forth.

(Note: Bid items must include all work as described in the Contract Documents and bid form and as indicated in the Drawings, specifications, soil and groundwater management plan and all permitting requirements. The bid items include all materials, labor, equipment and other incidental items and overhead items required to complete the work for each item summarized below. The BID must be made clearly and in ink or typed; the total cost for each bid item should be written in both words and figures. In the case of discrepancy, the value in words shall govern.)

1.1 BID ITEMS

A. BASE BID

1. BID ITEM #1: PHASE 1 MOBILIZATION
   a. Mobilization for PHASE 1 as indicated in the specifications and Drawings, including but not limited to: storage of materials during construction and police details and coordination with Town for road work.

2. BID ITEM #2: DEMOLITION AND EROSION CONTROL (ALL PHASES)
   a. All work required for all phases, for the duration of the project, to complete the bid items as indicated in the Drawings and relevant specifications, including but not limited to the following:
      1) Site preparation, clearing and demolition.
      2) Installation of temporary construction fencing.
      3) Installation and maintenance of erosion and sedimentation controls and mud mats.
      4) Tree and vegetation protection

3. BID ITEM #3: REMOVE AND DISPOSE ALL EXPORTED SOIL AND SEDIMENT (ALL PHASES)
   a. Off-site/off island disposal of exported soil at a registered facility as described in the specifications and Soil and Groundwater Management Plan (Appendix A) for the duration of the project to complete all bid items as indicated in the Drawings and relevant specifications.

4. BID ITEM #4: DEWATERING (ALL PHASES)
   a. Temporary dewatering for the duration of the project as indicated in the Drawings, specification 31 23 19-DEWATERING, the Soil and Groundwater Management Plan, and as required per the Dewatering Remediation General Permit (DRGP), including discharge water sampling.

5. BID ITEM #5: RESTORATION AREA 1A
   a. Work as indicated in the Drawings and relevant specifications, including but not limited to the following:
      1) Earthwork and grading.
      2) Drainage structures and piping.
      3) Overflow spillways.
      4) Outlet structures and piping
      5) Temporary stabilization

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6. BID ITEM #6: RESTORATION AREA 1A BOARDWALK
   a. All work and material for the completed construction of the boardwalks and overlooks within Restoration Area 1A , includes geotechnical services and final piling design as indicated in the Drawings and relevant specifications.

7. BID ITEM #7: NEW GATEWAY
   a. Work as indicated in the Drawings and relevant specifications, including but not limited to the following:
      1) Site work and earthwork
      2) Rough and fine grading.
      3) Wetland replication
      4) Installation of seating, flagstone and fence
      5) Installation of site furnishings, amenities and signage.
      6) Temporary stabilization

8. BID ITEM #8: RESTORATION AREA 1B
   a. Work as indicated in the Drawings and including but not limited to the following:
      1) Earthwork and grading.
      2) Temporary stabilization

9. BID ITEM #9: RESTORATION AREA 1B BOARDWALK
   a. All work and material for the completed construction of the boardwalks and overlooks within Restoration Area 1B , includes geotechnical services and final piling design as indicated in the Drawings and relevant specifications.

10. BID ITEM #10: IRRIGATION WELL AND DISTRIBUTION SYSTEM
    a. Permitting, design and installation of irrigation well and distribution system including well, pump, valves and piping as indicated in the Drawings.
    b. This item will need to meet Build America, Buy America (BABA) requirements.

11. BID ITEM #11:RESTORATION AREA 1A PLANTING AND SEEDING
    a. Work as indicated in the Drawings and specifications 32 91 19-LANDSCAPE GRADING, 32 92 10-SEEDING, 32 93 00-PLANTS for Restoration Area 1A work including but not limited to the following areas:

12. BID ITEM #12:RESTORATION AREA 1B PLANTING AND SEEDING
    a. Work as indicated in the Drawings and specifications 32 91 19-LANDSCAPE GRADING, 32 92 10-SEEDING, 32 93 00-PLANTS for Restoration Area 1B work.

13. BID ITEM #13:NEW GATEWAY PLANTING AND SEEDING
    a. Work as indicated in the Drawings and specifications 32 91 19-LANDSCAPE GRADING, 32 92 10-SEEDING, 32 93 00-PLANTS for New Gateway.

14. BID ITEM #14: PHASE 1 PLANT AND LANDSCAPE MAINTENANCE
    a. All work and material to complete sixteen (16) months of plant and landscape maintenance for all plant and seed material in Phase 1 as indicated in the Drawings and specifications 32 92 10-SEEDING and 32 93 00-PLANTS, work including but not limited to the following areas:
       1) Restoration Area 1A planting and seeding.
       2) Restoration Area 1B planting and seeding.

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3) New Gateway.

15. BID ITEM #15: PHASE 1 SHUTDOWN AND TEMPORARY ACCESS
    a. Public to be allowed access to park to the maximum extent practicable during the summer shutdown months.
    b. No equipment or material to remain on site
    c. Work as indicated in the Drawings and relevant specifications to allow public access of the park during the summer months, including but not limited to the following:
        1) Demobilization.
        2) Restoration of areas beyond Phase 1 areas disturbed during Phase 1 construction.
        3) Provide temporary paths and accessible temporary boardwalk ramps for public access.
        4) Temporary stabilization, loaming and temporary seeding, as necessary.
        5) Adjustments or additions to temporary construction fence.
        6) Temporary signage.
        7) Monitoring / maintenance of all erosion and sediment controls.

16. BID ITEM #16: PHASE 2 MOBILZATION
    a. Mobilization for PHASE 2 as indicated in the specifications and Drawings, including but not limited to: storage of materials during construction and police details and coordination with Town for road work.

17. BID ITEM #17: RESTORATION AREA 2
    a. Work as indicated in the Drawings and relevant specifications, including but not limited to the following:
        1) Site work
        2) Earthwork and grading.
        3) Installation of proprietary water quality devices, drainage pipes and structures.
        4) Construction of constructed stormwater wetland and overflow spillways.
        5) Construction of vegetated retaining wall.
        6) Construction of new parking area.
        7) Construction of a parking lot bioretention.
        8) Construction of new granite curb and brick walkways.
        9) Installation of site furnishings, amenities and signage.
        10) Installation of reinforced turf.
        11) Temporary stabilization
    b. This item will need to meet Build America, Buy America (BABA) requirements.

18. BID ITEM #18: RESTORATION AREA 2 BOARDWALK
    a. All work and material for the completed construction of the boardwalks and overlooks within Restoration Area 2 , includes geotechnical services and final piling design as indicated in the Drawings and relevant specifications.
    b. This item will need to meet Build America, Buy America (BABA) requirements.

19. BID ITEM #19: RESTORATION AREA 3
    a. Work as indicated in the Drawings and relevant specifications, including but not limited to the following:
        1) Site work
        2) Earthwork and grading.
        3) Installation of proprietary water quality devices, drainage pipes and structures.

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4) Construction of overflow spillway.
5) Modification to granite curb and brick walkway entrance.
6) Installation of site furnishings, amenities and signage.
7) Installation of reinforced turf.
8) Temporary stabilization

20. BID ITEM #20: RESTORATION AREA 3 BOARDWALK
    a. All work and material for the completed construction of the boardwalks and overlooks within Restoration Area 3 , includes geotechnical services and final piling design as indicated in the Drawings and relevant specifications.

21. BID ITEM #21: NORTH LIBERTY STREET DRAINAGE
    a. Work as indicated in the Drawings and relevant specifications, including but not limited to the following:
        1) Site preparation and demo.
        2) Installation of drainage structures, pipes and proprietary water quality device.
        3) New pavement/pavement patch.
        4) Police detail and coordination with Town for road work.

22. BID ITEM #22: RESTORATION AREA 2 PLANTING AND SEEDING
    a. Work as indicated in the Drawings and specifications 32 91 19-LANDSCAPE GRADING, 32 92 10-SEEDING, and 32 93 00-PLANTS for Restoration Area 2.

23. BID ITEM #23: RESTORATION AREA 3 PLANTING AND SEEDING
    a. Work as indicated in the Drawings and specifications 32 91 19-LANDSCAPE GRADING, 32 92 10-SEEDING, and 32 93 00-PLANTS for Restoration Area 3.

24. BID ITEM #24: WESCO PLACE BUFFER PLANTING AND SEEDING
    a. Work as indicated in the Drawings and specifications 32 91 19-LANDSCAPE GRADING, 32 92 10-SEEDING, and 32 93 00-PLANTS for Wesco Place Buffer.

25. BID ITEM #25: PHASE 2 PLANT AND LANDSCAPE MAINTENANCE
    a. All work and material to complete sixteen (16) months of plant and landscape maintenance for all plant and seed material in Phase 1 as indicated in the Drawings and specifications 32 92 10-SEEDING and 32 93 00-PLANTS, work including but not limited to the following areas:
        1) Restoration Area 2
        2) Restoration Area 3
        3) Wesco Place Buffer

26. BID ITEM #26: POST CONSTRUCTION INVASIVE SPECIES MANAGEMENT (YEAR 1)
    a. All work and material to complete one year post construction invasive species management following acceptance of Phase 1 as indicated in the Drawings and specification 32 92 20-INVASIVE SPECIES REMOVAL. This includes the entire park boundary to the property lines beyond the project limit of work.

27. BID ITEM #27: POST CONSTRUCTION INVASIVE SPECIES MANAGEMENT (YEAR 2)

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a. All work and material to complete one additional year post construction invasive species management following Year 1 management, as indicated in the Drawings and specification 32 92 20-INVASIVE SPECIES REMOVAL. This includes the entire park boundary to the property lines beyond the project limit of work.

28. BID ITEM #28: PROJECT CLOSEOUT
    a. Work as indicated in the Drawings and relevant specification, including but not limited to the following:
        1) As-built Survey
        2) Permit closeout

1.2 BID SCHEDULE

A. BASE BID

BID ITEM #	DESCRIPTION	UNIT	QTY	UNIT BID PRICE	BID ITEM TOTAL
1	PHASE 1 MOBILIZATION	LUMP SUM	1		
	TOTAL IN WORDS:				
2	DEMOLITION AND EROSION CONTROL	LUMP SUM	1		
	TOTAL IN WORDS:				
3	REMOVE AND DISPOSE ALL EXPORTED SOIL AND SEDIMENT	CUBIC YARDS	3,500		
	TOTAL IN WORDS:				
4	DEWATERING	LUMP SUM	1		
	TOTAL IN WORDS:				
5	RESTORATION AREA 1A	LUMP SUM	1		
	TOTAL IN WORDS:				
6	RESTORATION AREA 1A BOADWALK	LINEAR FEET	676		

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BID ITEM #	DESCRIPTION	UNIT	QTY	UNIT BID PRICE	BID ITEM TOTAL
	TOTAL IN WORDS:				
7	NEW GATEWAY	LUMP SUM	1		
	TOTAL IN WORDS:				
8	RESTORATION AREA 1B	LUMP SUM	1		
	TOTAL IN WORDS:				
9	RESTORATION AREA 1B BOARDWALK	LINEAR FEET	933		
	TOTAL IN WORDS:				
10	IRRIGATION WELL AND TUBING	LUMP SUM	1		
	TOTAL IN WORDS:				
11	RESTORATION AREA 1A - PLANTING AND SEEDING	LUMP SUM	1		
	TOTAL IN WORDS:				
12	RESTORATION AREA 1B - PLANTING AND SEEDING	LUMP SUM	1		
	TOTAL IN WORDS:				
13	NEW GATEWAY PLANTING AND SEEDING	LUMP SUM	1		
	TOTAL IN WORDS:				

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BID ITEM #	DESCRIPTION	UNIT	QTY	UNIT BID PRICE	BID ITEM TOTAL
14	PHASE 1 PLANT AND LANDSCAPE MAINTENANCE	LUMP SUM	1		
	TOTAL IN WORDS:				
15	PHASE 1 SHUTDOWN AND TEMPORARY ACCESS	LUMP SUM	1		
	TOTAL IN WORDS:				
16	PHASE 2 MOBILIZATION	LUMP SUM	1		
	TOTAL IN WORDS:				
17	RESTORATION AREA 2	LUMP SUM	1		
	TOTAL IN WORDS:				
18	RESTORATION AREA 2 BOARDWALK	LINEAR FEET	187		
	TOTAL IN WORDS:				
19	RESTORATION AREA 3	LUMP SUM	1		
	TOTAL IN WORDS:				
20	RESTORATION AREA 3 BOARDWALK	LINEAR FEET	203		
	TOTAL IN WORDS:				
21	NORTH LIBERTY DRAINAGE	LUMP SUM	1		
	TOTAL IN WORDS:				

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BID ITEM #	DESCRIPTION	UNIT	QTY	UNIT BID PRICE	BID ITEM TOTAL
22	RESTORATION AREA 2 PLANTING AND SEEDING	LUMP SUM	1		
	TOTAL IN WORDS:				
23	RESTORATION AREA 3 PLANTING AND SEEDING	LUMP SUM	1		
	TOTAL IN WORDS:				
24	WESCO PLACE BUFFER PLANTING AND SEEDING	LUMP SUM	1		
	TOTAL IN WORDS:				
25	PHASE 2 PLANT AND LANDSCAPE MAINTENANCE	LUMP SUM	1		
	TOTAL IN WORDS:				
26	POST CONSTRUCTION INVASIVE SPECIES MANAGEMENT (YEAR 1)	HOURS	70		
	TOTAL IN WORDS:				
27	POST CONSTRUCTION INVASIVE SPECIES MANAGEMENT (YEAR 1)	HOURS	40		
	TOTAL IN WORDS:				
28	PROJECT CLOSEOUT	LUMP SUM	1		
	TOTAL IN WORDS:				

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BID ITEM #	DESCRIPTION	UNIT	QTY	UNIT BID PRICE	BID ITEM TOTAL
				TOTAL BASE BID:	

THE TOTAL BASE BID AMOUNT, based upon the quantities of materials and labor estimated by the Bidder, **(total of Bid Items No. 1 through 28, inclusive)**, as computed by the Bidder is:

Total Bid amount in words:_____
_____

Bid amount in numbers: $_____
_____

Name of general bidder: _____

Address of bidder: _____

_____

Telephone number of bidder: _____

Email of bidder: _____

Bidder's signature: _____

Date: _____

NOTE: If the bidder is a corporation, indicate state of incorporation under signature and affix corporate seal; if a partnership, give full names and residential addresses of all partners; if an individual, give residential address if different from business address.

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FORM OF GENERAL BID

Bid of _____ (hereinafter called "Bidder")*

(____) a corporation, organized and existing under the laws of the state of _____

(____) a partnership

(____) a joint venture

(____) an individual
doing business as _____

To the Land Bank, Massachusetts (hereinafter called "Owner").

Gentlemen:

A) The undersigned Bidder, in compliance with your invitation for bids for the project known as_____, having examined the plans and specifications and related documents and the site of the proposed work, and being familiar with all of the conditions surrounding the construction of the proposed project including the availability of materials and labor, hereby proposes to furnish all labor, materials, and supplies, and to construct the project in accordance with the contract documents and the plans and specifications within the time set forth below, and at the prices stated below. These prices are to cover all expenses incurred in performing the work required under the contract documents, of which this bid is a part.

The Bidder hereby agrees to commence work on or before the date to be specified in written "Notice to Proceed" of the Owner, and to fully complete the project within 90 consecutive calendar days thereafter. The Bidder further agrees to pay as liquidated damages the sum of one thousand ($1,000) Dollars for each consecutive calendar day thereafter that the work is not complete as provided in the contract.

_____
*Specify corporation, partnership or individual as applicable

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B) Bidder acknowledges receipt of and this bid includes the following addenda:

No. Dated:

No. Dated:

No. Dated:

No. Dated:

C) The Bidder agrees to perform the bid work described in the specifications and shown on the plans for the following contract price: $_____.

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The above unit prices shall include all labor, materials, bailing, shoring, removal, overhead, profit, insurance, etc., to cover the finished work of the several kinds called for.

The Bidder understands that all bids for this project are subject to the applicable bidding laws of the Commonwealth of Massachusetts, including General Laws Chapter 149 and Chapter 30, Section 39M, as amended.

The Bidder understands that the Owner reserves the right to reject any or all bids and to waive any informalities in the bidding.

The Bidder agrees that this bid shall be good and may not be withdrawn for a period of 30 days, Saturdays, Sundays and legal holidays excluded, after the opening of bids.

Within 10 days of receipt of the written notice of acceptance of this bid, the Bidder will execute the formal Agreement set forth in Section 00200 AGREEMENT.

Bid security is submitted in the sum of five percent (5%) of the total bid in accordance with the conditions of Section 00050 INSTRUCTIONS TO BIDDERS. The bid security may become the property of the Owner in the event the contract and bond are not executed within the time set forth above.

The selected Contractor shall furnish a payment bond in an amount at least equal to fifty percent (50%) of the contract price in accordance with Section 00300 PAYMENT BOND, and as stipulated in the contract.

The undersigned offers the following information as evidence of his qualifications to perform the work as bid upon according to all the requirements of the plans and specifications.

1. Have been in business under present name for ____ years.

2. The names and addresses of all persons interested in the bid (if made by a partnership or corporation) as principals, are as follows:

_____
_____
_____
_____
_____
_____
(attach supplementary list if necessary)

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Bank reference _____

(Name)

_____
(Bank)

_____
(Address)

_____
(Telephone No.)

Pursuant to G.L. c.62C, §49A, I certify hereby in writing, under penalties of perjury, that the within named Bidder/Contractor has complied with all laws of the commonwealth relating to taxes, reporting of employees and contractors, and withholding and remitting of child support.

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The undersigned Bidder hereby certifies under penalties of perjury, as follows: (1) that he/she is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work; (2) that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and (3) that all employees to be employed in the work subject to this bid have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

The undersigned certifies under penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this paragraph the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

The undersigned bidder hereby certifies, under pains and penalties of perjury, that the foregoing bid is based upon the payment to laborers to be employed on the project of wages in an amount no less that the applicable prevailing wage rates established for the project by the Massachusetts Department of Labor and Workforce Development. The undersigned bidder agrees to indemnify the awarding authority for, from and against any loss, expense, damages, actions or claims, including any expense incurred in connection with any delay or stoppage of the project work arising out of or as a result of (1) the failure of the said bid to be based upon the payment of the said applicable prevailing wage rates or (2) the failure of the bidder, if selected as the contractor, to pay laborers employed on the project the said applicable prevailing wage rates.

Respectfully submitted:

Date: _____ By: _____
(Signature)

_____

_____
(Type Name of Bidder)

_____
(Title)

_____
(Business Address)

_____
(City and State)

_____
(Telephone Number)

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00 10 50 STATEMENT OF QUALIFICATIONS

All questions must be answered with clear and comprehensive data; if necessary, add additional pages. This statement must be notarized.

l. Name of Bidder and Contact Person(s) including the Project Manager:_____

_____

_____

2. Permanent Main Office address, telephone, fax, email: _____

_____

_____

4. Please provide the year the Contractor (and note any Predecessor Entities or Related Entities) were first organized. _____

_____

_____

5. Please list any Predecessor Entities below (or on attached sheets if necessary). _____

_____

_____

6. Please list any Related Entities below (or on attached sheets if necessary). _____

_____

_____

7. Where incorporated. _____

8. How many years have you been engaged in the general contracting business under your present firm name? Also state names and dates of previous firm names, if any.

_____

_____

_____

9. The Bidder is required to submit the following proof of certifications with the Bid:
   - MA Certified Landscape Professional (MCLP) and/or MA Certified Horticulturalist (MCH).
   - Current MA Pesticide License (MPL).

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10. Experience and References: Please provide at a minimum four references for projects with a similar scope of work that will assist the Owner to judge experience, skill and business standing. Each project reference must clearly demonstrate the following bidder experience:
    - Excavation and removal off-site disposal of contaminated soils.
    - Working within a resource area and the successful completion of wetland restoration(s).
    - Dewatering for a wetland restoration.
    - Construction of green stormwater infrastructure.

Failure of the bidder's references to address the contractor's performance pertaining to the above items to the satisfaction of the owner may be grounds for bid disqualification.

Project Name, Type and Location	Contract Amount	Project Manager	Date Completed	Owner/Contact Person Name, Address, Telephone Number and Email

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11. Contracts in Progress. Please provide the following information regarding all contracts currently in progress, in descending order of contract amount. [Please feel free to provide this information on attached sheets in another format as long as it contains all the information requested.]

Project Type and Location	Contract Amount	% Complete	Start Date and End Date

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12. Liquidated Damages:

(a) Within the last five years has the Contractor (or any Predecessor Entities or Related Entities) had liquidated damages assessed against it?

YES _____ NO_____

(b) Within the last five years has the Contractor (or any Predecessor Entities or Related Entities) had liquidated damages accrued which were not assessed by the Owner?

YES _____ NO_____

If YES, to (a) or (b) above please provide full details on attached sheets including the per diem amount of liquidated damages, the original contract time, and the number of days for which liquidated damages were accrued and/or assessed. Please feel free to include a written summary of your position on the matter.

13. Terminations, Suspensions or Defaults:

(a) Within the last five years has a contract of the Contractor (or any Predecessor Entities or Related Entities) been terminated or suspended for cause?

YES _____ NO_____

(b) Within the last five years has another party (e.g., surety) completed Work which the Contractor (or any Predecessor Entities or Related Entities) was originally responsible to perform?

YES _____ NO_____

(c) Within the last five years has the Contractor (or any Predecessor Entities or Related Entities) been considered in default of a contract that was not cured within the time frame allowed by the contract?

YES _____ NO_____

If the answer to any of questions 13(a)-(c) is YES, please provide full details on attached sheets. Please feel free to include a written summary of your position on the matter.

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14. Claims History:

(a) Within the last 5 years has the Contractor (or any Predecessor Entities or Related Entities) been a party to a Claim with an originally claimed amount in excess of $50,000?

YES _____ NO_____

If YES, please provide full details for each Claim on attached sheets including (a) whether the Claim was brought by or against the Contractor (or any Predecessor Entities or Related Entities), (b) the nature of the Dispute underlying the Claim, (c) originally claimed amounts, (d) the resolution of such Claims (including the amount) or if unresolved, the current status of such Claims, and (e) the name, address and phone number of the primary adverse party who can be contacted for additional information, and (f) a written summary of your position on the matter (if desired).

15. Please list the following information for your key personnel:

Title	Name	Experience (# Years)
1. Project Manager		
2. Project Superintendant (if different from above)		
3. Foremen		

Identify how many projects your Project Manager will manage concurrent with this project. Include dollar value and end date.

16. List any subcontractors whom you would expect to use and the general components of the Project for which they will be responsible. Indicate other projects on which the proposed subcontractor has worked with you.

17. List any vendors/nurseries from whom you would expect to purchase materials for the general components of the Project. Please provide a contact name and phone number.

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Dated at _____ this _____ day of _____, 20____

_____
(Name of Bidder)

By: _____

Title: _____

State of _____

County of _____

_____ being duly sworn, deposes and says that they are

of _____ and that the answers to the foregoing
(Name of Organization)

questions and all statements contained therein are true and correct.

Sworn to before me this _____ day of _____, 20___.

(Notary Public)

_____

My commission expires _____.

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Section 00 11 13
ADVERTISEMENT TO BID
MGL c.30 §39M Over $50K

The **NANTUCKET LAND BANK**, the Awarding Authority, invites sealed bids from Contractors for the Lily Pond Park Improvements at in Nantucket, Massachusetts, in accordance with the documents prepared by **HORSLEY WITTEN GROUP**.

The Project consists of but not limited to:
The work to be performed includes, but is not limited to earthwork, off island disposal of soil, wetland restoration, water quality and drainage improvements (installation of constructed wetland, bioretention and water quality units), park improvements (parking lot, walkways, boardwalks), planting, invasive species management and all associated work.

A performance bond in an amount equal to 100 percent (100%) of the total amount of the contract price will be required. This takes precedence over section BIDDOCs 00 21 13 Instruction to Bidders Section 7.4.

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The work is estimated to cost **$6,750,000.00**.

All bidding Requests for Information (RFIs) shall be submitted online by 07/09/2026 at 4:00PM EDT for general bids.

Bids are subject to M.G.L. c.30§39M and to minimum wage rates as required by M.G.L. c.149 §§26 to 27H inclusive.

THIS PROJECT IS BEING ELECTRONICALLY BID AND HARD COPY BIDS WILL NOT BE ACCEPTED. Please review the instructions in the bid documents on how to register as an electronic bidder. All Bids shall be submitted online at www.biddocs.com and received no later than the date and time specified.

General Bids will be received until **22 July 2026** at **10:00AM EDT** and publicly opened online, forthwith.

General bids and sub-bids shall be accompanied by a bid deposit that is not less than five (5%) of the greatest possible bid amount (including all alternates), and made payable to the **NANTUCKET LAND BANK**. Note: A bid deposit is not required for Projects advertised under $50,000.

Bid Forms and Contract Documents will be available for review at www.biddocs.com (may be viewed and downloaded electronically at no cost).

PRE-BID CONFERENCE / SITE VISIT: Scheduled
Date and Time: 07/07/2026 at 11:00AM EDT
Address: 17-19 North Liberty Street, Nantucket, MA 02554
Instructions: Attendees will meet at the parking lot.

The hard copy Contract Documents may be seen at:

Nashoba Blue Inc.
433 Main Street
Hudson, MA 01749
978-568-1167

END OF SECTION

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SECTION 00 20 00

AGREEMENT

THIS AGREEMENT made this _____ day of _____

in the year Two Thousand and ____, between _____, with a usual

place of business at _____, hereinafter called the

CONTRACTOR, and The Land Bank, acting by its Commission, with a usual place of business at

22 Broad Street, Nantucket, MA 02554, hereinafter called the OWNER.

The CONTRACTOR and the OWNER, for the consideration hereinafter named, agree as follows:

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1. Scope of Work

The Contractor shall furnish all labor, materials, equipment and insurance to perform all work required for the project known as the LILY POND PARK IMPROVEMENTS, in strict accordance with the Contract Documents and all related Drawings and Specifications. The said Documents, Specifications, Drawings and any GENERAL SUPPLEMENTARY CONDITIONS are incorporated herein by reference and are made a part of this Agreement.

2. Contract Price

The Owner shall pay the Contractor for the performance of this Agreement, subject to additions and deductions provided herein, in current funds, the sum of _____.

3. Commencement and Completion of Work and Liquidated Damages

It is agreed that time is of the essence of this Agreement. The Contractor shall commence and prosecute the work under this Agreement upon execution hereof and shall complete the work on or before _____.

A. Definition of Term: The Term "Substantial completion" shall mean the date certified by the Owner when construction is sufficiently complete, in accordance with the Contract Documents, so the Owner may occupy the project, or designated portion(s) thereof, for the use for which it is intended.

B. Time as Essential Condition: It is understood and agreed that the commencement of and substantial completion of the work are essential conditions of this Agreement. It is further agreed that time is of the essence for each and every portion of the Contract Documents

wherein a definite and certain length of time is fixed for the performance of any act whatsoever; and where under the Contract Documents any additional time is allowed for the completion of any work, the new time fixed by such extension shall be of the essence of this Agreement. It is understood and agreed that the times for the completion of the work are reasonable, taking into consideration the average climatic range and usual industrial conditions prevailing in this locality.

C. Progress and Completion: Contractor shall commence work promptly upon execution of this Agreement and shall prosecute and complete the work regularly, diligently and uninterruptedly at such a rate of progress as will insure Substantial Completion within the stipulated number of calendar days.

D. Liquidated Damages: It is expressly agreed between the Contractor and the Owner that the Contractor will be responsible for all damages which may arise due to the Contractor's failure to substantially complete the work within the above specified time. If the Contractor shall neglect, fail or refuse to complete the work within the specified number of days, or any extension thereof authorized by the Owner, Contractor agrees, as a part of the consideration for the execution of this Contract by the Owner, to pay the Owner the amount specified herein, not as a penalty, but as liquidated damages for such breach of contract as hereinafter set forth, for each and every calendar day, excluding Saturdays, Sundays and legal Holidays, that the Contractor shall be in default of Substantial completion after the date specified in the Agreement. Due to the impracticability and extreme difficulty of fixing and ascertaining the actual damages the Owner would in such event sustain, said amount is agreed to be the amount of damages which the Owner would sustain, and said amount shall be retained from time to time by the Owner from current periodic estimates. The amount of liquidated damages shall be $1,000 per day.

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4. Performance of the Work

A. Direction of the Work: The Contractor shall supervise and direct the Work, using his best skills and attention which shall not be less than such state of skill and attention generally rendered by the contracting profession for projects similar to the Project in scope, difficulty and location. The Contractor shall maintain adequate supervisory personnel at the project site during the performance of the Work. He shall be solely responsible for all construction means, methods, techniques, sequences and procedures and for coordinating all portions of the Work under the Agreement.

B. Responsibility for the Work:

(1) The Contractor shall be responsible to the Owner for the acts and omissions of his employees, Subcontractors and their agents and employees, and other persons performing any of the Work under a contract with the Contractor. This obligation shall also extend to the presence on the Site of suppliers of materials or equipment, their employees, contractors, and agents engaged in the work.

(2) The Contractor shall not be relieved from his obligations to perform the Work in accordance with the Contract Documents either by the activities or duties of the Owner in its administration of the Agreement, or by inspections, tests or approvals required or performed by persons other than the Contractor.

C. Permits and Fees: Unless otherwise expressly provided, the Contractor shall secure and pay for all permits and fees, licenses and inspections necessary for the proper execution and completion of the Work which are customarily secured after execution of the Agreement and which are legally required at the time the bids are received, and the same shall at all times be the property of the Owner and shall be delivered to the Owner upon completion of the Project.

D. Notices, Compliance With Laws:

(1) The Contractor shall give all notices and comply with all federal, state and local laws, ordinances, rules, regulations and lawful orders of any public authority bearing on the performance of the Work. The Contractor shall provide the Owner with reproductions of all permits, licenses and receipts for any fees paid. The Owner represents that it has disclosed to the Contractor all orders and requirements known to the Owner of any public authority particular to this Agreement.

(2) If the Contractor observes that any of the Contract Documents are at variance with applicable laws, statutes, codes and regulations in any respect, he shall promptly notify the Owner in writing, and any necessary changes shall be accomplished by appropriate modification.

(3) If the Contractor performs any Work which he knows or should know is contrary to such laws, ordinances, rules and regulations, and without such notice to the Owner, he shall assume full responsibility therefor and shall bear all costs attributable thereto.

(4) In the performance of the Work, the Contractor shall comply with all applicable federal, state and local laws and regulations including those relating to workplace and employee safety. The Contractor shall notify the Owner immediately of any conditions at the place of the work which violate said laws and regulations and shall take prompt action to correct and eliminate any such violations.

E. Project Superintendent: The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site at all times during the progress of the Work. The superintendent shall represent the Contractor and all communications given to the superintendent shall be as binding as if given to the Contractor. Important communications shall be confirmed in writing. Other communications shall be so confirmed on written request in each case.

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F. Progress Schedule: The Contractor, immediately after being awarded the Contract, shall prepare and submit for the Owner's information an estimated progress schedule for the Work. The progress schedule shall be related to the entire Project to the extent required by the Contract Documents, and shall provide for expeditious and practicable execution of the Work.

G. Drawings, Specifications and Submittals:

(1) The Contractor shall maintain at the site for the Owner one record copy of all Drawings, Specifications, Addenda, Change Orders and other Modifications, and "As-Built" Drawings and Specifications in good order and marked currently to record all changes made during construction, and approved Shop Drawings, Product Data and Samples. These shall be delivered to the Owner upon completion of the Work.

(2) By approving and submitting Shop Drawings, Product Data and Samples, the Contractor represents that he has determined and verified all materials, field measurements, and field construction criteria related thereto, or will do so, and that he has checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

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(3) The Contractor shall not be relieved of responsibility for any deviation from the requirements of the Contract Documents by the Owner's approval of Shop Drawings, Product Data or Samples unless the Contractor has specifically informed the Owner in writing of such deviation at the time of submission and the Owner has given written approval to the specific deviation. The Contractor shall not be relieved from responsibility for errors or omissions in the Shop Drawings, Product Data or Samples by the Owner's approval thereof.

(4) The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data or Samples, to revisions other than those requested by the Owner on previous submittals.

(5) No portion of the Work requiring submission of a Shop Drawing, Product Data or Sample shall be commenced until the submittal has been approved by the Owner. All such portions of the Work shall be in accordance with approved submittals.

H. Protection of the Work and Owner's Property: The Contractor shall at all times safely guard the Owner's property from injury or loss in connection with this Agreement. He shall at all times safely guard and protect his own work, and that of adjacent property from damage. The Contractor shall replace or make good any such damage, loss or injury. The Contractor shall clean the work area and restore it to its original condition upon completion of the work.

I. Quality of the Work: The Contractor shall perform the work in a good, workmanlike

manner. The Contractor hereby guarantees that the entire work constructed by him under the Agreement will meet fully all requirements thereof as to quality of workmanship and materials. The Contractor hereby agrees to make at his own expense any repairs or replacements made necessary by defects in materials or workmanship supplied to him that become evident within one (1) year after the date of the final payment, and to restore to full compliance with the requirements set forth herein any part of the work constructed hereunder, which during said one (1) year period is found to be deficient with respect to any provisions of the Contract Documents. The Contractor also agrees to hold the Owner harmless from claims of any kind arising from damage due to said defects. The Contractor shall make all repairs and replacements promptly upon receipt of written orders for same from the Owner. If the Contractor fails to make the repairs and replacements promptly, the Owner may do the work and the Contractor shall be liable to the Owner for the cost thereof.

J. Warranty: The Contractor guarantees to Owner that all materials incorporated into the work will be new unless otherwise specified or agreed. Prior to final payment, the Contractor shall deliver to the Owner all manufacturers' warranties, together with such endorsements or assignments as are necessary to ensure to the Owner the full rights and benefits of such warranties.

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5. Affirmative Action/Equal Employment Opportunity

The Contractor is directed to comply with all applicable State Laws, Ordinances, Bylaws, and rules and regulations regarding affirmative action/equal employment opportunity requirements. Failure of the Contractor to comply with any such law, rule or regulation shall constitute grounds for the Owner to terminate the Agreement.

6. Site Information Not Guaranteed; Contractor's Investigation

All information given in the Contract Documents relating to subsurface and other conditions, natural phenomena, existing pipes, and other structures is from the best sources at present available to the Owner. All such information is furnished only for the information and convenience of the Contractor and is not guaranteed.

It is agreed and understood that the Owner does not warrant or guarantee that the subsurface or other conditions, natural phenomena, existing pipes, or other structures encountered during construction will be the same as those indicated in the Contract Documents.

Contractor has familiarized himself with the nature and extent of the Contract Documents, work, locality, and with all local conditions and federal, state, and local laws, rules, ordinances, and regulations that in any manner may affect costs, progress, or performance of the work. Contractor has made, or has caused to be made, examinations, investigations, and tests and studies of such reports and related data in addition to those referred to in the paragraph above as he deems necessary for the performance of the work at the Contract Price, within the Contract Time, and in accordance with the other Terms and Conditions of the Contract Documents; and no additional

examinations, tests, investigations, reports, and similar data are or will be required by the Contractor for such purposes.

Contractor has correlated the results of all such observations, examinations, investigations, tests, reports, and data with the Contract Documents. Contractor has given the Owner written notice of all conflicts, errors, or discrepancies that he has discovered in the Contract Documents, and the resolution thereof by the Owner is acceptable to the Contractor.

It is further agreed and understood that the Contractor shall not use or be entitled to use any of the information made available to him or obtained in any examination made by him in any manner as a basis of or ground for any claim or demand against the Owner, arising from or by reason of any variance which may exist between the information made available and the actual subsurface conditions or other conditions or structures actually encountered during the construction work, except as may otherwise be expressly provided for in the Contract Documents.

7. Project Oversight

The Special Projects Coordinator and/or Research Ecologist or other Land Bank Staff, or their designee(s) may be working with a local on-site Project Manager designated by the Owner. Except as otherwise indicated in the Contract Documents, the Land Bank Staff shall be a representative of the Owner and the Contractor shall direct all communications, questions and comments on the work and the performance thereof to the Land Bank Staff. Except as otherwise provided, the Land Bank Staff shall have all the authority of the Owner set forth in the Contract Documents. In general, the Land Bank Staff shall have the authority to review the performance of the work, reject work which is defective or otherwise does not comply with the Contract Documents and to order the Contractor to remedy defective work and take such actions which are necessary to make the work conform to the Contract Documents.

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8. Wage Rates

Prevailing Wage Rates as determined by the Commissioner of the Department of Labor and Workforce Development under the provisions of Massachusetts General Laws, Chapter 149, Section 26 to 27G, as amended, apply to this project. It is the responsibility of the Contractor to provide the Town with certified payrolls and to comply with all requirements of the above-cited statutes.

The schedules of prevailing wage rates are included in the Contract Documents.

9. Payments to the Contractor

Within fifteen (15) days after receipt from the Contractor of a proper and satisfactory periodic estimate requesting payment of the amount due for the preceding month, the Owner shall have fifteen (15) days to make payment for:

A. The work performed during the preceding month.

B. The materials not incorporated in the Work but delivered and suitably stored at the site (or at some location agreed upon in writing) to which the Contractor has title, or to which a Subcontractor has title and has authorized the Contractor to transfer title to the Owner.

C. Less the following retention items:

1. A retention based on an estimate of the fair value of the Owner's claims against the Contractor.

2. A retention for direct payments to Subcontractors, if any, based on demands for same in accordance with the provisions of Section 39F of Chapter 30 of the General Laws.

3. A retention not exceeding five percent (5%) of the approved amount of the periodic payment.

D. After the receipt of a periodic estimate requesting final payment and within sixty-five (65) days after the Contractor fully completes the Work, or substantially completes the Work so that the value of the Work remaining to be done is, on the estimate of the Owner, less than 1% of the original Contract Price, or substantially completes the Work and the Owner takes possession or occupancy, whichever occurs first, the Owner shall pay the Contractor the entire balance due on the Contract less:

1. A retention based on an estimate of the fair value of the Owner's claims against the Contractor and of the cost of completing the incomplete and unsatisfactory items of work.

2. A retention for direct payments to Subcontractors, if any, based on demands of same in accordance with the provisions of Section 39F of Chapter 30 of the General Laws, or based on the record of payments by the Contractor to the Subcontractors under this Contract if such record of payment indicates that the Contractor has not paid Subcontractors as provided in Section 39F of Chapter 30 of the General Laws.

If the Owner fails to make payment as herein provided, there shall be added to each such payment, daily interest at the rate of 3 percentage points above the rediscount rate than charged by the Federal Reserve Bank of Boston, commencing on the first day after said payment is due, and continuing until the payment is delivered or mailed to the Contractor; provided that no interest shall be due, in any event, on the amount of a periodic estimate for final payment until fifteen (15) days after receipt of such a periodic estimate by the Owner as provided in the first paragraph of this Article. The Contractor agrees to pay to each subcontractor a portion of any such interest paid in accordance with the amount due each subcontractor.

The Owner may make changes in any periodic estimate submitted by the Contractor and the

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payment due on said periodic estimate shall be computed in accordance with the changes so made, and such changes and any requirements for a corrected periodic estimate shall not affect the due date for the periodic payment or the date for the commencement of interest charges on the amount of the periodic payment computed in accordance with the changes made, as provided herein; provided further, that the Owner may, within seven (7) days after receipt, return to the Contractor for correction, any periodic estimate which is not in acceptable form or which contains computations not arithmetically correct, and in that event, the date of receipt of such periodic estimate shall be the date of receipt of the corrected periodic estimate in proper form and with arithmetically correct computations. The date of receipt of a periodic estimate received on a Saturday shall be the first working day thereafter.

E. Changes in the Work: No changes in the work covered by the approved Contract Documents shall be made without prior written approval of the Owner. Charges or credits for the work covered by the approved change shall be determined by one or more, or a combination of the following methods:

(a) Unit bid prices previously approved.

(b) An agreed lump sum.

(c) The actual cost of:

(1) Labor.

(2) Materials entering permanently into the work.

(3) The ownership or rental cost of construction equipment during the time of use on the extra work.

(4) Power and consumable supplies for the operation of power equipment.

(5) Wages to be paid.

To the cost under (c) there shall be added a fixed fee to be agreed upon but not to exceed fifteen percent (15%) of the actual cost of work. The fee shall be compensation to cover the cost of supervision, overhead, bond, profit and any other general expenses.

F. Claims for Additional Costs: If the Contractor wishes to make a claim for an increase in the Contract Sum, he shall give the Owner written notice thereof within twenty days after the occurrence of the event giving rise to such claim. This notice shall be given by the Contractor before proceeding to execute the Work, except in an emergency endangering life or property. No such claim shall be valid unless so made. Any change in the Contract Sum resulting from such claim shall be authorized by Change Order.

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The Contractor hereby agrees that the Contractor shall have no claim for damages of any kind against the Awarding Authority on account of any delay in the commencement or performance of the work and/or any hindrance, delay or suspension of any portion of the work including, but not limited to, any claims or damages on account of having to perform out of sequence work, claims for damages on account of loss of production or other interference with the work whether such delay is caused by the Awarding Authority or otherwise, except as and to the extent expressly provided under G.L. c.30, §39O in the case of written orders by the Awarding Authority. The Contractor acknowledges that the Contractor's sole remedy for any such claim will be an extension of time as provided herein.

10. Final Payment, Effect

The acceptance of final payment by the Contractor shall constitute a waiver of all claims by the Contractor arising under the Agreement.

11. Contract Documents

The Contract Documents consist of the following, together with this Agreement:

Invitation to Bid
Instructions to Bidders
This Contract Form
Bid Form
Performance Bond
Labor & Materials Payment Bond
Non-Collusion Certificate
Tax Compliance Certificate
Clerk's Certificate of Corporate Vote
Certificate of Insurance
General Conditions
Supplementary General Conditions
General Requirements
Specifications and Addenda
Contract Drawings
Schedule of Prevailing Wages
(Strike out any inapplicable item)

12. Terms Required By Law

This Agreement shall be considered to include all terms required to be included in it by the Massachusetts General Laws, and all other laws, as though such terms were set forth in full herein.

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13. Indemnification

The Contractor shall indemnify and hold harmless the Owner from and against any and all claims, damages, losses, and expenses, including attorney's fees, arising out of the performance of this Agreement when such claims, damages, losses, and expenses are caused, in whole or in part, by the acts, errors, or omissions of the Contractor or his employees, agents, subcontractors or representatives.

14. Insurance

The Contractor shall purchase and maintain such insurance as will protect both the Owner and the Contractor from claims which may arise under the Agreement, including operations performed for the named insured by independent contractors and general inspection thereof by the named insured. In addition, the Contractor shall require its subcontractors to maintain such insurance. Coverage shall be provided for:

.1 claims under workers' or workmen's compensation, disability benefit and other applicable employee benefit acts;

.2 claims for damages because of bodily injury, occupational sickness or disease, or death of Contractor's employees;

.3 claims for damages because of bodily injury, sickness or disease, or death of any person other than Contractor's employees;

.4 claims for damages insured by usual personal injury liability coverage which are sustained (1) by any person as a result of an offense directly or indirectly related to the employment of such person by the Contractor, or (2) by any other person;

.5 claims for damages, including damages to the Work itself, because of injury to or destruction of tangible property, including loss of use resulting therefrom; and

.6 claims for damages because of bodily injury or death of any person or property damage arising out of the ownership, maintenance or use of any motor vehicle.

.7 claims involving contractual liability applicable to the Contractor's obligations under Article 13.

The limits of liability for coverage required under the preceding paragraph shall be as Specified in the Supplemental Conditions.

Except for Workmen's Compensation, all liability coverage shall name the Awarding Authority as an additional insured and shall provide for 30 days prior written notice to the Awarding Authority of any modification or termination of coverage provided thereby. The

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Contractor shall provide the Owner with appropriate certificate(s) of insurance evidencing compliance with this provision prior to the commencement of any work under this Agreement.

15. Notice

All notices required to be given hereunder shall be in writing and delivered to, or mailed first class to, the parties' respective addresses stated above. In the event that immediate notice is required, it may be given by telephone or facsimile, but shall, to the extent possible, be followed by notice in writing in the manner set forth above.

16. Termination

A. Each party shall have the right to terminate this Agreement in the event of a failure of the other party to comply with the terms of the Agreement. Such termination shall be effective upon seven days' notice to the party in default and the failure within that time of said party to cure its default.

B. The Owner shall have the right to terminate the Agreement without cause, upon ten (10) days' written notice to the Contractor. In the event that the Agreement is terminated pursuant to this subparagraph, the Contractor shall be reimbursed in accordance with the Contract Documents for all Work performed up to the termination date, and for all materials or equipment not incorporated in the Work, but delivered and suitably stored at the site. Payment for material or equipment stored at the site shall be conditioned upon submission by the Contractor of bills of sale or such other evidence as is satisfactory to Owner to establish the Owner's title to such material or equipment or otherwise protect the Owner's interests.

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17. Miscellaneous

A. Royalties and Patents: The Contractor shall pay all royalties and license fees. He shall defend all suits or claims for infringement of any patent rights and shall save the Owner harmless from loss on account thereof, except that the Owner shall be responsible for all such loss when a particular design, process or the product of a particular manufacturer or manufacturers is specified; but if the Contractor believes or has reason to believe that the design, process or product specified is an infringement of a patent, he shall be responsible for such loss unless he promptly gives such information to the Owner, and thereafter the Owner insists on the use of the design, process or products specified.

B. Assignment: The Contractor shall not assign or transfer any of its rights, duties or obligations under this Agreement without the written approval of the Owner.

C. Governing Law: This Agreement shall be governed by and construed in accordance with the law of the Commonwealth of Massachusetts.

D. By its signature hereon, the Contractor certifies, under the pains and penalties of perjury, that it has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

[Remainder of page intentionally blank.]

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AGREED:

THE NANTUCKET ISLANDS LAND BANK, MASSACHUSETTS
(Owner)

By its Commission

_____ _____
Chairman

_____ _____

_____

CONTRACTOR: _____

By_____

_____
(Name)

_____
(Title)

_____
(Address)

_____
(City and State)

Approved as to Form:

By_____
(Owner's Counsel)

In accordance with G.L. c.44, Section 31C, this is to certify that an appropriation in the amount of this contract is available therefor and that the _____ has been authorized to execute the contract and approve all requisitions and change orders.

By_____
(Owner's Accountant)

_____
(Name)

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CERTIFICATE OF CORPORATE AUTHORITY

At a duly authorized meeting of the Board of Directors of _____
(Name of Corporation)

held on _____ it was VOTED that:
(Date)

_____ _____
(Name) (Title)

of this corporation, be and he/she hereby is authorized to submit bids and proposals, execute contracts, deeds and bonds in the name and on behalf of said corporation, and affix its corporate seal thereto; and such execution of any contract, deed or obligation in this corporation's name on its behalf by such _____ under seal of the company, shall be valid and binding upon this corporation.

A True Copy,

ATTEST: _____

TITLE: _____

PLACE OF BUSINESS: _____

_____

DATE OF THIS CERTIFICATE: _____

I hereby certify that I am the clerk of the _____
(Corporation)

that _____ is the duly elected _____ of
(Name) (Title)
said corporation, and that the above vote has not been amended or rescinded and remains in full force and effect as of the date of this Certification.

_____
(Clerk)

CORPORATE SEAL:

_____, MASSACHUSETTS

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LLC CERTIFICATE OF INCUMBENCY AND AUTHORITY

_____, LLC

I, _____, do hereby certify that:

1. I am the duly elected and acting _____ of _____ LLC, a limited liability company organized and existing in good standing under the laws of the State of _____ (the "Company").

2. Attached hereto as Exhibit A is a true and correct copy of resolutions which were duly adopted by the members of the Company on _____, 20___.

3. The attached resolutions have not been amended, rescinded or modified and are in full forces and effect on the date hereof in the form originally adopted, and are in conformity with the Articles of Organization and Operating Agreement of the Company.

4. Attached hereto as Exhibit B is a true and correct copy of the Articles of Organization dated _____, 20___ and the Operating Agreement dated _____, 20___.

5. The attached Articles of Organization and Operating Agreement have not been amended, rescinded, or modified and are in full forces and effect on the date hereof.

6. The following person are the Authorized Officers of the Company in the capacities indicated, and the signatures set forth after their names and titles are their true and genuine signatures.

Name	Office	Signature
_____		
_____		
_____		

Witness, my signature and the seal of the Company this _____day of _____, 20__.

_____
Name:
Title:

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CERTIFICATIONS REQUIRED BY LAW FOR PUBLIC CONSTRUCTION CONTRACTS

You must COMPLETE and SIGN the following certifications. You must also print, at the bottom of this page, the name of the contractor for whom these certifications are submitted.

TAX COMPLIANCE

Pursuant to Chapter 62C of the Massachusetts General Laws, Section 49A(b), I, the undersigned, authorized signatory for the below named contractor, do hereby certify under the pains and penalties of perjury that said contractor has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

NON-COLLUSION

The undersigned certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

PUBLIC CONTRACTOR DEBARMENT

The undersigned certifies under penalty of perjury that the below named contractor is not presently debarred from doing public construction work in the commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

OSHA TRAINING

Pursuant to G.L. c. 30, §39S, the Contractor hereby certifies under penalties of perjury as follows:

(1) Contractor is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work;
(2) All employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and they shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and
(3) All employees to be employed in the work subject to this contract have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

COMPLETE AND SIGN BELOW:

_____ _____
Authorized Person's Signature Date

_____
Print Name & Title of Signatory

_____
Name of Contractor

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AGREED:

THE NANTUCKET ISLANDS LAND BANK, MASSACHUSETTS
(Owner)

By its Commission

_____ _____
Chairman

_____ _____

_____

CONTRACTOR: _____

By_____

_____
(Name)

_____
(Title)

_____
(Address)

_____
(City and State)

Approved as to Form:

By_____
(Owner's Counsel)

In accordance with G.L. c.44, Section 31C, this is to certify that an appropriation in the amount of this contract is available therefor and that the _____ has been authorized to execute the contract and approve all requisitions and change orders.

By_____
(Owner's Accountant)

_____
(Name)

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CERTIFICATE OF CORPORATE AUTHORITY

At a duly authorized meeting of the Board of Directors of _____
(Name of Corporation)

held on _____ it was VOTED that:
(Date)

_____ _____
(Name) (Title)

of this corporation, be and he/she hereby is authorized to submit bids and proposals, execute contracts, deeds and bonds in the name and on behalf of said corporation, and affix its corporate seal thereto; and such execution of any contract, deed or obligation in this corporation's name on its behalf by such _____ under seal of the company, shall be valid and binding upon this corporation.

A True Copy,

ATTEST: _____

TITLE: _____

PLACE OF BUSINESS: _____

_____

DATE OF THIS CERTIFICATE: _____

I hereby certify that I am the clerk of the _____
(Corporation)

that _____ is the duly elected _____ of
(Name) (Title)
said corporation, and that the above vote has not been amended or rescinded and remains in full force and effect as of the date of this Certification.

_____
(Clerk)

CORPORATE SEAL:

_____, MASSACHUSETTS

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LLC CERTIFICATE OF INCUMBENCY AND AUTHORITY

_____, LLC

I, _____, do hereby certify that:

1. I am the duly elected and acting _____ of _____ LLC, a limited liability company organized and existing in good standing under the laws of the State of _____ (the "Company").

2. Attached hereto as Exhibit A is a true and correct copy of resolutions which were duly adopted by the members of the Company on _____, 20___.

3. The attached resolutions have not been amended, rescinded or modified and are in full forces and effect on the date hereof in the form originally adopted, and are in conformity with the Articles of Organization and Operating Agreement of the Company.

4. Attached hereto as Exhibit B is a true and correct copy of the Articles of Organization dated _____, 20___ and the Operating Agreement dated _____, 20___.

5. The attached Articles of Organization and Operating Agreement have not been amended, rescinded, or modified and are in full forces and effect on the date hereof.

6. The following person are the Authorized Officers of the Company in the capacities indicated, and the signatures set forth after their names and titles are their true and genuine signatures.

Name	Office	Signature
_____		
_____		
_____		

Witness, my signature and the seal of the Company this _____day of _____, 20__.

_____
Name:
Title:

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CERTIFICATIONS REQUIRED BY LAW FOR PUBLIC CONSTRUCTION CONTRACTS

You must COMPLETE and SIGN the following certifications. You must also print, at the bottom of this page, the name of the contractor for whom these certifications are submitted.

TAX COMPLIANCE

Pursuant to Chapter 62C of the Massachusetts General Laws, Section 49A(b), I, the undersigned, authorized signatory for the below named contractor, do hereby certify under the pains and penalties of perjury that said contractor has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

NON-COLLUSION

The undersigned certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.

PUBLIC CONTRACTOR DEBARMENT

The undersigned certifies under penalty of perjury that the below named contractor is not presently debarred from doing public construction work in the commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

OSHA TRAINING

Pursuant to G.L. c. 30, §39S, the Contractor hereby certifies under penalties of perjury as follows:

(1) Contractor is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed in the work;
(2) All employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and they shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and
(3) All employees to be employed in the work subject to this contract have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration.

COMPLETE AND SIGN BELOW:

_____ _____
Authorized Person's Signature Date

_____
Print Name & Title of Signatory

_____
Name of Contractor

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Section 00 21 13
INSTRUCTIONS TO BIDDERS
MGL c.30 §39M Over $50K

THIS PROJECT IS BEING ELECTRONICALLY BID AND HARD COPY BIDS WILL NOT BE ACCEPTED. Please review the instructions in the bid documents on how to register as an electronic bidder. The bids are to be prepared and submitted at biddocs.com **.**

ARTICLE 1 - BIDDER'S REPRESENTATION

1.1 Each General Bidder or Sub-bidder (hereinafter called the **"Bidder"**) by making a bid or sub-bid (hereinafter called **"bid"**) represents that:

.1 The Bidder has read and understands the Contract Documents and the bid is made in accordance therewith.

.2 The Bidder has visited the site and is familiar with the local conditions under which the Work must be performed.

1.2 Failure to so examine the Contract Documents and site will not relieve any Bidder from any obligation under the bid as submitted.

ARTICLE 2 - REQUESTS FOR INTERPRETATION

2.1 Bidders shall promptly notify the contact specified in the Advertisement via written request for information (RFI) of any ambiguity, inconsistency, or error which they may discover upon examination of the Contract Documents, the site, and local conditions.

2.2 Bidders requiring clarification or interpretation of the Contract Documents shall make a written request for information (RFI) as specified in the Advertisement. The Awarding Authority may answer such requests if received before the bid date and/or within the time specified in the Advertisement. The Awarding Authority has no obligation to respond to the written requests.

2.3 Interpretation, correction, or change in the Contract Documents will be made by written Addendum which will become part of the Contract Documents. Neither the Awarding Authority nor the Prime Designer will be held accountable for any oral interpretations, corrections, or changes.

2.4 Copies of addenda will be made available for inspection at the locations listed in the Advertisement where Contract Documents are on file or at biddocs.com. **Hard copies of the addenda will not be forwarded to the plan holders. The bidder is solely responsible for reviewing all addenda posted on the project website.**

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ARTICLE 3 - PREPARATION AND SUBMISSION OF BIDS

3.1 Forms and Bid Preparation

Bids shall be submitted electronically on the **"Form for General Bid"** at biddocs.com, as appropriate and available at no cost.

The forms enclosed in the Project Manual shall not be extracted or used.

.1 All bidders must create at User Profile account at biddocs.com, at no cost, to complete and submit a bid. The Awarding Authority, the Prime Designer or BidDocs ONLINE Inc. will not be held accountable if the bidder fails to create a User Profile in a timely manner.

.2 All entries on the bid form shall be made online. Any documents that are attached to the bid must be in a pdf format.

.3 Sums shall be expressed in both words and figures in the space indicated on the bid form. The electronic bid forms automatically match the "word" amount to the numeric "figure" amount entered.

3.1 Bid Deposits shall be:

.1 at least five percent (5%) of the greatest possible bid amount, considering all alternates (except for projects bid under MGL c. 149 or MGL c. 3039M under $50,000);

.2 made payable to the **Awarding Authority.**

.3 conditioned upon faithful performance by the principal of the agreements contained in the bid, and

.4 in the form of:

- **.1** cash,
- **.2** certified check, treasurer's or cashier's check issued by a responsible bank or trust company, or
- **.3** bid bond issued by a surety company licensed to do business in the Commonwealth of Massachusetts.

Note: Both the "bid bond" or "check" bid deposits are to be scanned and uploaded to the system as a pdf file. **IMPORTANT NOTICE**: If the bidder elects to make a bid deposit in the form of "cash" or "check", the Bidder must have the cash or check physically delivered to the Awarding Authority prior to the date and time of the bid opening.

.5 retained until the execution and delivery of the Awarding Authority / Contractor Agreement if they represent the bid deposit of one of the three (3) lowest responsible and eligible General Bidders or one of the three (3) lowest Sub-bidders in a filed sub-bid trade, or a sub-bidder listed by one of the three (3) lowest General Bidders.

3.3 Electronic Submission of General Bids

General Bids, including the bid deposit (if applicable), and required miscellaneous forms noted in the bid documents shall be submitted electronically online at

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biddocs.com . No hard copy bids will be accepted.
The Bidder will receive an email and/or system notification confirming submission of the bid. Click on the email link to review and print the submitted bid documents. Keep the email as a **receipt** that the bid was submitted. **Note:** The Bidder may modify the bid at any time prior to the bid date and time advertised. The Bidder will receive a new email each time the Bidder re-submits the bid.

.1 Date and time for receipt of bids is set forth in the Advertisement.
.2 Timely submission of a bid online shall be the full responsibility of the Bidder. Note: The project countdown clock on the website is the official clock that will determine when the bids are due.

3.4 Addenda

All modifications to the bid documents will be issued via an addendum. All registered plan holders will be electronically notified when addenda are issued. **Hard copies of the addenda will not be forwarded to the plan holders**. The Bidder is solely responsible for reviewing all addenda posted on the project website. The Bidder must acknowledge all addenda have been reviewed by selecting “yes” or “no” as part of the ebidding process. If the Bidder selects “no”, the Bidder will automatically be directed to the Addenda icon on the project page.

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ARTICLE 4 - ALTERNATES

4.1 Each General Bidder shall acknowledge Alternates in Section C on the Form for General Bid by entering the dollar amount of addition or subtraction necessitated by each Alternate.

4.2 In the event an Alternate does not involve a change in the amount of the base bid, the Bidder shall so indicate by entering **"0" (numeric figure)** in the “Add” space provided for that Alternate.

4.3 General Bidders shall enter on the Form for General Bid a single amount for each Alternate.

4.4 The low Bidder will be determined based on the sum of the base bid and the accepted alternates.

4.5 Alternates will be considered in numerical sequence as required by Chapter 149, Section 44G of the Massachusetts General Laws.

ARTICLE 5 - WITHDRAWAL OF BIDS

5.1 Before Opening of Bids

Any bid may be withdrawn (retracted) prior to the time designated for receipt of bids upon clicking the tab to “Retract Bid”. The Bidder and the Awarding Authority will receive an email confirming that the bidder retracted the bid. Withdrawn bids may be modified and resubmitted up to the time designated for the receipt of bids.

5.2 After Opening of Bids

Bidders may withdraw a bid, without penalty, any time up to the time of Award as defined in paragraph 6.1, and upon demonstrating, to the satisfaction of the Awarding Authority, that a bona fide clerical error was made during the preparation of the bid. Failure to conclusively demonstrate a bona fide clerical error may result in forfeiture of the bid deposit.

5.3 In the event of a general bid withdrawal after opening of bids, the Awarding Authority shall consider the bid from the next lowest eligible and responsible bidder.

ARTICLE 6 - CONTRACT AWARD

6.1 **Award** means both the determination and selection of the lowest, responsible, and eligible bidder, by the Awarding Authority.

6.2 The Awarding Authority will award the contract to the lowest responsible and eligible bidder within thirty days, Saturdays, Sundays, and legal holidays excluded after the opening of bids in accordance with M.G.L. c.149 §44A.

6.3 The Contract will be awarded to the lowest responsible and eligible Bidder, except in the event of substitution as provided under M.G.L. c.149 §§44E and 44F, in which case the procedure as required by said sections shall govern the award of the Contract.

6.4 The award of this Contract is subject to the approval of the Awarding Authority. Contracts without approval shall not be considered valid.

6.5 The Awarding Authority reserves the right to waive any informalities in or to reject any or all Bids if it is in the public interest to do so.

6.6 As used herein, the term "lowest responsible and eligible bidder" shall mean the General Bidder whose bid is the lowest of those Bidders demonstrably possessing the skill, ability, and integrity necessary for the faithful performance of the work, and who meets the requirements for Bidders set forth in M.G.L. c.149 §44A-J and is not debarred from bidding under M.G.L. c.149 §44C; and who shall certify that they are able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work.

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ARTICLE 7 - FORMS REQUIRED FOR CONTRACT APPROVAL

7.1 Upon Award, the General Bidder shall complete the following forms to ensure prompt contract validation. These forms will be provided to the selected General Bidder by the Awarding Authority.

7.2 Awarding Authority / Contractor Agreement and Form of Corporate Vote.

7.3 Form of Contractor's Equal Employment Certification in accordance with the General Conditions.
.1 Form of Sub-Contractor's Equal Employment Certification

7.4 Form of Performance Bond and Form of Payment Bond must be submitted by the General Contractor on the Awarding Authority's form, in accordance with the General Conditions. The dates on the bonds must coincide with the contract date, and a current Power-of-Attorney must be attached to each bond. The minimal performance and payment bonds are as follows.

BOND	MGL c. 149		MGL c. 3039M	
	$25K to $50K	$50K to $150K	$25K to $50K	Over $50K
Performance	None	None	None	None
Payment	50%	50%	50%	50%

7.5 Insurance Certificates for the General Contractor is required and must be submitted in accordance with the General Conditions. General Contractors must indicate on Builder's Risk insurance or installation floater if stored materials are covered.

7.6 Statement of Management on Internal Accounting Controls and a Statement prepared by a CPA expressing an opinion to the state of Management Controls, as required by M.G.L. c.30 §39R. This applies to the General Contractor only.

ARTICLE 8 - CONTRACT VALIDATION

8.1 The Awarding Authority -Contractor Agreement shall not be valid until signed by the Authorized Signatory of the Awarding Authority.

8.2 The Notice to Proceed for construction shall not be issued until the Awarding Authority/Contractor Agreement has been validated by the Authorized Signatory of the Awarding Authority.

8.3 Incomplete or unacceptable submissions of forms required by paragraphs 7.2 - 7.6 will delay the validation of the Awarding Authority/Contractor Agreement by the Awarding Authority.

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END OF SECTION

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SECTION 00 30 00

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS: That we _____
(Name of Contractor)

a _____ hereinafter called "Principal" and
(Corporation, Partnership, Joint Venture or Individual)

_____of _____, State of _____
(Surety) (City & State)

_____ hereinafter called the "Surety" and licensed by the State Division of Insurance to do business under the laws of the Commonwealth of Massachusetts, are held and firmly bound to the Nantucket Islands Land Bank, Massachusetts, hereinafter called "Owner", in the penal sum of _____ Dollars ($_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain contract with the Owner, dated the _____ day of _____, 20___ (the "Construction Contract"), for the construction described as follows: _____
_____.

NOW, THEREFORE, if the Principal shall well, truly and faithfully perform its duties, all the undertakings, covenants, terms, conditions, and agreements of the Construction Contract during the original term thereof, and any extensions thereof which may be granted by the Owner, with or without notice to the Surety, and if he shall satisfy all claims and demands incurred under the Construction Contract, and shall fully indemnify and save harmless the Owner from all costs and damages which it may suffer by reason of failure to do so, and shall reimburse and repay the Owner all outlay and expense which the Owner may incur in making good any default, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the Surety's obligation under this Bond shall arise after (1) the Owner has declared the Principal in default of the Construction Contract or any provision thereof or (2) has declared that the Principal has failed, or is otherwise unable or unwilling, to execute the work consistent with, and in conformance to, the Construction Contract (collectively referred to as a "Contractor Default"). The determination of a Contractor Default shall be made solely by the Owner. The Owner need not terminate the Construction Contract to declare a Contractor Default or to invoke its rights under this Bond.

When the Surety's obligation under this Bond arises, the Surety, at its sole expense and at the consent and election of the Owner, shall promptly take one of the following steps: (1) arrange for the Principal to perform and complete the work of the Construction Contract: (2) arrange for a contractor other than the Principal to perform and complete the work of the Construction Contract; (3) reimburse the Owner, in a manner and at such time as the Owner shall decide, for all costs and expenses incurred by the Owner in performing and completing the work of the Construction Contract. Surety will keep Owner reasonably informed of the progress, status and results of any investigation of any claim of the Owner.

If the Surety does not proceed as provided in this Bond with due diligence and all deliberate speed, the Surety shall be deemed to be in default of this Bond, and the Owner shall be entitled to enforce any remedy available to the Owner.

After the Surety's obligation under this Bond arises, the Surety is obligated, to the limit of the amounts of this Bond, for (1) the correction of defective work and completion of the Construction Contract; (2) additional design, professional services, and legal costs, including attorneys' fees, resulting from the Contractor Default or from the default of the Surety under this Bond; (3) any additional work beyond the Construction Contract made necessary by the Contractor Default or default of the Surety under this Bond; (4) indemnification obligation of the Principal, if any, as provided in the Construction Contract; and (5) liquidated damages as provided in the Construction Contract, or if none are so specified, actual and foreseeable consequential damages resulting from the Contractor Default or default of the Surety under this Bond.

Any proceeding, legal or equitable, under this Bond shall be instituted in any court of competent jurisdiction in the Commonwealth of Massachusetts.

The Surety, for value received, hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the Construction Contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this Bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of the Construction Contract or to the work or to the specifications.

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IN WITNESS WHEREOF, this instrument is executed in _____ ( ) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 20___.

ATTEST:

_____
Principal

_____ By _____
(Principal Secretary)

_____

_____

_____
(Address-Zip Code)

_____ (SEAL)
Witness as to Principal

_____

_____
(Address-Zip Code)

ATTEST:

_____
Surety

_____ By _____
(Attorney-in-Fact)

_____

_____
(Address-Zip Code)

_____ (SEAL)
Witness as to Surety

_____

_____
(Address-Zip Code)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners should execute Bond.

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SECTION 00 40 00

PAYMENT BOND

KNOW ALL MEN BY THESE PRESENTS: That we _____

_____ a_____ _____
(Name of Contractor) (Corporation, Partnership, Joint Venture or Individual)

hereinafter called "Principal" and _____ of _____,
(Surety)

State of _____ hereinafter called the “Surety” and licensed by the State
(City and State)

Division of Insurance to do business under the laws of the Commonwealth of Massachusetts, are held and firmly bound to the Nantucket Islands Land Bank, Massachusetts, hereinafter called "Owner", in the penal sum of _____ Dollars ($_____) in lawful money of the United States, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION is such that Whereas, the Principal entered into a certain contract with the Owner, dated the _____ day of _____, 20___, for the construction described as follows:

NOW, THEREFORE, if the Principal shall promptly make payment to all persons, firms, subcontractors, and corporations furnishing materials for or performing labor in the prosecution of the work provided for in such contract, and any authorized extension or modification thereof, including all amounts due for materials, lubricants, oil, gasoline, coal and coke, repairs on machinery, equipment and tools, consumed or used in connection with the construction of such work, and all insurance premiums on said work, and for all labor, performed in such work whether by subcontractor or otherwise, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, FURTHER, that the said Surety, for value received hereby stipulates and agrees that no change, extension of time, alteration or addition to the terms of the contract or to the work to be performed thereunder or the specifications accompanying the same shall in any way affect its obligation on this bond, and it does hereby waive notice of any such change, extension of time, alteration or addition to the terms of this contract or to the work or to the specifications.

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PROVIDED, FURTHER, that no final settlement between the Owner and the Contractor shall abridge the right of any beneficiary hereunder, whose claim may be unsatisfied.

IN WITNESS WHEREOF, this instrument is executed in _____ ( ) counterparts, each one of which shall be deemed an original, this the _____ day of _____, 20___.

ATTEST:

_____
Principal

_____ By _____
(Principal Secretary)

_____

_____

_____
(Address-Zip Code)

_____ (SEAL)
Witness as to Principal

_____

_____
(Address-Zip Code)

ATTEST:

_____
Surety

_____ By _____
(Attorney-in-Fact)

_____

_____
(Address-Zip Code)

_____ (SEAL)
Witness as to Surety

_____

_____
(Address-Zip Code)

NOTE: Date of Bond must not be prior to date of Contract. If Contractor is a Partnership, all partners should execute Bond.

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Section 00 41 00
FORM FOR GENERAL BID
MGL c.30 §39M Over $50K

TO THE AWARDING AUTHORITY: Nantucket Land Bank

A. The Undersigned proposes to furnish all labor and materials required for **Lily Pond Park Improvements [Project #2026-LB-05]** at in Nantucket, Massachusetts, in accordance with the accompanying plans and specifications prepared by **Horsley Witten Group** for the contract price specified below, subject to additions and deductions according to the terms of the specifications.

B. This bid includes addenda numbered: _____

C. **The proposed contract price is:**

_____ dollars $_____

Bid Amount in Words **Bid Amount in Numbers**

For alternate	No. _____	Add $_____	Subtract $_____
	No. _____	Add $_____	Subtract $_____
	No. _____	Add $_____	Subtract $_____
	No. _____	Add $_____	Subtract $_____
	No. _____	Add $_____	Subtract $_____

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ELECTRONIC BID - HARD COPY SUBMISSION WILL NOT BE ACCEPTED

D. The undersigned agrees that, if he is selected as general contractor, he will within five days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the awarding authority, execute a contract in accordance with the terms of this bid and furnish a performance bond and also a labor and materials or payment bond, each of a surety company qualified to do business under the laws of the commonwealth and satisfactory to the awarding authority and each in the sum of the contract price, the premiums for which are to be paid by the general contractor and are included in the contract price; provided, however, that if there is more than 1 surety company, the surety companies shall be jointly and severally liable.

The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of labor employed or to be employed on the work; that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that he will comply fully with all laws and regulations applicable to awards made subject to section 44A.

The undersigned further certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the commonwealth under the provisions of section twenty-nine F of chapter twenty-nine, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.

_____

NAME OF BIDDER

_____

SIGNATURE AND TITLE OF PERSON SIGNING BID

Date: _____

_____

BUSINESS ADDRESS

_____

ELECTRONIC BID - HARD COPY SUBMISSION WILL NOT BE ACCEPTED

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BID BOND

CONTRACTOR:
Name: _____
Address: _____
_____
_____

SURETY:
Name: _____
Address: _____
_____
_____

AWARDING AUTHORITY:
Name: _____
Address: _____
_____

BOND AMOUNT: _____

PROJECT: _____

The Contractor and Surety are bound to the Awarding Authority in the amount set forth above, for the payment of which the Contractor and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, as provided herein. The conditions of this Bond are such that if the Awarding Authority accepts the bid of the Contractor within the time specified in the bid documents, or within such time period as may be agreed to by the Awarding Authority and Contractor, and the Contractor either (1) enters into a contract with the Awarding Authority in accordance with the terms of such bid, and gives such bond or bonds as may be specified in the bidding or Contract Documents, with a surety admitted in the jurisdiction of the Project and otherwise, acceptable to the Awarding Authority, for the faithful performance of such Contract and for the prompt payment of labor and material furnished in the prosecution thereof; or (2) pays to the Owner the difference, not to exceed the amount of this Bond, between the amount specified in said bid and such larger amount for which the Awarding Authority may in good faith contract with another party to perform the work covered by said bid, then this obligation shall be null and void, otherwise to remain in full force and effect. The Surety hereby waives any notice of an agreement between the Awarding Authority and Contractor to extend the time in which the Awarding Authority may accept the bid. Waiver of notice by the Surety shall not apply to any extension exceeding sixty (60) days in the aggregate beyond the time for acceptance of bids specified in the bid documents, and the Awarding Authority and Contractor shall obtain the Surety's consent for an extension beyond sixty (60) days.

When this Bond has been furnished to comply with a statutory or other legal requirement in the location of the Project, any provision in this Bond conflicting with said statutory or legal requirement shall be deemed deleted here from and provisions conforming to such statutory or other legal requirement shall be deemed incorporated herein. When so furnished, the intent is that this Bond shall be construed as a statutory and not as a common law bond.

IN THE WITNESS WHEREOF,

the Principal and Surety signed and sealed this _____ day of _____, 20_____

_____ _____
(Witness) *(Contractor as Principal)* *(Seal)*

_____
(Title)

_____ _____
(Witness) *(Surety)* *(Seal)*

_____
(Title)

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SIMILAR PROJECTS - REFERENCE FORM

The bidder must provide five (5) similar projects performed & completed within the past five (5) years.

Similar Project 1

Project Address: _____

Start Date: _____ End Date: _____
Current Cost: _____ Original Cost: _____
Cost Change Explanation: _____

Project Description: _____
_____
_____

Awarding Authority Reference Contact	Prime Designer Reference Contact
_____	_____
_____	_____
_____	_____
_____	_____

Project Manager Reference Contact	General Contractor Reference Contact
_____	_____
_____	_____
_____	_____
_____	_____

Similar Project 2

Project Address: _____

Start Date: _____ End Date: _____
Current Cost: _____ Original Cost: _____
Cost Change Explanation: _____

Project Description: _____
_____
_____

Awarding Authority Reference Contact	Prime Designer Reference Contact
_____	_____
_____	_____
_____	_____
_____	_____

Project Manager Reference Contact	General Contractor Reference Contact
_____	_____
_____	_____
_____	_____
_____	_____

COMPLETE THIS FORM ONLINE

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SIMILAR PROJECTS - REFERENCE FORM

Similar Project 3

Project Address: _____

Start Date: _____ End Date: _____

Current Cost: _____ Original Cost: _____

Cost Change Explanation: _____

Project Description: _____

Awarding Authority Reference Contact	Prime Designer Reference Contact

Project Manager Reference Contact	General Contractor Reference Contact

Similar Project 4

Project Address: _____

Start Date: _____ End Date: _____

Current Cost: _____ Original Cost: _____

Cost Change Explanation: _____

Project Description: _____

Awarding Authority Reference Contact	Prime Designer Reference Contact

Project Manager Reference Contact	General Contractor Reference Contact

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SIMILAR PROJECTS - REFERENCE FORM

Similar Project 5

Project Address: _____

Start Date: _____ End Date: _____

Current Cost: _____ Original Cost: _____

Cost Change Explanation: _____

Project Description: _____

_____

_____

Awarding Authority Reference Contact	Prime Designer Reference Contact
_____	_____
_____	_____
_____	_____
_____	_____
Project Manager Reference Contact	**General Contractor Reference Contact**
_____	_____
_____	_____
_____	_____
_____	_____

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SECTION 00 50 00

SUPPLEMENTAL CONDITIONS

Page

1. Introduction 2

2. Prevailing Wage Rates 2

3. Insurance Requirements 2

SECTION 00 60 00 - Incorporation of Applicable Provisions of the Massachusetts General Laws

Appendix A - Wage Rates and Certificate of Compliance

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§ SC 1.1 INTRODUCTION

The following provisions modify, change, delete from or add to Section 00200 Agreement. Where any Subsection of the Agreement is modified or any Article Paragraph, Subparagraph or Clause thereof is modified or deleted by these Supplemental Conditions, the unaltered provisions of that Article, Paragraph, Subparagraph or Clause shall remain in effect.

§ SC 2.1 PREVAILING WAGE

In accordance with General Laws Chapter 149, Section 26 through 27D, the Contractor is obligated to comply with the prevailing wage rates established by the Commissioner of the Department of Labor and Workforce Development for mechanics, apprentices, chauffeurs, teamsters and laborers employed on the Project. The schedule of applicable prevailing wage rates for the Project, together with a Certificate of Compliance therewith, are set forth in Appendix A herein.

§ SC 3.1 CONTRACTOR'S REQUIRED INSURANCE

In no case shall the limits of liability be less than the following:

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1. Contractor's Liability Insurance

a. Workers' Compensation:

1. State: Statutory

2. Employer Liability:

$ 1,000,000 Bodily Injury by Accident
$ 1,000,000 Bodily Injury by Disease - policy limit
$ 1,000,000 Bodily Injury by Disease - each

b. Comprehensive General Liability (including Premises-Operations; Independent Contractor's Protective; Products and Completed Operations; Broad Form Property Damage (including coverage for XCU hazards), Contractual Liability, and Personal Injury). Policy will be endorsed to cover Rigger's Liability for the maximum value of any item rigged.

1. $ 1,000,000 Each Occurrence
$ 2,000,000 Aggregate (applies per project)

2. Products and Completed Operations insurance shall be maintained for a for a period no less than the statute of repose in the jurisdiction where work will be performed after final payment and Contractor

shall continue to provide evidence of such coverage to Owner on an annual basis during the aforementioned.

c. Comprehensive Automobile Liability (for all owned, non-owned, and hired vehicles) covering Bodily Injury and Property Damage:

1. $ 1,000,000 Combined Single Limit – Each Accident

d. Property Insurance / Builders Risk:
From the first equipment delivery date and through Final Completion, Contractor shall maintain builder's all-risk insurance (including earth movement and flood, collapse, sinkhole and subsidence, transit and offsite storage). Coverage shall be on a replacement cost basis covering the full replacement value of the structures, machinery, equipment, facilities, fixtures and other property constituting a part of the completed project. Owner and all Subcontractors of any tier shall be additional insureds and a waiver of subrogation will apply in favor of Owner. The deductible under the builders risk policy shall be the responsibility of the Contractor.

e. Umbrella Liability Coverage
$ 5,000,000 Each Occurrence/Aggregate.
Policy must provide follow form coverage and excess limits over Commercial General Liability, Automobile Liability, and Employers Liability.

f. Contractor's Pollution Liability Coverage: Insurance with a limit of not less than $1,000,000 per occurrence and in the aggregate. Policy should include coverage for ongoing and completed site operations, transportation incidents and non-owned disposal sites. It shall include coverage for liability and clean up expenses. Coverage under a "claims made" policy shall remain in effect for a period of two years after final completion of all work.

g. Professional Liability Insurance: If Contractor is performing design-build work or providing any professional services in connection with the Work or the Project, then Contractor shall maintain Professional Liability insurance with a limit no less than $1,000,000 per claim and $1,000,000 policy aggregate. The scope of coverage provided by the policy shall encompass the Contractor's operations and obligations as defined in the project agreement.

h. Cyber/Network Privacy Liability Insurance including coverage for liability arising from loss or disclosure of Business Data; system or privacy breach; denial or loss of service; introduction, implantation or spread of malicious software code; and unauthorized access to or use of computer systems or Business Data with minimum coverage limits of One Million Dollars

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($1,000,000) each occurrence/claim. Such insurance coverage shall not exclude or restrict coverage for unencrypted portable devices or media

i. Crime/Employee Theft Insurance with minimum coverage limits of Two Million Dollars ($2,000,000) per loss. This insurance shall include a Client Property Coverage Extension, ensuring protection against theft, dishonesty, or fraudulent acts committed by the Contractor's employees or representatives involving property belonging to the Client.

Except for Workmen's Compensation, all liability coverage shall name the Awarding Authority as an additional insured and shall provide for 30 days prior written notice to the Awarding Authority of any modification or termination of coverage provided thereby. The Contractor shall provide the Owner with appropriate certificate(s) of insurance evidencing compliance with this provision prior to the commencement of any work under this Agreement.

1. Claims-Made Provisions: If the required Pollution or Professional Liability insurance is written on a claims-made basis, the coverage retroactive date shall be no later than the date services are first rendered by Contractor to Owner. Coverage must be maintained for a period not less than three (3) years after the termination of this agreement.

2. Primary & Non-Contributory Insurance: Contractor's insurance shall apply as primary insurance and not seek contribution with respect to any other insurance or self-insurance programs afforded to Owner or any other required Additional Insured for losses caused in whole or in part by the negligent acts or omissions of Contractor.

3. Waiver of Rights of Recovery / Subrogation: Contractor waives all rights of recovery (including subrogation) against Owner and any other required Additional Insured for any claim, injury, loss or damage arising from any occurrence covered by insurance maintained (or required to be maintained) by Contractor. All policies of insurance carried by Contractor, except Professional Liability, shall include provisions in which the insurer permits such waiver.

4. General: Each of the required insurance coverages must be written by insurance companies authorized to do business in the jurisdiction where the Work is performed and with current A.M. Best ratings of A-, VIII or better. The Contractor shall be responsible for the payment of any deductible or self-insured retention. Upon request, Contractor shall furnish Owner with a complete copy of each policy, including all endorsements, required under this agreement. Owner's approval or failure to disapprove insurance furnished by Contractor shall not release or limit Contractor from full responsibility for liability for damage and accidents.

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5. Subcontractors: If any work is to be performed under this agreement by individuals who are not employees of Contractor, such subcontractors shall also be required to maintain the insurance as stipulated within this section, except Umbrella and Excess Liability insurance limits shall be no less than $5,000,000 per occurrence and aggregate. For avoidance of doubt, Subcontractors must comply with Additional Insured and Primary and Noncontributory insurance requirements. Contractor shall be responsible for verification and written certification of all subcontractors' insurance coverage required for the Contract. Owner reserves the right to request that the Contractor provide copies of insurance certificates for subcontractors.

6. Equipment: Contractor, any of its subcontractors, and their employees shall bear sole responsibility for loss or damage to their personal property, equipment or tools while on or about Owner's premises or project locations.

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SECTION 00 60 00

Incorporation of Applicable Provisions of the Massachusetts General Laws

Certain provisions of the Massachusetts General Laws are applicable to Construction contracts including, but not limited to, those contained in Chapter 30 and Chapter 149. All applicable provisions of the Massachusetts General Laws are incorporated into the Contract as if fully set forth herein, and shall prevail over any conflicting provisions of the General or Supplemental General Conditions.

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Prevailing Wage Rates

See Appendix A

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SECTION 01 00 00 - SPECIAL PROVISIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Build America, Buy America Requirements
2. Stockpile and Staging
3. Soils and Sediment Information.
4. Ledge.
5. Sheeting and Bracing.
6. Weather.
7. Order to Suspend Work.
8. Dewatering.
9. Material Tests Reports, Certificates Of Compliance And Shipping Lists.
10. Occupational Safety and Health.
11. Traffic Officers.
12. Dust Control.
13. Fire Hydrants.
14. Utility Coordination.
15. Contractor Parking.

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1.2 BUILD AMERICA, BUY AMERICA REQUIREMENTS

A. A portion of the Project will be subject to the Buy America Sourcing requirements under the Build America, Buy America Act (BABA) requirements of the Infrastructure Investment and Jobs Act (IIJA) (P.L. 117-58, §§70911-70917). This may include but not limited to:
1. Utility piping
2. Utility structures
3. Water quality units
4. Lumber
5. Site furnishings
6. Irrigation Equipment

B. The Buy America preference will apply only to the following federally funded project areas:
1. Restoration Area 2
2. Restoration Area 2 Boardwalk
3. Irrigation Well and Distribution System

1.3 It is the contractors responsibility to ensure the BABA compliance requirements are met. At a minimum, letters from the manufacturers for each applicable material and product are be provided for compliance.

1.4 For more information, please refer to https://www.epa.gov/cwsrf/build-america-buy-america-baba or contact baba-ow@epa.gov

1.5 STOCKPILE AND STAGING

A. On-site construction stockpile and staging space is limited to the areas indicated in the Drawings and cannot be reconfigured or relocated without the written approval of the Owner/Engineer.

B. The area identified as "Staging and Stockpile Area" are to be used at the Contractor's discretion except for temporary stockpiling of excavated soil/sediment for export that may require water decanting prior to transport. Two specific areas have been identified for temporary stockpiling of export-sediment decanting. These areas shall also not be reconfigured or relocated without the written approval of the Engineer.

C. If a staging area greater than shown in the Drawings is required, the contractor is responsible for locating additional staging areas off the property and is responsible for all associated costs and transportation.

D. Contractor is responsible for loss of or damage to, materials and equipment furnished, until the final acceptance of the Work.

E. Do not store equipment, materials or vehicles in the Public Rights of Way or in any Private Ways.

F. The following provisions and restrictions apply to each staging area used by the contractor.
1. Do not stockpile or store any material, equipment or vehicles in the resource area.
2. Install and maintain erosion control measures to prevent sediment from leaving the Project Area.
3. Install a stabilized construction entrance for access to the site.
4. If necessary, install mud mats in the staging area suitable for vehicles using the area.
5. Protect all trees or landscaping within the staging area.

G. Prior to substantial completion of the project, remove all materials from the staging area and restore surfaces to preconstruction grades and conditions.

1.6 SOILS AND SEDIMENT INFORMATION

A. A summary of the potential management classification of soil and sediment on site is provided in the Soil and Groundwater Management Plan included in Appendix F of the Bid Documents. A copy of the sediment sample data is provided as an appendix. The Owner does not guarantee that the information is representative of all soils, sediment, rock and other materials that may be encountered on the site.

B. If during the life of this contract hazardous material is suspected to be encountered, notify the Owner and Engineer, cease all construction activities and take all necessary precautions in

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compliance with Massachusetts Department of Environmental Protection's (DEP) 310 CMR 40.0000, the Massachusetts contingency plan and 310 CMR 30 Hazardous Waste Regulations.

1.7 LEDGE

A. Soil Evaluation test pits have been performed in the area of the proposed site work to a depth of 4-feet and ledge is not anticipated at the proposed excavated depths. If ledge or boulders greater than 8 feet that cannot be removed, are encountered immediately cease all construction activity and notify the Engineer and Owner.

1.8 SHEETING AND BRACING

A. Any sheeting, shoring and/or bracing required, including for the protection of abutting property, structures and utilities, will not be paid for separately and considered as incidental to the appropriate bid item. The Contractor is responsible for the design and implementation of any excavation support required. This work is considered a subsidiary obligation of the contract for which no specific payment will be made.

1.9 WEATHER

A. Monitor local weather reports during construction and prior to scheduling earth moving or other construction activities which will leave large, disturbed areas unstabilized or that could be affected by inflow and dewatering. If inclement weather is predicted, the Contractor shall use their best professional judgment and schedule construction activities only if quality workmanship can be provided.

B. Due to the site conditions and dewatering requirements, earthwork in the wetland is prohibited during predicted rain events greater than 0.5 inches within a 24 hour duration and operations will need to be suspended until the rain has stopped and the site can be properly dewatered.

C. Any work completed during inclement weather which is deemed unacceptable by the Engineer and/or Owner shall be repaired / replaced by the Contractor at no expense to the Owner.

D. Ensure all necessary erosion control devices are installed, maintained and functioning properly to minimize erosion and off-site sediment transport from any impending weather events for the entirety of the construction period as described in the drawings and specifications.

1.10 ORDER TO SUSPEND WORK

A. If the Owner or Owner's Representative considers that any portion of the work should be suspended temporarily because of extreme weather conditions or for any other reason, he/she shall order, in writing, the Contractor to suspend work until conditions permit its resumption at no expense to the Owner.

1.11 DEWATERING (SEE ALSO SECTION 31 21 29 – DEWATERING)

A. The contractor is responsible for all dewatering required to complete the work outlined in the drawings and dewatering specification. Any delays caused by dewatering will not be grounds for extension of time to complete the work, nor claim for additional cost.

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B. Obtain a permit from the Town of Nantucket prior to discharge of water into the stormwater system. The outlet for the project area is connected to the Town's stormwater drainage system and outlets at Children's Beach. The outlet is below high tide elevation and is connected to a pump system for high tide rain events. Coordinate with the Town on any requirements related to dewatering.

C. The Contractor is responsible for any testing, treatment and/or off-site disposal of the water in accordance with applicable Federal, State and local regulatory requirements. A Dewatering and Remediation General Permit will be required.

D. Provide the Owner and Town 24-hours' notice before any dewatering commences.

1.12 MATERIAL TESTS REPORTS, CERTIFICATES OF COMPLIANCE AND SHIPPING LISTS

A. Furnish the materials, manufacturers test reports and methods of tests to show compliance with all specification requirements.

B. Shipment of materials shall be accompanied with the manufacturer's certificate of conformance and a shipping list itemizing the amounts of each item shipped

C. Testing of all materials furnished under these Specifications shall be provided by the Contractor at no additional expense to Owner.

1.13 OCCUPATIONAL SAFETY AND HEALTH

A. All work shall be performed with equipment, methods, and use of personnel in conformance with the pertinent Occupational Safety and Health Act requirements and with the regulations for construction as specified by the Department of Labor and Occupational Safety and Health Administration (OSHA) as currently amended.

1.14 TRAFFIC OFFICERS

A. Comply with all Town of Nantucket Traffic control regulations and if necessary hire and pay police officers and vehicles necessary for maintenance of traffic.

1.15 DUST CONTROL

A. Apply water as the primary means of dust control. Apply as needed such that dust is prevented.

1.16 FIRE HYDRANTS

A. If requesting water from a public hydrant, private contractors are required to submit an application for hydrant meter / flow test to the Town and Wannacomet Water Company. The approved applicants will pay for the installation and removal of the hydrant meter and all water recorded by the meter.

1.17 UTILITY COORDINATION

A. Coordinate Work with utilities of public or private agencies.

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B. The project includes construction in close proximity to water, gas, and electrical lines. The Contractor will be responsible for notifying utility representatives of the anticipated construction schedule. The Contractor will be responsible for all utility coordination, protection of existing infrastructure and any damages to existing utilities as a result of the work at no additional cost to the Owner.

1.18 CONTRACTOR PARKING

A. The Contractor and his employees are not permitted to park within the vegetated wetland and permission from the Town has not been obtained to park on public streets.

B. Overnight parking is not allowed on public streets or within the Public Right of Way. Contractor must be aware of hourly parking limitations within the neighborhood. All vehicles in violation of those limitations will be ticketed and fined accordingly.

C. The contractor shall not park in the parking lots or driveways of private properties abutting the site unless authorized by the property owner.

D. The cost of parking off-site parking on private property is incidental to the contractor's mobilization and no separate payment will be made.

END OF SECTION

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SECTION 01 10 00 - SUMMARY

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
1. Project information.
2. Contract description.
3. Construction sequencing, phasing and completion deadlines.
4. General conditions.
5. Laws and Regulations.
6. Work by Owner or Others.
7. Contractor’s use of Site
8. Working restrictions.
9. Permits.
10. As-built Survey
11. Specification conventions.

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1.2 PROJECT INFORMATION

A. Name: Lily Pond Park Improvements.
1. Project Location: 17-19 North Liberty Street, 36 Lily Street, 8 Wesco Place, Nantucket MA, 02554.

B. Owner: Nantucket Land Bank
1. Owner's Representative: Eleanor Antonietti

C. Project Design / Engineer: Horsley Witten Group, Inc.
1. Designer / Engineer's Representative: Brian Kuchar RLA, P.E.

1.3 CONTRACT DESCRIPTION

A. The scope of work includes all labor, materials, equipment and services required to complete the work described fully in the Contract Documents including but not limited to the following work as indicated in the specifications and drawings.
1. Mobilization and demobilization.
2. All general site work.
3. Installation and maintenance of erosion and sedimentation controls and mud mats.
4. Site clearing and demolition.
5. Installation of temporary construction fencing.
6. Traffic management, as necessary.
7. Earthwork and grading.
8. Drainage structures and piping.
9. Off-site/off island disposal of exported soil at a registered facility as described in the Soil and Groundwater Management Plan (Appendix A).
10. Temporary dewatering and discharge water sampling as required per the Dewatering Remediation General Permit (DRGP).

11. Irrigation well and distribution system.
12. Electrical service.
13. Temporary stabilization.
14. Summer shutdown and temporary access.
15. Wetland restoration plantings and seeding
16. Construction of constructed stormwater wetland.
17. Installation of proprietary water quality devices, drainage pipes and structures.
18. Construction of vegetated retaining wall.
19. Construction of new parking area.
20. Construction of a parking lot bioswale.
21. Construction of new granite curb and brick walkways.
22. Construction of a new park gateway.
23. Construction of boardwalk and overlooks, includes geotechnical services and final piling design.
24. Installation of site furnishings, amenities and signage.
25. Landscape planting.
26. Loam and hydroseed.
27. As-built survey.
28. Sixteen Month plant warranty and maintenance.
29. Two-year invasive species management.

B. Project to be constructed under Two Phases with a summer shutdown as described in Section 1.4

C. Project to be constructed under a single prime contract.

1.4 CONSTRUCTION SEQUENCING, PHASING AND COMPLETION DEADLINES

A. Construction period:

1. **September 8th, 2026 – May 15th, 2028**
2. To be constructed in two Phases with a summer (2027) shutdown.

B. Due to the summer shutdown and the spring wet season, all work within the wetlands is restricted to September 8th thru November 1st. The Contractor is to sequence their work plan accordingly. Any work within the wetland beyond these dates will require Owner and engineer approval.

C. Complete work in Phases as indicated in the Drawings and described in the Bid Form. Work within each Phase includes but is not limited to the following. Failure to meet the final completion deadline may be cause for liquidated damages.

1. **Phase 1: September 8, 2026 – June 16, 2027**

a. Phase 1 Site Mobilization.
b. Demolition and installation of erosion and sediment controls as required to complete Phase 1
c. Erosion and sediment control maintenance, as required for Phase 1.
d. Phase 1 General site construction and earthwork.
e. Dewatering as necessary
f. Remove and dispose all exported soil and sediment for Phase 1.
g. Construction of Restoration Area 1A

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1) Deadline: November 1, 2026
a) **All earthwork and temporary stabilization complete.**

h. Construction of Restoration Area 1B
1) Deadline: November 1, 2026
a) **All earthwork and stabilization completed.**
2) If the earthwork and stabilization for this work cannot be completed by the deadline, this work cannot begin until September 7, 2027

i. Construction of Restoration Area 1A and 1B boardwalk.
j. Construction of New Gateway.
k. North Liberty drainage.
l. Irrigation well and distribution system.
m. Phase 1 planting and landscape.
n. Phase 1 Plant and Landscape Maintenance.
o. Demobilization Summer shutdown and temporary public access.
1) No equipment or material to remain on site.
p. Phase 1 Deadlines:
1) Substantial Completion: May 27, 2027
2) All Phase 1 work including the summer shutdown to be completed by June 11, 2027.

2. **Summer Shutdown: June 14th, 2027 – September 6th, 2027**

a. Full demobilization complete: **June 11th 2027**
1) Including removal of all equipment and material, and stabilization of soils.
b. Limited work allowed during the shutdown includes plant and seed maintenance, invasive species management and monitoring / maintenance of the erosion and sediment controls.

3. **Phase 2: September 7th, 2027 – May 15th, 2028**

a. Phase 2 mobilization.
b. Complete any remaining work not completed during Phase 1.
c. Demolition and installation of erosion and sediment controls as required to complete Phase 2.
d. Erosion and sediment control maintenance, as required for Phase 2.
e. Phase 2 General site construction and earthwork.
f. Dewatering, as necessary.
g. Remove and dispose all exported soil and sediment for Phase 2.
h. Construction of Restoration Area 2.
i. Construction of Restoration Area 2 boardwalk.
j. Construction of Restoration Area 3.
k. Construction of Restoration Area 2 boardwalk.
l. Remove and dispose all exported soil and sediment.
m. Dewatering, as necessary.
n. Irrigation distribution system.
o. Stabilization, Planting and seeding for all Phase 2 disturbed areas.
1) All equipment and material to be removed from the site until site is ready for planting and seeding.
p. Demobilization.
q. As-built Survey and project closeout.
r. Phase 2 Deadlines:

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1) Substantial Completion: April 15, 2028
2) All Phase 2 work including project closeout May 15th 2028.

D. Construction phasing and sequencing will be reviewed with the selected contracted and owner prior to the start of construction and may be adjusted, as necessary.

E. Any proposed changes or alterations to the work completed during each phase must be approved by the Owner.

F. Phase Plan: Include phasing plan with construction work plan. Indicate work to be completed, access points and public accessibility on the plan for acceptance by Owner.

1.5 GENERAL CONDITIONS

A. It is the Contractor's responsibility to review the coordination of all work included in the contract documents as necessary to avoid any misunderstanding.

B. Coordinate scheduling, submittals, and work of the various sections of these Specifications to assure efficient and orderly sequence of interdependent elements.

C. Complete all work within the project schedule and the phases specified. The protection of all adjacent resource areas, abutting properties, and public roads must be maintained at all times.

D. Handle and distribute all materials and all surplus supplies on the different portions of the Work as necessary and at the contractor's own expense. Upland areas are the only spaces available within the project for staging and stockpile.

E. Refer to the Soil & Groundwater Management Plan for all soil and sediment material management guidance.

1.6 LAWS AND REGULATIONS

A. Give all notices and comply with all Laws and Regulations applicable to furnishing the performance of the Work.

B. Contractor to bear all claims, costs, losses and damages caused by, arising out of or resulting from any work performed that is contrary to Laws and/or Regulations.

1.7 WORK BY OWNER OR OTHERS

A. Invasive Treatment: Owner has awarded a contract for Invasive Management of Lily Pond Park beginning in 2024.
   1. Work under this contract will conclude at the end of August 2026, prior to the start of construction.

B. Owner will establish up to six survey benchmarks within the project area at the start of construction for the contractors use.

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C. Items noted in the Contract Documents as "Not In Contract" (NIC), including all signs and bike racks will be furnished and installed by Owner after construction is complete.

1.8 CONTRACTOR'S USE OF SITE

A. Restricted Use of Site: Contractor to have limited use of Project Site for construction operations as indicated by the Limit of Work.

1. Summer Shutdown Period: See deadlines above
   a. Allow public access and use of the park.
   b. Any restricted use or restricted access to the public within the park must be approved by the Owner and Engineer prior to the completion of Phase 1.
   c. The only work allowed during this time includes Owner approved plant and landscape maintenance and invasive species management, and maintenance of any necessary erosion control devices.

B. Invasive species management is the only construction activity to occur outside the Limit of Work, but within the property boundaries. No other work or site disturbance is to occur beyond the Limit of Work.

C. Limits on Use of Site: Confine construction operations to Limit of Work, except invasive species management which is confined to the property boundaries.

D. Owner Access: Allow for Owner and agents to access site as needed.

E. Construction Plan: Before start of construction, submit three copies of construction plan regarding access to Work, phasing and use of Site for acceptance by Owner. After acceptance of plan, construction operations shall comply with accepted plan unless deviations are accepted by Owner in writing.

F. Contractor is responsible for security of site including all materials and equipment on the site.

1.9 WORKING RESTRICTIONS

A. Regular Working Hours shall be 7:30 A.M. to 6:00 P.M., Monday through Saturday, and 12:00 P.M. to 6:00 P.M. Sunday. If the Contractor or Subcontractors wish to work outside of these hours, written authorization must be obtained in advance from the Owner.

B. Work during holiday weekends is prohibited without written authorization obtained in advance from the Owner.

C. Noise Construction Operations:
1. Noisy and Disruptive Operations (such as Use of Jack Hammers and Other Noisy Equipment): Not allowed in close proximity to existing buildings during regular hours of operation. Coordinate and schedule such operations with Owner to minimize disruptions.
2. Per the Town ordinance: Commercial operation or permitting the commercial operation of any mechanically powered tools or equipment actually being used in ongoing building construction, building renovations, non-emergency building maintenance, or building demolition work is prohibited before 7:30 a.m. and after 6:00 p.m. Monday through Saturday, and before 12:00 p.m. and after 6:00 p.m. Sundays and federal holidays.

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D. Backfill or cover open trenches and move all equipment and materials from any public streets, sidewalks/ways or access points during non-working hours.

E. Do not occupy public streets.

F. The Contractor will not be allowed to close public or private ways to vehicular traffic during construction operations without written authorization obtained in advance from the Owner, and Town. A police detail may be required at the Contractor's expense.

G. No additional payment will be allowed for work which occurs outside of the authorized working hours.

H. Unless warranted by emergency measures, work cannot be conducted during the following periods, except as otherwise noted:
   1. Summer Shutdown Period.
   2. No Work shall be performed on federal holidays.

1.10 PERMITS

A. Make all necessary construction notifications and provide all necessary fees, bonds and documentation required to apply for and obtain all necessary construction permits including but not limited to the following:
   1. Town Connection/Discharge to the Stormwater Collection System permit.
   2. Dewatering and Remediation General Permit.
   3. Irrigation Well Permit
   4. Any other permits needed to complete the Work.

B. Submit and comply with all requirements of the National Pollutant Discharge Elimination System (NPDES) program and for the submittal of a Stormwater Pollution Prevention Plan (SWPPP).

C. The Owner has obtained the following permits for the contract work:
   1. Order of Conditions (OOC) from the Town of Nantucket Conservation Commission.
      a. File #: SE48-3826 & SE48-3827
   2. Massachusetts Environmental Policy Act (MEPA) Single Environmental Impact Report (EIR) Approval
      a. EEA #:16874
   3. Army Corps of Engineers General Permit
      a. File #: NAE-2025-00390
   4. Department of Environmental Protection Water Quality Certificate
      a. ID #: 25-WW10-0030-APP.

D. Conduct operations in such a manner to conform to all requirements set forth in the obtained permits. If the Contractor's method of operations deviate from those indicated in the permits, the Contractor shall be responsible for all necessary additional permits and fees required to complete the work. Such permit revisions and delays shall be at the Contractor's own expense and will not be grounds for extension of time to complete the work, nor claim for additional cost.

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1.11 AS-BUILT SURVEY

A. Provide a stamped surveyed as-built drawing completed by a licensed Massachusetts surveyor to the Owner.

B. See Section 01 07 00 – EXECUTION AND CLOSEOUT REQUIREMENTS.

1.12 SPECIFICATION CONVENTIONS

A. Specification Content: The Specifications use certain conventions for the style of language and the intended meaning of certain terms, words, and phrases when used in particular situations. These conventions are as follows:
   1. Imperative mood and streamlined language are generally used in the Specifications. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.

END OF SECTION

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SECTION 01 20 00 - PRICE AND PAYMENT PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Schedule of Values.

B. Application for Payment.

C. Change Procedures.

D. Defect Assessment.

E. Unit Prices.

F. Price Includes.

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1.2 SCHEDULE OF VALUES

A. Submit printed schedule on Progress Estimate schedule on EJCDC C-620 or equivalent.

B. Submit Schedule of Values within 15 days after date established in Notice to Proceed.

C. Coordination: Coordinate preparation of the Schedule of Values with preparation of Contractor's construction Work Schedule.

D. Where the Work is separated into phases requiring separately phased payments, provide sub-schedules showing values correlated with each phase of payment.

E. Format: Use Table of Contents of this Project Manual, the appropriate division of labor, and any grant funding requirements as guide to establish line items for the Schedule of Values. Identify each line item phase and with number and title of major Specification Section.

1. Identification: Include the following Project identification of the Schedule of Values:
   a. Project name and location
   b. Name of Owner and Engineer
   c. Engineer's Project number
   d. Contractor's name and address
   e. Date of submittal
2. Within the Schedule of Values identify values by Phases and at least one item per specification and break out individual products / materials.
3. Schedule of Values to also include as separate line items:
   a. Bonds and insurance.
   b. Site mobilization (Per Phase).

c. Dewatering.
d. Plant and landscape maintenance.

F. Include within each line item, direct proportional amount of Contractor's overhead and profit.

G. Round amounts to nearest whole dollar; total shall equal the Contract Sum.

H. Revise schedule to list approved Change Orders with each Application for Payment.

1.3 APPLICATION FOR PAYMENT

A. Submit three copies of each Application for Payment on EJCDC C-620 - Contractor's Application for Payment or similar form acceptable to the Engineer for Applications for Payment.

B. Content and Format: Use Schedule of Values for listing items in Application for Payment.

C. Payment Breakdown: A portion of the project is grant funded and will require a separate Application for Payment for work completed in Restoration Area 2, up to grant amount.

D. Initial Application for Payment: Administrative actions and submittals that must precede or coincide with submittal of first Application for Payment include the following:
1. List of subcontractors
2. Schedule of Values
3. Contractor’s Construction Schedule
4. Submittals Schedule
5. List of Contractor’s staff assignments
6. List of contractor’s principal consultants
7. Copies of required permits
8. Copies of authorizations and licenses from authorities having jurisdiction for performance of the work
9. Initial progress report
10. Report of preconstruction conference
11. Certificates of insurance and insurance policies
12. Separate Application of Payment for Grant related items.

E. Every Application of Payment will include:
1. Updated construction schedule
   a. Match data on the Schedule of Values and Contractor's Construction Schedule. Use updated schedules if revisions were made.
2. Include amounts of Change Orders and Construction Change Directives issued before last
3. day of construction period covered by application.
4. Receipts for soil disposal, if applicable to the payment
5. Separate Application of Payment for Grant related items, for work completed in Restoration Area 2.

F. Substantiating Data: When Engineer requires substantiating information, submit data justifying dollar amounts in question. Include the following with Application for Payment:

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1. Current construction photographs.
2. Partial release of liens from major Subcontractors and vendors.
3. Record Documents, for review by Owner, which will be returned to Contractor.
4. Affidavits attesting to off-Site stored products.
5. Construction Progress Schedule, revised and current.

G. Final Payment Application: Submit final Application of Payment with releases and supporting documentation not previously submitted and accepted, including, but not limited, to the following in a form approved by the Engineer:
1. Evidence of completion of Project closeout requirements
2. Contractor’s Affidavit of Payment of Debts and Claims
3. Contractor’s Affidavit of Release of Liens
4. Consent of Surety to Final Payment
5. Evidence that claims have been settled
6. Final, liquidated damages settlement statement.

1.4 CHANGE PROCEDURES

A. Submittals: Submit name of individual who is authorized to receive change documents and is responsible for informing others in Contractor's employ or Subcontractors of changes to the Work.

B. Carefully study and compare Contract Documents before proceeding with fabrication and installation of Work. Promptly advise Architect/Engineer of any error, inconsistency, omission, or apparent discrepancy.

C. Requests for Interpretation (RFI) and Clarifications: Allot time in construction scheduling for liaison with Engineer; establish procedures for handling queries and clarifications.

1. Use CSI Form 13.2A - Request for Interpretation, or similar approved by Engineer for requesting interpretations.
2. Engineer may respond with a direct answer on the Request for Interpretation form.

D. Engineer will advise of minor changes in the Work not involving adjustment to Contract Sum/Price or Contract Time by issuing supplemental instructions.

E. Engineer may issue Notice of Change including a detailed description of proposed change with supplementary or revised Drawings and Specifications, a change in Contract Time for executing the change with the period of time during which the requested price will be considered valid. Contractor will prepare and submit estimate within 7 days.

F. Contractor may propose changes by submitting a request for change to Engineer, describing proposed change and its full effect on the Work. Include a statement describing reason for the change and the effect on Contract Sum/Price and Contract Time with full documentation.

G. Stipulated Sum/Price Change Order: Based on Notice of Change and Contractor's fixed price quotation or Contractor's request for Change Order as approved by Engineer.

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H. Unit Price Change Order: For Contract unit prices and quantities, the Change Order will be executed on a fixed unit price basis. For unit costs or quantities of units of that which are not predetermined, execute Work under Construction Change Directive. Changes in Contract Sum/Price or Contract Time will be computed as specified for Time and Material Change Order.

I. Construction Change Directive: Engineer may issue directive, on EJCDC C-940 - Work Change Directive or similar document signed by Owner, instructing Contractor to proceed with change in the Work, for subsequent inclusion in a Change Order. Document will describe changes in the Work and designate method of determining any change in Contract Sum/Price or Contract Time. Promptly execute change.

J. Document each quotation for change in Project Cost or Time with sufficient data to allow evaluation of quotation.

K. Change Order Forms: EJCDC C-941 - Change Order or Engineer approved equivalent.

1.5 DEFECT ASSESSMENT

A. Replace the Work, or portions of the Work, not conforming to specified requirements.

B. If, in the opinion of Engineer, it is not practical to remove and replace the Work, Engineer will direct appropriate remedy or adjust payment.

C. The defective Work may remain, but unit sum/price will be adjusted to new sum/price at discretion of the Engineer and Owner.

D. Defective Work will be partially repaired according to instructions of Engineer and unit sum/price will be adjusted to new sum/price at discretion of Engineer and Owner.

E. Authority of Engineer to assess defects and identify payment adjustments is final.

1.6 UNIT PRICES ITEM

A. Payment for all work shall be in accordance with the unit price bid items in the Schedule of Values and shall be full compensation for all labor, materials, and equipment required to furnish, deliver, install, construct and test the Work covered under the unit price bid item. Work for which there is not a price schedule item will be considered incidental to other items of Work and no additional compensation shall be allowed.

B. Payment will be made only for the actual approved quantities of work performed in compliance with the Contract Documents. The Contractor will receive reimbursement equal to the approved quantity multiplied by the applicable unit price.

C. Payment of the lump sum items established in the Contractor's Bid shall also fully compensate the Contractor for any other work that is not specified or shown, but which is necessary to complete the Lump Sum items.

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D. Payments for Lump Sum items will be based upon measured and approved physical progress for each activity in accordance with the breakdown of the lump sum prices agreed to in the Schedule of Values.

E. Measurement of all quantities of items listed in the Bid shall be done by the Contractor and verified by Owner. The measurement will include proper and complete documentation of all items to the satisfaction of the Owner prior to submission for payment. The measurement submitted shall be in the same unit description listed in the Bid Form.

F. Measurement of bid items made for unit quantities will be subject to the maximum permissible excavation width and depth allowed by the contract for payment purposes, as stipulated on the Drawings and Contract Documents. Excavations that are made deeper or cut wider due to Contractor's means and methods or for the Contractor's convenience will not be subject to additional payment. As such, the actual quantity used will not necessarily reflect the payable quantity, unless otherwise authorized by Owner. Contractor shall adjust their unit prices accordingly.

1.7 PRICE INCLUDES

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A. The prices stated in the Bid Form include full compensation not only for furnishing all the labor, equipment and material needed for, and for performing the work contemplated by, the Contract, but also for assuming all risks of any kind for expenses arising by reason of the nature of the proposed work and for fulfilling all obligations assumed by the Contractor under the Contract and its related documents. .

B. The Owner shall pay and the Contractor shall receive the prices stipulated in the Bid made a part hereof as full compensation for everything performed and for all risks and obligations undertaken by the Contractor under and as required by the Contract.

C. The prices for those Items which involve excavation shall include compensation for disposal of surplus excavated material and handling water.

D. In all Items involving excavation, the price shall be based on doing the entire excavation in earth. Where rock is excavated, the price, therefore, shall be in addition to the cost of excavating earth and no deduction will be made in the amount for earth excavation.

E. The prices for all pipe Items (i.e., sewers, service connections, drains, etc.) shall constitute full compensation for furnishing, laying, jointing and testing; earth excavation, backfill and compaction; materials for bedding pipe as specified; and cleaning up.

F. Payment for boulder excavation less than one (1) cubic yard in size, including hauling boulders offsite and furnishing and installing appropriate backfill material, is included in the various items of work on the Bid Form and no separate payments shall be made thereof.

G. Payment for stripping topsoil, including stockpiling, and clearing and grubbing, including disposal, is included in the prices for the various items of work on the Bid Form and no separate payment shall be made thereof.

H. Payment for permits and bonds required by the contract is included in the prices for the various items in the Bid Form and no separate payment shall be made thereof.

I. Payment for all signage required for this project is included in the prices for the various items in the Bid Form and no separate payment shall be made thereof.

J. No separate payment will be made for work or items associated with Division 1 - General Requirements unless otherwise specified herein. This includes Professional Engineer design fees incurred by the Contractor where this is required for submittals. Contractor shall incorporate the cost for these items into the prices submitted on the Bid Form.

K. Contractor to pay the direct cost of police details in the event they are required and is responsible for coordinating and scheduling police details assigned to the project. Cancellation charges imposed due to changes or errors in Contractor's scheduling shall be paid for solely by the Contractor.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

PART 4 - COMPENSATION

4.1 BID ITEMS

A. BID ITEM 1:PHASE 1 MOBILZATION
1. Measurement
a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the Contractor.
2. Payment
a. Payment of the lump sum price bid in the Bid Form for Item No. 1 shall constitute full compensation for all labor, material, tools, equipment and incidentals required for Phase 1 mobilization, complete, as indicated in the Contract Documents.

B. BID ITEM #2: DEMOLTION AND EROSION CONTROL
1. Measurement
a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the Contractor.
2. Payment
a. Payment of the lump sum price bid in the Bid Form for Item No. 2 shall constitute full compensation for all labor, material, tools, equipment and incidentals required to complete all work, as indicated in the Contract Documents.

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C. BID ITEM #3: REMOVE AND DISPOSE OF ALL SOIL AND SEDIMENT (ALL PHASES)
1. Measurement
a. Cubic yards - The work of this section shall be measured by cubic yard of removed and disposed soil and sediment. Slips are to be provided from disposal facilities indicated actual quantity, in cubic yards, of soil and sediment disposed.
2. Payment
a. Payment for Bid item No. 3 in the Bid form to be made at the contract unit price per cubic yard of soil and sediment removed and disposed and shall constitute full compensation for all labor, material, tools, equipment, transportation, fees and all other incidentals necessary for complete removal and disposal of all soil and sediment, as indicated in the Contract Documents.

D. BID ITEM #4: DEWATERING (ALL PHASES)
1. Measurement
a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the Contractor.

2. Payment
a. Payment of the lump sum price bid in the Bid Form for Item No. 4 shall constitute full compensation for all labor, material, tools, permitting fees, monitoring, documentation, testing, coordination, equipment and incidentals necessary for dewatering during all phases of work.

E. BID ITEM #5: RESTORATION AREA 1A
1. Measurement
a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the Contractor.
2. Payment
a. Payment of the lump sum price bid in the Bid Form for Item No. 5 shall constitute full compensation for all labor, material, tools, equipment and incidentals required to complete all work, as indicated in the Contract Documents.

F. BID ITEM #6: RESTORATION AREA 1A BOARDWALK
1. Measurement
a. Linear Feet - The work of this section shall be measured by linear foot of boardwalk completely installed, measured from the centerline of the walking surface.
2. Payment
a. Payment for Bid item No. 6 in the Bid Form to be made at the contract unit price per linear foot of installed boardwalk and shall constitute full compensation for all labor, material, tools, equipment, transportation, fees, testing and all other incidentals necessary for complete installation of boardwalk for all phases as indicated in the Contract Documents.

G. BID ITEM #7: NEW GATEWAY
1. Measurement

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a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the Contractor.

2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 7 shall constitute full compensation for all labor, material, tools, equipment and incidentals required to complete all work, as indicated in the Contract Documents.

H. BID ITEM #8: RESTORATION AREA 1B
1. Measurement
   a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the Contractor.
2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 8 shall constitute full compensation for all labor, material, tools, equipment and incidentals required to complete all work, as indicated in the Contract Documents.

I. BID ITEM #9: RESTORATION AREA 1B BOARDWALK
1. Measurement
   a. Linear Feet - The work of this section shall be measured by linear foot of boardwalk completely installed, measured from the centerline of the walking surface.
2. Payment
   a. Payment for Bid item No. 9 in the Bid Form to be made at the contract unit price per linear foot of installed boardwalk and shall constitute full compensation for all labor, material, tools, equipment, transportation, fees, testing and all other incidentals necessary for complete installation of boardwalk for all phases as indicated in the Contract Documents.

J. BID ITEM #10: IRRIGATION WELL AND DISTRIBUTION SYSTEM
1. Measurement
   a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the Contractor.
2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 10 shall constitute full compensation for all labor, material, tools, equipment and incidentals required to complete all work, as indicated in the Contract Documents.

K. BID ITEM #11: RESTORATION AREA 1A PLANTING AND SEEDING
1. Measurement
   a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the contractor.
2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 11 shall constitute full compensation for all labor, material, tools, equipment and incidentals required for the installation of all Phase 1 plants and seeding, complete, as indicated in the Contract Documents.

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b. Payment to be based on the following % complete schedule:
   1) 50% value at time of Installation.
   2) 40% of the value at Final Acceptance.
   3) 10% value at end of Warranty Period.

L. BID ITEM #12: RESTORATION AREA 1B PLANTING AND SEEDING
1. Measurement
   a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the contractor.
2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 12 shall constitute full compensation for all labor, material, tools, equipment and incidentals required for the installation of all Phase 1 plants and seeding, complete, as indicated in the Contract Documents.
   b. Payment to be based on the following % complete schedule:
      1) 50% value at time of Installation.
      2) 40% of the value at Final Acceptance.
      3) 10% value at end of Warranty Period.

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M. BID ITEM #13: NEW GATEWAY PLANTING AND SEEDING
1. Measurement
   a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the contractor.
2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 13 shall constitute full compensation for all labor, material, tools, equipment and incidentals required for the installation of all Phase 1 plants and seeding, complete, as indicated in the Contract Documents.
   b. Payment to be based on the following % complete schedule:
      1) 50% value at time of Installation.
      2) 40% of the value at Final Acceptance.
      3) 10% value at end of Warranty Period.

N. BID ITEM #14: PHASE 1 PLANT AND LANDSCAPE MAINTENANCE
1. Measurement
   a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown and maintenance schedule to be submitted by the Contractor.
2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 14 shall constitute full compensation for all labor, material, tools, transportation, equipment and incidentals necessary for completing Phase 1 plant and landscape maintenance as indicated in the Contract Documents.

O. BID ITEM #15: PHASE 1 SHUTDOWN AND TEMPORARY ACCESS
1. Measurement

a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown and maintenance schedule to be submitted by the Contractor.

2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 15 shall constitute full compensation for all labor, material, tools, transportation, equipment and incidentals necessary for Phase 1 closeout and temporary access as indicated in the Contract Documents.

P. BID ITEM #16: PHASE 2 MOBILZATION
1. Measurement
   a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the Contractor.
2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 16 shall constitute full compensation for all labor, material, tools, equipment and incidentals required for Phase 2 mobilization, complete, as indicated in the Contract Documents.

Q. BID ITEM #17: RESTROATION AREA 2
1. Measurement
   a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the Contractor.
2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 17 shall constitute full compensation for all labor, material, tools, equipment and incidentals required to complete all work, as indicated in the Contract Documents.

R. BID ITEM #18: RESTORATION AREA 2 BOARDWALK
1. Measurement
   a. Linear Feet - The work of this section shall be measured by linear foot of boardwalk completely installed, measured from the centerline of the walking surface.
2. Payment
   a. Payment for Bid item No. 18 in the Bid Form to be made at the contract unit price per linear foot of installed boardwalk and shall constitute full compensation for all labor, material, tools, equipment, transportation, fees, testing and all other incidentals necessary for complete installation of boardwalk for all phases as indicated in the Contract Documents.

S. BID ITEM # 19: RESTROATION AREA 3
1. Measurement
   a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the Contractor.
2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 19 shall constitute full compensation for all labor, material, tools, equipment and incidentals required to complete all work, as indicated in the Contract Documents.

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T. BID ITEM #20: RESTORATION AREA 2 BOARDWALK
1. Measurement
   a. Linear Feet - The work of this section shall be measured by linear foot of boardwalk completely installed, measured from the centerline of the walking surface.
2. Payment
   a. Payment for Bid item No. 20 in the Bid Form to be made at the contract unit price per linear foot of installed boardwalk and shall constitute full compensation for all labor, material, tools, equipment, transportation, fees, testing and all other incidentals necessary for complete installation of boardwalk for all phases as indicated in the Contract Documents.

U. BID ITEM #21: NORTH LIBERTY STREET DRAINAGE
1. Measurement
   a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the Contractor.
2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 21 shall constitute full compensation for all labor, material, tools, equipment and incidentals required to complete all work, as indicated in the Contract Documents.

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V. BID ITEM #22: RESTORATION AREA 2 PLANTING AND SEEDING
1. Measurement
   a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the contractor.
2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 22 shall constitute full compensation for all labor, material, tools, equipment and incidentals required for the installation of all Phase 2 plants and seeding, complete, as indicated in the Contract Documents.
   b. Payment to be based on the following % complete schedule:
      1) 50% value at time of Installation.
      2) 40% of the value at Final Acceptance.
      3) 10% value at end of Warranty Period.

W. BID ITEM #23: RESTORATION AREA 3 PLANTING AND SEEDING
1. Measurement
   a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the contractor.
2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 23 shall constitute full compensation for all labor, material, tools, equipment and incidentals required for the installation of all Phase 2 plants and seeding, complete, as indicated in the Contract Documents.
   b. Payment to be based on the following % complete schedule:
      1) 50% value at time of Installation.
      2) 40% of the value at Final Acceptance.

3) 10% value at end of Warranty Period.

X. BID ITEM #24: RESTORATION AREA 2 PLANTING AND SEEDING
1. Measurement
a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown to be submitted by the contractor.
2. Payment
a. Payment of the lump sum price bid in the Bid Form for Item No. 24 shall constitute full compensation for all labor, material, tools, equipment and incidentals required for the installation of all Phase 2 plants and seeding, complete, as indicated in the Contract Documents.
b. Payment to be based on the following % complete schedule:
1) 50% value at time of Installation.
2) 40% of the value at Final Acceptance.
3) 10% value at end of Warranty Period.

Y. BID ITEM #25: PHASE 2 PLANT AND LANDSCAPE MAINTENANCE
1. Measurement
a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown and maintenance schedule to be submitted by the Contractor.
2. Payment
a. Payment of the lump sum price bid in the Bid Form for Item No. 25 shall constitute full compensation for all labor, material, tools, transportation, equipment and incidentals necessary for completing Phase 2 plant and landscape maintenance as indicated in the Contract Documents.

Z. BID ITEM #26: POST CONSTRUCTION INVASIVE SPECIES MANAGEMENT (YEAR 1)
1. Measurement
a. Hours - The work of this bid item shall be measured by hours of work complete for on-going invasive species management of all areas within the property boundaries following acceptance of Phase 1 including development of the Year End Report.
2. Payment
a. Payment for Bid item No. 26 in the Bid Form to be made at the contract unit price per hour and shall constitute full and complete compensation for all labor, materials, transportation, coordination, and equipment required to manage the onsite invasive plant species as indicated in the Contract Documents.

AA. BID ITEM #27: POST CONSTRUCTION INVASIVE SPECIES MANAGEMENT (YEAR 2)
1. Measurement
a. Hours - The work of this bid item shall be measured by hours of work complete for on-going invasive species management of all areas within the property boundaries following acceptance the first year of invasive management including development of the Year End Report.
2. Payment
a. Payment for Bid Item No. 27 to be made at the contract unit price per hour and shall constitute full and complete compensation for all labor, materials, transportation,

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coordination, and equipment required to manage the onsite invasive plant species as indicated in the Contract Documents.

BB. BID ITEM #28: PROJECT CLOSEOUT

1. Measurement
   a. Lump Sum - The work of this section shall be measured on a percent complete basis based on an approved schedule of values breakdown and maintenance schedule to be submitted by the Contractor.
2. Payment
   a. Payment of the lump sum price bid in the Bid Form for Item No. 28 shall constitute full compensation for all labor, material, tools, transportation, equipment and incidentals necessary for completing Phase 2 closeout as indicated in the Contract Documents.

END OF SECTION 012000

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SECTION 013000 - ADMINISTRATIVE REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Coordination and Project conditions.

B. Preconstruction meeting.

C. Site mobilization meeting.

D. Progress meetings.

E. End of phase meetings.

F. Weather event inspections and monitoring

G. Preinstallation meetings.

H. Closeout meeting.

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1.2 COORDINATION AND PROJECT CONDITIONS

A. Coordinate scheduling, submittals, and Work of various Sections of Project Manual to ensure efficient and orderly sequence of installation of interdependent construction elements.

B. Coordinate Work of various Sections having interdependent responsibilities for installing, connecting to, and placing operating equipment in service.

C. Coordination Drawings: Prepare as required to coordinate all portions of Work. Show relationship and integration of different construction elements that require coordination during fabrication or installation to fit in space provided or to function as intended. Indicate locations where space is limited for installation and access and where sequencing and coordination of installations are important.

D. Coordination Meetings: In addition to other meetings specified in this Section, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.

1.3 PRECONSTRUCTION MEETING

A. Engineer will schedule and preside over meeting after Notice of Award.

B. Attendance Required: Engineer, Owner, Construction Manager, major Subcontractors, and Contractor.

C. Minimum Agenda:

1. Execution of Owner-Contractor Agreement.
2. Submission of executed bonds and insurance certificates.
3. Distribution of Contract Documents.
4. Submission of list of Subcontractors, list of products, schedule of values, and Progress Schedule.
5. Designation of personnel representing parties in Contract.
6. Communication procedures.
7. Procedures and processing of requests for interpretations, field decisions, submittals, substitutions, Applications for Payments, proposal request, Change Orders, and Contract closeout procedures.
8. Scheduling.
9. Critical Work sequencing.

D. Contractor: Record minutes and distribute copies to participants within two days after meeting, to Engineer, Owner, and those affected by decisions made.

1.4 SITE MOBILIZATION MEETING

A. Engineer will schedule and preside over meeting at Project Site prior to Contractor occupancy.

B. Attendance Required: Engineer, Owner, Contractor, Contractor's Superintendent, major Subcontractors, applicable government agencies.

C. Minimum Agenda:

1. Use of premises by Owner and Contractor.
2. Owner's requirements.
3. Construction facilities and controls.
4. Erosion and Sediment Control
5. Survey and layout.
6. Security and housekeeping procedures.
7. Schedules.
8. Procedures for testing.
9. Procedures for maintaining record documents.
10. Requirements for startup of equipment.

D. Contractor record minutes and distribute copies to participants within three days after meeting, to Engineer, Owner, and those affected by decisions made.

1.5 PROGRESS MEETINGS

A. Attend and participate in the following meetings throughout progress of the Work:
1. Weekly virtual meetings.
   a. Engineer to preside over meetings and provide agenda.
   b. Contractor to provide meeting summary.

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1) Record significant discussions and agreements achieved. Distribute the meeting summary to all attendees including Owner and Engineer within three days of meeting.

2. Weekly site meetings (minimum), coordinated to align with required site visits per the drawings and specifications.

B. Attendance Required: Job superintendent, major Subcontractors, Contractors and suppliers, Engineer, and Owner, as appropriate to agenda topics for each meeting.

C. Minimum Agenda:

1. Review minutes of previous meetings.
2. Review of Work progress.
3. Field observations, problems, and decisions.
4. Identification of problems impeding planned progress.
5. Review of submittal schedule and status of submittals.
6. Review of off-site fabrication and delivery schedules.
7. Maintenance of Progress Schedule.
8. Corrective measures to regain projected schedules.
9. Planned progress during succeeding work period.
10. Coordination of projected progress.
11. Maintenance of quality and work standards.
12. Effect of proposed changes on Progress Schedule and coordination.
13. Other business relating to Work.

D. Contractor: Record minutes and distribute copies to participants within two days after meeting, to Engineer, Owner, and those affected by decisions made.

1.6 END OF PHASE MEETINGS

1. Two weeks prior to the end of Phase 1 and Phase 2, convene on site to review final clean up and demobilization needed before completion of the Phase.

1.7 WEATHER EVENT INSPECTIONS AND MONITORING

1. Monitor and maintain erosion controls and dewatering equipment during all precipitation events to ensure equipment continues to function, and excess erosion and flooding do not occur.
2. Provide post precipitation event summary to Owner and Engineer.

1.8 PREINSTALLATION MEETINGS

A. When required in individual Specification Sections, convene preinstallation meetings at Project Site before starting Work of specific Section.

B. Require attendance of parties directly affecting, or affected by, Work of specific Section.

C. Notify Engineer four days in advance of meeting date.

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D. Prepare agenda and preside over meeting:

1. Review conditions of installation, preparation, and installation procedures.
2. Review coordination with related Work.

E. Record minutes and distribute copies to participants within two days after meeting, to Engineer, Owner, and those affected by decisions made.

1.9 CLOSEOUT MEETING

A. Schedule Project closeout meeting with sufficient time to prepare for requesting Substantial Completion. Preside over meeting and be responsible for minutes.

B. Attendance Required: Contractor, major Subcontractors, Engineer, Owner, and others appropriate to agenda.

C. Notify Architect/Engineer four days in advance of meeting date.

D. Minimum Agenda:
1. Operations and maintenance manuals.
2. Testing, adjusting, and balancing.
3. Operation and maintenance instructions for Owner's personnel.
4. Contractor's inspection of Work.
5. Contractor's preparation of an initial "punch list."
6. Procedure to request Engineer inspection to determine date of Substantial Completion.
7. Completion time for correcting deficiencies.
8. Inspections by authorities having jurisdiction.
9. Partial release of retainage.
10. Final cleaning.
11. Preparation for final inspection.
12. Closeout Submittals:

    a. Project record documents.
    b. As-built Drawing
    c. Operating and maintenance documents.
    d. Operating and maintenance materials.
    e. Affidavits.

13. Final Application for Payment.
14. Contractor's demobilization of Site.
15. Maintenance.

E. Record minutes and distribute copies to participants within two days after meeting, to Engineer, Owner, and those affected by decisions made.

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PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION – Not Used

END OF SECTION 013000

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SECTION 013216 - CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Submittals.

B. Schedule - Bar Chart.

C. Review and evaluation.

1.2 SUBMITTALS

A. Schedule: Within 10 days of Notice to Process submit project schedule for review.

B. Progress Schedule Updates: Submit monthly updates.

1. Overall percent complete, projected and actual.
2. Completion progress by listed activity and sub-activity, to within five working days prior to submittal.
3. Changes in Work scope and activities modified since submittal.
4. Delays in submittals or resubmittals, deliveries, or Work.
5. Adjusted or modified sequences of Work.
6. Other identifiable changes.
7. Revised projections of progress and completion.

C. Narrative Progress Report:

1. Submit with each monthly submission of Progress Schedule.
2. Summary of Work completed during the past period between reports.
3. Work planned during the next period.
4. Explanation of differences between summary of Work completed and Work planned in previously submitted report.
5. Current and anticipated delaying factors and estimated impact on other activities and completion milestones.
6. Corrective action taken or proposed.

1.3 SCHEDULE - BAR CHART

A. Computer-generated bar chart schedule to include at least:

1. Identification and listing in chronological order of those activities reasonably required to complete the Work, including:

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a. Subcontract Work.
b. Major equipment design, fabrication, factory testing, and delivery dates including required lead times.
c. Move-in and other preliminary activities.
d. Equipment and equipment system test and startup activities.
e. Project closeout and cleanup.
f. Work sequences, constraints, and milestones.

2. Listings identified by Specification Section number.
3. Identification of the following:

a. Horizontal time frame by year, month, and week.
b. Duration, early start, and completion for each activity and subactivity.
c. Critical activities and Project float.
d. Subschedules to further define critical portions of Work.

1.4 REVIEW AND EVALUATION

A. Participate in joint review and evaluation of schedules with Engineer during the weekly virtual meetings with each submittal.

B. Evaluate Project status to determine Work behind schedule and Work ahead of schedule.

C. After review, revise schedules incorporating results of review, and resubmit within three days.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 013216

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SECTION 013300 - SUBMITTAL PROCEDURES

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Definitions.

B. Submittal procedures.

C. Proposed product list.

D. Product data.

E. Use of electronic CAD files of Project Drawings.

F. Shop Drawings.

G. Samples.

H. Design data.

I. Test reports.

J. Certificates.

K. Manufacturer's instructions.

L. Manufacturer's field reports.

M. Erection Drawings.

N. Construction photographs.

O. Contractor review.

P. Engineer review.

1.2 DEFINITIONS

A. Action Submittals: Written and graphic information and physical samples that require Engineer's responsive action.

B. Informational Submittals: Written and graphic information and physical Samples that do not require Engineer's responsive action. Submittals may be rejected for not complying with requirements.

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1.3 SUBMITTAL PROCEDURES

A. Transmit each submittal with CSI Form 12.1A - Submittal Transmittal or Engineer approved equivalent.

B. Sequentially number transmittal forms. Mark revised submittals with original number and sequential alphabetic suffix.

C. Identify: Project, Contractor, Subcontractor and supplier, pertinent Drawing and detail number, and Specification Section number appropriate to submittal.

D. Apply Contractor's stamp, signed or initialed, certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information is according to requirements of the Work and Contract Documents.

E. Schedule submittals to expedite Project, and deliver electronic PDF files electronically via email to Engineer or posted to project website.

F. For each submittal for review, allow 15 days excluding delivery time to and from Contractor.

G. Identify variations in Contract Documents and product or system limitations that may be detrimental to successful performance of completed Work.

H. Allow space on submittals for Contractor and Architect/Engineer review stamps.

I. When revised for resubmission, identify changes made since previous submission.

J. Distribute copies of reviewed submittals as appropriate. Instruct parties to promptly report inability to comply with requirements.

K. Submittals not requested will not be recognized nor processed.

L. Incomplete Submittals: Engineer will not review. Complete submittals for each item are required. Delays resulting from incomplete submittals are not the responsibility of Engineer.

1.4 PROPOSED PRODUCT LIST

A. Within 15 days after date of Notice to Proceed, submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.

B. For products specified only by reference standards, indicate manufacturer, trade name, model or catalog designation, and reference standards.

1.5 PRODUCT DATA

A. Product Data: Action Submittal: Submit to Engineer for review for assessing conformance with information given and design concept expressed in Contract Documents.

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B. Submit electronic submittals via email as PDF electronic files.

C. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.

D. Indicate product utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

E. After review, produce copies and distribute.

1.6 ELECTRONIC CAD FILES OF PROJECT DRAWINGS

A. Electronic CAD Files of Project Drawings: May only be used to expedite production of Shop Drawings for the Project. Use for other Projects or purposes is not allowed.

B. Electronic CAD Files of Project Drawings: Distributed only under the following conditions:

1. Use of files is solely at receiver's risk. Engineer does not warrant accuracy of files. Receiving files in electronic form does not relieve receiver of responsibilities for measurements, dimensions, and quantities set forth in Contract Documents. In the event of ambiguity, discrepancy, or conflict between information on electronic media and that in Contract Documents, notify Engineer of discrepancy and use information in hard-copy Drawings and Specifications.
2. CAD files do not necessarily represent the latest Contract Documents, existing conditions, and as-built conditions. Receiver is responsible for determining and complying with these conditions and for incorporating addenda and modifications.
3. User is responsible for removing information not normally provided on Shop Drawings and removing references to Contract Documents. Shop Drawings submitted with information associated with other trades or with references to Contract Documents will not be reviewed and will be immediately returned.
4. Receiver shall not hold Engineer responsible for data or file clean-up required to make files usable, nor for error or malfunction in translation, interpretation, or use of this electronic information.
5. Receiver shall understand that even though Engineer has computer virus scanning software to detect presence of computer viruses, there is no guarantee that computer viruses are not present in files or in electronic media.
6. Receiver shall not hold Engineer responsible for such viruses or their consequences, and shall hold Architect/Engineer harmless against costs, losses, or damage caused by presence of computer virus in files or media.

1.7 SHOP DRAWINGS

A. Shop Drawings: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.

B. Indicate special utility and electrical characteristics, utility connection requirements, and location of utility outlets for service for functional equipment and appliances.

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C. When required by individual Specification Sections, provide Shop Drawings signed and sealed by a professional Engineer responsible for designing components shown on Shop Drawings.

1. Include signed and sealed calculations to support design.
2. Submit Shop Drawings and calculations in form suitable for submission to and approval by authorities having jurisdiction.
3. Make revisions and provide additional information when required by authorities having jurisdiction.

D. Post electronic submittals as PDF electronic files to Project website or Submit electronic submittals via email as PDF electronic files.

E. After review, produce copies and distribute.

1.8 SAMPLES

A. Samples: Action Submittal: Submit to Engineer for assessing conformance with information given and design concept expressed in Contract Documents.
1. Product Samples: One sample to each of the following:
a. Engineer: Horsely Witten Group, Inc.
ATTN: Brian Kuchar
90 Route 6A, Unit 1
Sandwich, MA 02563
b. Owner: Nantucket Land Bank
ATTN: Eleanor Antonietti
22 Broad Street
Nantucket, MA 02554

B. Samples for Selection as Specified in Product Sections:

1. Submit to Engineer and Owner for aesthetic, color, and finish selection.
2. Submit Samples of finishes, textures, and patterns for Engineer and Owner selection.

C. Submit Samples to illustrate functional and aesthetic characteristics of products, with integral parts and attachment devices. Coordinate Sample submittals for interfacing work.

D. Include identification on each Sample, with full Project information.

E. Submit number of Samples specified in individual Specification Sections; Engineer will retain one Sample and Owner will retain one Sample.

F. Reviewed Samples that may be used in the Work are indicated in individual Specification Sections.

G. After review, produce copies and distribute.

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1.9 DESIGN DATA

A. Informational Submittal: Submit data for Engineer's knowledge as Contract administrator or for Owner.

B. Submit information for assessing conformance with information given and design concept expressed in Contract Documents.

1.10 TEST REPORTS

A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.

B. Submit test reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.11 CERTIFICATES

A. Informational Submittal: Submit certification by manufacturer, installation/application Subcontractor, or Contractor to Engineer, in quantities specified for Product Data.

B. Indicate material or product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Certificates may be recent or previous test results on material or product but must be acceptable to Engineer.

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1.12 MANUFACTURER'S INSTRUCTIONS

A. Informational Submittal: Submit manufacturer's installation instructions for Architect/Engineer's knowledge as Contract administrator or for Owner.

B. Submit printed instructions for delivery, storage, assembly, installation, adjusting, and finishing, to Engineer in quantities specified for Product Data.

C. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

1.13 MANUFACTURER'S FIELD REPORTS

A. Informational Submittal: Submit reports for Engineer's knowledge as Contract administrator or for Owner.

B. Submit report within 5 days of observation to Engineer for information.

C. Submit reports for information for assessing conformance with information given and design concept expressed in Contract Documents.

1.14 CONSTRUCTION PHOTOGRAPHS

A. Pre-construction Photos: provide photographs of existing site conditions prior to any site work.
   1. Flag construction limits before taking construction photographs.
   2. Take plenty of photographs to show existing conditions of entire work and and adjacent to property before starting work.
   3. Take detailed photographs of existing buildings either on or adjoining property to accurately record physical conditions at start of construction.
   4. Identify date of photos, name of project, contract number, orientation of view, name and address of photographer, and photographer's numbered identification of image.
   5. Photographs: high quality digital files transmitted electronically to the Owner and Engineer or provided on a flash drive.

B. Application of Payment Photos: Provide photographs of Site and construction throughout progress of Work produced by an experienced photographer acceptable to Engineer.
   1. Each month submit photographs with Application for Payment.
   2. Photographs: Color; 8x10-inch size with no more than two photos on each sheet with a short description under each photo. Provided in high quality PDF format.
   3. Take photographs as evidence of existing Project conditions to demonstrate work complete.
   4. Identify name of Project, Contract number, orientation of view, date and time of view, name and address of photographer, and photographer's numbered identification of image.

C. Submit digital images exactly as originally recorded in the digital camera, without alteration, manipulation, editing, or modifications.

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1.15 CONTRACTOR REVIEW

A. Review for compliance with Contract Documents and approve submittals before transmitting to Engineer.

B. Contractor: Responsible for:

   1. Determination and verification of materials including manufacturer's catalog numbers.
   2. Determination and verification of field measurements and field construction criteria.
   3. Checking and coordinating information in submittal with requirements of Work and of Contract Documents.
   4. Determination of accuracy and completeness of dimensions and quantities.
   5. Confirmation and coordination of dimensions and field conditions at Site.
   6. Construction means, techniques, sequences, and procedures.
   7. Safety precautions.
   8. Coordination and performance of Work of all trades.

C. Stamp, sign or initial, and date each submittal to certify compliance with requirements of Contract Documents.

D. Do not fabricate products or begin Work for which submittals are required until approved submittals have been received from Engineer.

1.16 ENGINEER REVIEW

A. Do not make "mass submittals" to Engineer. "Mass submittals" are defined as six or more submittals or items in one day or 20 or more submittals or items in one week. If "mass submittals" are received, Engineer's review time stated above will be extended as necessary to perform proper review. Engineer will review "mass submittals" based on priority determined by Engineer after consultation with Owner and Contractor.

B. Informational submittals and other similar data are for Engineer's information, do not require Engineer's responsive action, and will not be reviewed or returned with comment.

C. Submittals made by Contractor that are not required by Contract Documents may be returned without action.

D. Submittal approval does not authorize changes to Contract requirements unless accompanied by Change Order.

E. Owner may withhold monies due to Contractor to cover additional costs beyond the second submittal review.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 013300

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SECTION 014000 - QUALITY REQUIREMENTS, TESTING AND MONITORING

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Quality control.

B. Tolerances.

C. References.

D. Labeling.

E. Mockup requirements.

F. Testing and inspection services.

G. Infrastructure Installation Information.

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1.2 QUALITY CONTROL

A. Monitor quality control over suppliers, manufacturers, products, services, Site conditions, and workmanship, to produce Work of specified quality.

B. Comply with specified standards as the minimum quality for the Work except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

C. Perform Work using persons qualified to produce required and specified quality.

D. Supervise performance of Work in such manner and by such means to ensure that Work, whether completed or in progress, will not be subjected to harmful, dangerous, damaging, or otherwise deleterious exposure during construction period.

1.3 TOLERANCES

A. Monitor fabrication and installation tolerance control of products to produce acceptable Work. Do not permit tolerances to accumulate.

B. Comply with manufacturers' recommended tolerances and tolerance requirements in reference standards. When such tolerances conflict with Contract Documents, request clarification from Engineer before proceeding.

1.4 REFERENCES

A. For products or workmanship specified by association, trade, or other consensus standards, comply with requirements of standard except when more rigid requirements are specified or are required by applicable codes.

B. Conform to reference standard by date of issue current as of date of Contract Documents except where specific date is established by code.

C. Obtain copies of standards and maintain on Site when required by product Specification Sections.

D. When requirements of indicated reference standards conflict with Contract Documents, request clarification from Engineer before proceeding.

E. Neither contractual relationships, duties, or responsibilities of parties in Contract nor those of Engineer shall be altered from Contract Documents by mention or inference in reference documents.

1.5 LABELING

A. Attach label from agency approved by authorities having jurisdiction for products, assemblies, and systems required to be labeled by applicable code.

B. Label Information: Include manufacturer's or fabricator's identification, approved agency identification, and the following information, as applicable, on each label:

1. Model number.
2. Serial number.
3. Performance characteristics.

C. Manufacturer's Nameplates, Trademarks, Logos, and Other Identifying Marks on Products: Not allowed on surfaces exposed to view in public areas, interior or exterior.

1.6 MOCK-UP REQUIREMENTS

A. Tests will be performed under provisions identified in this Section and identified in individual product Specification Sections.

B. Assemble and erect specified or indicated items with specified or indicated attachment and anchorage devices, flashings, seals, and finishes.

C. Accepted mockups shall be comparison standard for remaining Work.

D. Mock-ups to be provided for:
1. Brick pavement: 5’ x 5’ minimum area.
2. Flagstone Pavement: 5’ x 5’ minimum area.

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1.7 TESTING, MONITORING AND INSPECTION SERVICES

A. Employ and pay for services of an independent testing agency or laboratory acceptable to Owner to perform specified testing.

1. Before starting Work, submit testing laboratory name, address, and telephone number, and names of full-time Professional Engineer, specialist, and responsible officer.
2. Submit copy of report of laboratory facilities' inspection made by Materials Reference Laboratory of National Bureau of Standards during most recent inspection, with memorandum of remedies of deficiencies reported by inspection.

B. Independent firm will perform tests, inspections, and other services specified and as required by Engineer or Owner.

C. Testing to be provided for the following as required per the specifications, Soil and Groundwater Management Plan and permitting:
1. Materials testing per specifications.
2. Compaction of all gravel, base and subbase material for surface paths and parking areas.
3. Helical Pile calibration information for the torque measurement.
4. Concrete testing for mix delivered to the site.
5. Influent-Effluent water sampling as required per the Dewater and Remediation General Permit (DRGP).

D. Monitoring to be provided for the following per the Soil and Groundwater Management Plan:
1. Monitor dust and record readings.
2. Photo Ionization Detector (PID) screening during loading of excess material for off-site disposal per facility requirements.

E. Laboratory: Authorized to operate at Project location or with in State of Massachusetts.

F. Reports shall be submitted by independent firm to Owner, Engineer, Contractor, and authorities having jurisdiction, indicating observations and results of tests and compliance or noncompliance with Contract Documents.

G. Cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.

1. Notify Engineer and independent firm 48 hours before expected time for operations requiring services.
2. Make arrangements with independent firm and pay for additional Samples and tests required for Contractor's use.

H. Employment of testing agency or laboratory shall not relieve Contractor of obligation to perform Work according to requirements of Contract Documents.

I. Retesting or re-inspection required because of nonconformance with specified or indicated requirements shall be performed by same independent firm. Payment for retesting or re-inspection will be charged to Contractor by deducting testing charges from Contract Sum/Price.

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J. Agency Responsibilities:

1. Test Samples of mixes submitted by Contractor.
2. Provide qualified personnel at Site. Cooperate with Engineer and Contractor in performance of services.
3. Perform indicated sampling and testing of products according to specified standards.
4. Ascertain compliance of materials and mixes with requirements of Contract Documents.
5. Promptly notify Engineer and Contractor of observed irregularities or nonconformance of Work or products.
6. Perform additional tests required by Owner.
7. Attend preconstruction meetings and progress meetings.

K. Agency Reports: After each test, promptly submit copies of report to Owner, Engineer, Contractor, and authorities having jurisdiction. When requested by Owner or Engineer, provide interpretation of test results.

L. Limits on Testing Authority:

1. Agency or laboratory may not release, revoke, alter, or enlarge on requirements of Contract Documents.
2. Agency or laboratory may not approve or accept any portion of the Work.
3. Agency or laboratory may not assume duties of Contractor.
4. Agency or laboratory has no authority to stop the Work.

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1.8 INFRASTRUCTURE INSTALLATION INFORMATION

A. Provide critical elevations and areas for the outlet control structure, bioretention and constructed wetland within five days of installation.
1. Elevations to be provided by a registered surveyor.
2. Fill out as-built forms as provided with this specification.
3. Minimum information to be provided includes:
   a. Invert Elevations (Pipes entering and leaving devices)
   b. Weir Elevations.
   c. RIM elevations.
   d. Reverse flow pipe inverts.
   e. Surface area for bioretention and constructed wetland.
   f. Edges elevations of berm or curb for bioretention and constructed wetland.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 015000 - TEMPORARY FACILITIES AND CONTROLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Temporary sanitary facilities

B. Vehicular Access

C. Parking

D. Progress Cleaning and Waste Removal

E. Project Identification.

F. Barriers

G. Security

H. Dust Control

I. Erosion and Sediment control

J. Pollution Control

K. Removal of utilities, facilities, and controls

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1.2 TEMPORARY SANITARY FACILITIES

A. Provide and maintain required facilities and enclosures. Existing facility use is not permitted. Provide facilities at time of Project mobilization.

1.3 VEHICULAR ACCESS

A. Construct temporary construction access as indicated in the Drawings with proper load-bearing capacity to accommodate traffic for construction purposes, that meets erosion and sediment control requirements.

B. Extend and relocate vehicular access as Work progress requires.

1.4 PARKING

A. Available on-site parking area space is limited. The contractor is responsible for locating additional parking off the property and is responsible for all associated costs and transportation.

B. Do not park vehicles on Woodbury Lane.

C. Follow all rules and regulations for public parking facilities.

1.5 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain Site in clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, before enclosing spaces.

C. Broom and vacuum clean interior areas before starting surface finishing and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from Site **weekly** and dispose of off-Site.

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1.6 PROJECT IDENTIFICATION

A. Project Informational Sign:

1. Minimum of three printed signs of construction project and design.
2. Content:

   a. Project number, title, logo, and name of Owner.
   b. Names and titles of authorities.
   c. Graphic of site (provided by Owner).
   d. Names and titles of Engineer and Consultants.
   e. Name of Prime Contractor.
   f. All required permitting information.

3. Graphic Design, Colors, and Style of Lettering: Approved by Owner.

4. Minimum size 36” x 36” unless otherwise approved by the Owner.

5. Printed on stiff material to withstand all weather conditions. Mounted on two 4” x 4” posts.

6. Install signs within 15 days of notice to proceed.

7. Removal: Remove signs, framing, supports, and foundations at completion of Project and restore area.

1.7 BARRIERS

A. Provide barriers/fencing sufficient to prevent public from entering the site to prevent unauthorized entry to construction areas and to protect existing facilities and adjacent properties from damage from construction operations.

B. Remove barriers during Summer Shutdown.

C. Tree and Plant Protection: Preserve and protect existing trees and plants designated to remain.

1. Protect areas within drip lines from traffic, parking, storage, dumping, chemically injurious materials and liquids, ponding, and continuous running water.
2. Provide 4 foot high barriers around drip line, with access for maintenance.
3. Replace trees and plants damaged by construction operations.

1.8 SECURITY

A. Upon mobilization, protect the construction site and all Work from theft, vandalism, and unauthorized entry.

B. Maintain proper security throughout construction period until Owner's acceptance precludes need for Contractor's security.

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1.9 DUST CONTROL

A. Execute Work by methods that minimize raising dust from construction operations.

B. Provide positive means to prevent airborne dust from dispersing into atmosphere and into adjacent properties.

1.10 EROSION AND SEDIMENT CONTROL

A. Plan and execute construction by methods to control surface drainage from cuts and fills from borrow and waste disposal areas. Prevent erosion and sedimentation.

B. Provide temporary measures including berms, dikes, drains, and other devices to prevent water flow.

C. Comply with sediment and erosion control plan indicated on Drawings.

1.11 POLLUTION CONTROL

A. Provide methods, means, and facilities to prevent contamination of soil, water, and atmosphere from discharge of noxious, toxic substances and pollutants produced by construction operations.

1.12 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, and materials before Substantial Completion inspection.

B. Clean and repair damage caused by installation or use of temporary Work.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 015000

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SECTION 01 50 50- MOBILIZATION AND TEMPORARY SHUTDOWN

PART 1 - GENERAL

1.1 DESCRIPTION

A. Work Includes: The transportation and storage of all equipment and materials necessary to complete the Work for the duration of the project, including mobilization, demobilization and remobilization during each Phase of work.

B. RELATED WORK
1. Documents affecting work of this Section are included in the Technical Specifications.

PART 2 MATERIALS (Not Applicable)

PART 3 EXECUTION

3.1 STORAGE AREA

A. It shall be the Contractor's responsibility to maintain the storage areas for tools, materials, and equipment necessary to perform the work as shown on the Drawings.
1. The Contractor shall not change the location of the storage areas without the Owner's agreement.
2. The storage areas shall not obstruct or interfere with pedestrian or vehicular movement and shall not occupy any space within the public right-of-way, except with specific permission from the Owner.
3. The storage areas shall be kept neat at all times.
4. Contractor shall not use storage areas for any storage of hazardous materials (e.g., gasoline, diesel, solvents, motor oils, and any materials that may cause unsafe conditions to personnel and environment.)
5. The Contractor shall be prohibited from fueling or refueling any of the equipment on the project site because of potential of groundwater contamination.
6. If storage is required beyond the designated space within the Limit of Work it is the Contractor′s responsibility to provide additional off-site storage including all fees and transportation and costs associated with storage.

3.2 PHASE MOBILIZATION

A. The Contractor is responsible for complete demobilization before the end of Phase 1, and remobilization at the beginning of Phase 2. Do not leave any material or equipment on the site during the Summer Shutdown period.

3.3 SUMMER SHUTDOWN

A. Coordinate with property Owner prior to Phase 1 demobilization to provide public access to the park to the maximum extent practicable. This may include but not limited to the following:
1. Restoration of areas beyond Phase 1 areas disturbed during Phase 1 construction.

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2. Provide temporary paths.
3. Temporary accessible boardwalk ramps for public access, as necessary.
4. Temporary stabilization, loaming and temporary seeding, as necessary.
5. Temporary signage.
6. Adjustments or additions to temporary construction fence
7. Monitoring / maintenance of all erosion and sediment controls.

3.4 EQUIPMENT

A. Transport all equipment to the site, assemble the equipment as needed to proceed with the work and maintain the equipment as needed during the work.

END OF SECTION

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SECTION 016000 - PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Products.

B. Product delivery requirements.

C. Product storage and handling requirements.

D. Product options.

1.2 PRODUCTS

A. At minimum, comply with specified requirements and reference standards.

B. Specified products define standard of quality, type, function, dimension, appearance, and performance required.

C. Furnish products of qualified manufacturers that are suitable for intended use. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.

D. Do not use materials and equipment removed from existing premises except as specifically permitted by Contract Documents.

E. Furnish interchangeable components from same manufacturer for components being replaced.

1.3 PRODUCT DELIVERY REQUIREMENTS

A. Transport and handle products according to manufacturer's instructions.

B. Promptly inspect shipments to ensure products comply with requirements, quantities are correct, and products are undamaged.

C. Provide equipment and personnel to handle products; use methods to prevent soiling, disfigurement, or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

A. Store and protect products according to manufacturer's instructions.

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B. Store products with seals and labels intact and legible.

C. Store sensitive products in weathertight, climate-controlled enclosures in an environment suitable to product.

D. For exterior storage of fabricated products, place products on sloped supports aboveground.

E. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.

F. Store loose granular materials on solid flat surfaces in well-drained area. Prevent mixing with foreign matter.

G. Provide equipment and personnel to store products; use methods to prevent soiling, disfigurement, or damage.

1.5 PRODUCT OPTIONS

A. Products Specified by Reference Standards or by Description Only: Products complying with specified reference standards or description.

B. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit Request for Substitution for any manufacturer not named, according to Section 012500 - Substitution Procedures.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 016000

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SECTION 017000 - EXECUTION AND CLOSEOUT REQUIREMENTS

PART 1 - GENERAL

1.1 SECTION INCLUDES

A. Protecting installed construction.

B. Demonstration and instruction.

C. Closeout procedures.

D. Permits

E. Project record documents.

F. Manual for materials and irrigation well.

G. Spare parts and maintenance products.

H. Product warranties and product bonds.

I. Final cleaning.

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1.2 PROTECTING INSTALLED CONSTRUCTION

A. Protect installed Work and provide temporary and removable protection for completed work. Control activity in immediate Work area to prevent damage.

B. Prohibit traffic or storage on planted or seeded areas. When traffic or activity is necessary, protect the landscape from damage and provide the necessary repairs.

C. Prohibit traffic from landscaped areas.

1.3 DEMONSTRATION AND INSTRUCTION

A. Demonstrate operation and maintenance of irrigation well to Owner's personnel two weeks prior to date of Substantial Completion.

B. Use operation and maintenance manuals as basis for instruction. Review contents of manual with Owner's personnel in detail to explain all aspects of operation and maintenance.

C. Demonstrate startup, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown of each item of equipment at agreed time at equipment location.

1.4 CLOSEOUT PROCEDURES

A. Prerequisites to Substantial Completion: Complete following items before requesting Certification of Substantial Completion, either for entire Work or for portions of Work:

1. Submit maintenance manuals, Project record documents, and other similar final record data in compliance with this Section.
2. Conduct inspection to establish basis for request that Work is substantially complete. Create comprehensive list (initial punch list) indicating items to be completed or corrected, value of incomplete or nonconforming Work, reason for being incomplete, and date of anticipated completion for each item. Include copy of list with request for Certificate of Substantial Completion.
3. Obtain and submit releases enabling Owner's full, unrestricted use of Project and access to services and utilities. Include certificate of conformance and similar releases from authorities having jurisdiction and utility companies.
4. Deliver tools, spare parts, extra stocks of material, and similar physical items to Owner.
5. Perform final cleaning according to this Section.

B. Substantial Completion Inspection:

1. When Contractor considers Work to be substantially complete, submit to Engineer:

   a. Written certificate that Work, or designated portion, is substantially complete.
   b. List of items to be completed or corrected (initial punch list).

2. Within seven days after receipt of request for Substantial Completion, Engineer will make inspection to determine whether Work or designated portion is substantially complete.

3. Should Engineer determine that Work is not substantially complete:

   a. Engineer will promptly notify Contractor in writing, stating reasons for its opinion.
   b. Contractor shall remedy deficiencies in Work and send second written request for Substantial Completion to Engineer.
   c. Engineer will reinspect Work.

4. When Engineer finds that Work is substantially complete, Engineer will:

   a. Prepare Certificate of Substantial Completion , accompanied by Contractor's list of items to be completed or corrected as verified and amended by Architect/Engineer and Owner (final punch list).
   b. Submit Certificate to Owner and Contractor for their written acceptance of responsibilities assigned to them in Certificate.

5. After Work is substantially complete, Contractor shall:

   a. Allow Owner occupancy of Project under provisions stated in Certificate of Substantial Completion.
   b. Complete Work listed for completion or correction within time period stipulated.

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C. Prerequisites for Final Completion: Complete following items before requesting final acceptance and final payment.

1. When Contractor considers Work to be complete, submit written certification that:

a. Contract Documents have been reviewed.
b. Work has been examined for compliance with Contract Documents.
c. Work has been completed according to Contract Documents.
d. Work is completed and ready for final inspection.
e.

2. Submittals: Submit following:

a. Final punch list indicating all items have been completed or corrected.
b. Final payment request with final releases and supporting documentation not previously submitted and accepted, except remaining maintenance items. Include certificates of insurance for products and completed operations where required.
c. Specified warranties, workmanship/maintenance bonds, maintenance agreements, and other similar documents.
d. Accounting statement for final changes to Contract Sum.
e. Contractor's affidavit of payment of debts and claims on AIA G706 - Contractor's Affidavit of Payment of Debts and Claims or Engineer approved equivalent.
f. Contractor affidavit of release of liens on AIA G706A - Contractor's Affidavit of Release of Liens or Engineer approve equivalent.
g. Consent of surety to final payment on AIA G707 - Consent of Surety to Final Payment Form or Engineer approved equivalent.

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1.5 PERMITS

A. Provide and file all documentation for the closeout all permits obtained by the Contractor during for construction.

1.6 PROJECT RECORD DOCUMENTS

A. Maintain one set of the following record documents; record actual revisions to the Work:

1. Drawings.
2. Specifications.
3. Addenda.
4. Change Orders and other modifications to the Contract.
5. Reviewed Shop Drawings, product data, and Samples.
6. Manufacturer's instruction for assembly, installation, and adjusting.

B. Ensure entries are complete and accurate, enabling future reference by Owner.

C. Record Drawings: Legibly mark each item to record actual construction as follows:

1. Include Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
2. Include locations of concealed elements of the Work.
3. Identify depth of buried utility lines and provide dimensions showing distances from permanent facility components that are parallel to utilities.
4. Dimension ends, corners, and junctions of buried utilities to permanent facility components using triangulation.
5. Identify and locate existing buried or concealed items encountered during Project.
6. Measured horizontal and vertical locations of underground utilities and appurtenances, referenced to permanent surface improvements.
7. Field changes of dimension and detail.
8. Details not on original Drawings.

D. Submit PDF electronic files of marked-up documents to Engineer before Substantial Completion.

E. As-Built Survey (PDF and CAD): Provide As-built survey stamped by a surveyor registered in the State of Massachusetts. Plans to include as a minimum:
1. Major spot grades
2. Walkway spot elevations and all changes in slope for ADA
3. Boardwalk location and elevations
4. Drainage structures and elevations
   a. Rims
   b. Weirs
   c. Inverts
5. Bioretention surface and inlet elevations
6. 1’ Contours
7. High and Low Points for upland and wetland areas
8. Overflow spillway and weir Elevations
9. Outlet Stricture Elevations
10. Underground infrastructure
11. Surface materials
12. Parking lot slopes
13. Water Elevations

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1.7 MANUAL FOR MATERIALS AND IRRIGATION WELL

A. Provide operation manuals and care instruction Instructions for all materials, site furnishings and irrigation well.

1.8 SPARE PARTS AND MAINTENANCE PRODUCTS

A. Provide spare parts, maintenance, and extra products to the Owner.

1.9 PRODUCT WARRANTIES AND PRODUCT BONDS

A. Obtain warranties and bonds executed by responsible Subcontractors, suppliers, and manufacturers within ten days after completion of applicable item of Work.

B. Execute and assemble transferable warranty documents and bonds from Subcontractors, suppliers, and manufacturers.

C. Time of Submittals:

1. For equipment or component parts of equipment put into service during construction with Owner's permission, submit documents within ten days after acceptance.

1.10 FINAL CLEANING

A. Execute final site cleaning per the specifications prior to final project closeout including but not ,limited to the following:
1. Remove all construction debris, materials, equipment, fencing, signage, , sediment accumulation, and erosion controls from the site.
2. Sweep all walks, boardwalks and parking areas.
3. Sweep all roads and remove any sediment or debris from the public right of ways.
4. Clean all drainage structures and pipes and remove any accumulated sediment and debris
5. Remove all sediment and debris from sediment forebays, bioretention areas, constructed wetland and wetlands.
6. Repair any damage caused during final cleaning.

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PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION 017000

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SECTION 02 41 13 - SELECTIVE SITE DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes: Labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
   a. Demolition of designated existing conditions as indicated on the Drawings.
   b. Protection of site work and adjacent structures.
   c. Removal and legal disposal of materials.

B. Related Sections:
   1. Section 31 10 00 – Site Clearing
   2. Section 31 20 00 – Earthwork
   3. Section 31 25 00 – Erosion and Sedimentation Control

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1.2 DEFINITIONS

A. Demolish: Completely remove and legally dispose of off-site at a location and route approved by Owner.

B. Construction Waste: Site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.

C. Demolition Waste: Site improvement materials resulting from demolition or selective demolition operations.

D. Disposal: Removal off-site of demolition and construction waste and/or deposit in landfill or incinerator acceptable to authorities having jurisdiction.

1.3 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures: Requirements for submittals

B. Schedule: Submit for approval selective demolition schedule, including schedule and methods for capping utilities to be abandoned and maintaining existing utility service.

1.4 COORDINATION

A. Arrange demolition schedule so as not to interfere with operations of adjacent occupied public streets.

B. Coordinate demolition activities with Town, Owner, and all jurisdictional agencies prior to start of work

C. Immediate areas of work will not be occupied during selective demolition.

D. No responsibility for the boardwalk structures to be demolished will be assumed by the Owner.

1.5 CLOSEOUT SUBMITTALS

A. Furnish disposal receipts on construction waste removed from site. Comply with the Soil and Groundwater Management Plan and all federal and State requirements.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with the Soil and Groundwater Management Plan and all applicable federal, state and local permit requirements.

PART 2 - PRODUCTS (NOT APPLICABLE)

PART 3 - EXECUTION

3.1 EXAMINATION

A. Confirm all existing conditions in the area of work, regardless of whether or not they are indicated on the construction Drawings or other record drawings.

B. Should unknown or incorrectly located existing utilities be identified, contact the Engineer and Owner immediately for instructions. Provide a scale drawing with the location and any additional information discovered regarding the unknown utility.

C. If necessary, verify that utilities have been disconnected and capped before starting demolition operations.

D. Clearly mark items with the area that are to be protected in place.

3.2 PROTECTION

A. Site Access and Temporary Controls: Conduct debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

B. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from the Town and authorities having jurisdiction.

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C. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

D. Existing Facilities to Remain:
   1. Adjacent Sidewalks

E. Clearly mark and place appropriate barricade around all trees and vegetation to be protected in place. Protection for trees to prevent disturbance to the tree or surrounding soils for the full canopy area unless other wise marked.

F. Maintain all temporary barriers to discourage site access. Remove temporary barriers and protections upon completion of construction.

3.3 SELECTIVE DEMOLITION

A. Partially remove paving, curbs, and other site elements as indicated on Drawings. Neatly saw cut edges at right angle to surface.

B. Clear the site of existing improvements, vegetation, and surface treatments, in phases as indicated in the Drawings and specifications, as required to permit construction of phased proposed improvements.

C. Do not damage items indicated to remain.

D. Continuously clean-up and remove trash, construction debris and waste materials from site. Do not allow materials to accumulate on site.

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3.4 REPAIRS

A. Promptly repair damage to adjacent parking areas, roads, walkways or other facilities caused by demolition operations to match condition and appearance of adjacent undamaged work.

3.5 DISPOSAL OF DEMOLISHED MATERIALS

A. All removed asphalt, concrete, plant material debris and any miscellaneous materials will become the property of the Contractor, unless specifically directed otherwise by the Owner, and properly disposed of offsite at an approved location at no additional cost to the Owner. This includes excess excavation spoils (earth and aggregate base) not needed as fill, unless otherwise directed by the Owner.

B. Disposal includes all permits and transportation of hauling costs.

C. Remove and Dispose of the items to the full depth as listed or indicated on the Drawings

D. Remove demolition waste materials from Project site.

1. Do not allow demolished materials to accumulate on-site.
2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.

E. Do not burn demolished materials.

3.6 CLEANING

A. Clean adjacent roads and sidewalks and improvements of dust, dirt, and debris caused by demolition operations. Return adjacent areas to the condition existing before demolition operations began.

B. Keep the project site in a neat and orderly condition, in conformance with these specifications.

END OF SECTION

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SECTION 03 30 00 - CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SUMMARY

A. Section includes cast-in-place concrete including formwork, reinforcement, and finishes for the following:
   1. Concrete Footing for Vertical Curbs
   2. Boardwalk transition
   3. Concrete cutoff wall
   4. Bollard base

B. Related Sections:
   1. Section 32 13 13 – Concrete Paving

1.2 REFERENCES

A. American Concrete Institute:
   1. ACI 301 - Specifications for Structural Concrete.
   2. ACI 305 - Hot Weather Concreting.
   3. ACI 306.1 - Standard Specification for Cold Weather Concreting.
   4. ACI 308.1 - Standard Specification for Curing Concrete.
   5. ACI 318 - Building Code Requirements for Structural Concrete.

B. ASTM International:
   1. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
   2. ASTM C33 - Standard Specification for Concrete Aggregates.
   3. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
   4. ASTM C42/C42M - Standard Test Method for Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
   5. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
   6. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.
   7. ASTM C150 - Standard Specification for Portland Cement.
   8. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
   9. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
   10. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
   11. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
   12. ASTM C330 - Standard Specification for Lightweight Aggregates for Structural Concrete.
   13. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
   14. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
   15. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.

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16. ASTM C685/C685M - Standard Specification for Concrete Made By Volumetric Batching and Continuous Mixing.
17. ASTM C845 - Standard Specification for Expansive Hydraulic Cement.
18. ASTM C989 - Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
19. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
20. ASTM C1064/C1064M - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
21. ASTM C1107/C1107M - Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink).
22. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
23. ASTM C1157 - Standard Performance Specification for Hydraulic Cement.
24. ASTM C1218/C1218M - Standard Test Method for Water-Soluble Chloride in Mortar and Concrete.
25. ASTM C1240 - Standard Specification for Silica Fume Used in Cementitious Mixtures.
26. ASTM D994 - Standard Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
27. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
28. ASTM D1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
29. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
30. ASTM E96/E96M - Standard Test Methods for Water Vapor Transmission of Materials.
31. ASTM E119 - Standard Test Methods for Fire Tests of Building Construction and Materials.
32. ASTM E1643 - Standard Practice for Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill under Concrete Slabs.
33. ASTM E1745 - Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
34. ASTM A82/A82M - Standard Specification for Steel Wire, Plain, for Concrete Reinforcement.
35. A185/A185M-07 Standard Specification for Steel Welded Wire Reinforcement, Plain, for Concrete.
36. ASTM A497/A497M - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.

C. Concrete Reinforcing Steel Institute:
   1. CRSI - Manual of Standard Practice.
   2. CRSI - Placing Reinforcing Bars.

1.3 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of the following: blended hydraulic cement, fly ash and other pozzolans, ground granulated blast-furnace slag, and silica fume; subject to compliance with requirements.

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1.4 SUBMITTALS

A. See Section 01 33 00 - Submittal Procedures

B. Product Data: Submit data on joint devices, attachment accessories and admixtures.

C. Design Data:
1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:
   a. Hot and cold weather concrete work.
   b. Air entrained concrete work.
2. Identify mix ingredients and proportions, including admixtures.
3. Identify chloride content of admixtures and whether or not chloride was added during manufacture.

D. Source of mix.
1. Submit concrete source, method and time frame for transportation.

E. Shop Drawings: Indicate bar sizes, spacings, locations, and quantities of welded wire fabric, bending and cutting schedules, and supporting and spacing devices.

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1.5 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements

B. Project Record Documents: Accurately record actual locations of embedded utilities and components concealed from view in finished construction.

C. Provide concrete test results to the Owner.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with the following ACI Publications unless modified by requirements in the Contract Documents:
1. ACI 301, "Specification for Structural Concrete."
2. ACI 117, "Specifications for Tolerances for Concrete Construction and Materials."

B. Concrete Testing Service: Engage a qualified independent testing agency to perform material evaluation tests. Provide test results to the Owner

C. Testing Agency Qualifications: 5 years experience in concrete testing.

D. Conform to ACI 305 when concreting during hot weather.

E. Conform to ACI 306.1 when concreting during cold weather.

F. Acquire cement and aggregate from one source for Work and order and secure in advance a sufficient quantity of cement(s) to complete concrete as indicated on Drawings.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements

B. Maintain concrete temperature after installation at minimum 50 degrees F (10 degrees C) for minimum 7 days.

1.8 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Coordinate placement of joint devices with erection of concrete formwork and placement of form accessories.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Steel Reinforcement: Deliver, store, and handle material to prevent damage.

B. Handle and store materials separately in such manner as to prevent intrusion of foreign matter, segregation, or deterioration.

C. Do not use foreign materials or those containing ice.

D. Remove improper and rejected materials immediately from point of use.

E. Cover materials, including steel reinforcement and accessories, during construction period. Stockpile concrete constituents properly to assure uniformity throughout project.

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PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

A. Cement: American-made Portland Cement, free from water soluble salts or alkalis which cause efflorescence on exposed surfaces.
   1. Portland Cement: Type II, ASTM C150. Use only one brand of cement for each type of cement throughout project.
   2. No visual variations in color will result in exposed concrete.

B. Normal Weight Fine Aggregate: Washed, inert, natural sand conforming to ASTM C33 and following additional requirements:

Sieve	Retained Percent
#4	0 - 5
#16	25 - 40
#50	70 - 87
#100	93 - 97

Fineness Modulus: 2.80 (Plus/Minus 0.20)

Organic:	Plate 2 maximum
Silt:	2.0 percent maximum
Mortar Strength:	100 percent minimum compression ratio
Soundness:	5 percent maximum loss, magnesium sulfate, five cycles

C. Normal Weight Coarse Aggregate: Well graded crushed stone or washed gravel conforming to ASTM C33 and the following additional requirements:

Designated Size (inches)	3	2	1-1/2	1	3/4	1/2	3/8
F.M. (+/-0.20)	7.95	7.45	7.20	6.95	6.70	6.10	4.50

Organic:	Plate 1 maximum
Silt:	1.0 percent maximum
Soundness:	5 percent maximum loss, magnesium sulfate, five cycles

Maximum designated sizes for normal weight coarse aggregate to be used in concrete sections as noted below, except that sizes be chosen in conjunction with required clearances.

1. One and one-half inches for sections over ten inches in thickness.
2. One inch for sections more than eight and up to ten inches in thickness.
3. Three-quarter inch for sections more than three and up to eight inches in thickness.

D. Water-Cement Ratio: Have a maximum water cement ratio of 0.45 conforming to ACI 316R.

E. Air content by volume: 6 percent +/- 1 percent,

F. Slump: Not less than 3 inches or greater than 4 inches in accordance with ASTM C143 or other method as approved by the Engineer.

G. Water: ACI 318; potable, clean and free from oils, acids, alkali, organic matter and other deleterious material, without deleterious amounts of chloride ions.

2.2 ADMIXTURES

A. Manufacturers
   1. Water-reducing agent: same manufacturer as air-entraining agent.
      a. "WRDA" - W.R. Grace & Co.
      b. "PDA25" - Protex Industries, Inc.
      c. "Pozzolith 344H" - Master Builder's Co.
   2. Air-entraining agent:
      a. "DAREX AEA" - W.R. Grace & Co.
      b. "PROTEX AEA" - Protex Industries
      c. "MB-VR" or "MB-AE" - Master Builder's Co.

B. Air Entrainment: ASTM C260.

C. Chemical: ASTM C494/C494M.

D. Fly Ash: ASTM C618 Class C.

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E. Silica Fume: ASTM C1240.

F. Slag: ASTM C989; Grade 100 or 120; ground granulated blast furnace slag.

G. Superplasticizer: High-range water-reducer conforming to ASTM C494, Type F or Type G.

2.3 ACCESSORIES

A. Non shrinkage grout: ASTM C1107/C1107M; premixed compound consisting of non-metallic aggregate, cement, water reducing and plasticizing agents; capable of developing minimum compressive strength of not be less than 5000 psi at 7 days and 7500 psi at 28 days.
   1. Manufacturers:
      a. "Embeco Pre-mixed Grout" by Master Builder's.
      b. "Vibro-Foil Ready-Mixed" by W.R. Grace & Co.
      c. "Ferrolith G" by Sonneborn Building Products, Inc.

2.4 CONCRETE MIX

A. In accordance with "Method 1" of ACI 301, and the requirements of this Section. All concrete is normal weight unless specifically designated otherwise; air-dry weight not to exceed 150 lbs. per cubic foot.

B. Limiting values shown below apply for specific strengths of concrete with coarse aggregates less than one and one-half inches unless noted otherwise in TABLE A below.

TABLE A

Minimum Allowable Compressive Strength at 28 day (psi)	Max. Allowable Net Water Content Gallons/Sack*	Minimum Permissible Cement Factor Sacks/Cubic Yard**
4,000	5.75	6.00
3,000	6.50	5.00

* Maximum; decrease if possible. This represents total water in mix at time of mixing, including free water on aggregate.
** Minimum; increase as necessary to meet other requirements.

C. Admixtures: Include admixture types and quantities indicated in concrete mix designs only when approved by Architect/Engineer.
   1. Water-Reducing Admixture – Use the approved water-reducing admixture in all concrete, in accordance with manufacturer's written instructions.
   2. Do not use admixtures retarding setting of cement in concrete without written approval of Engineer.
   3. Do not use admixtures causing accelerated setting of cement in concrete without written approval of Engineer.
   4. Use accelerating admixtures in cold weather. Use of admixtures will not relax cold weather placement requirements.
   5. Use calcium chloride only when approved by the engineer.
   6. Use set retarding admixtures during hot weather.

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7. Add air entrainment admixture to concrete mix for work exposed to freezing and thawing or deicing chemicals.

D. Average Compressive Strength Reduction: Not permitted

E. Ready Mixed Concrete: Mix and deliver concrete in accordance with STM C94/C94M.

F. Site Mixed Concrete: Mix concrete in accordance with ACI 318.

2.5 FORMS

A. Cylindrical Forms: Sonotube Fibre Forms, wax-impregnated strippable. ABS or PVC plastic reusable forms, or approved equivalent.
   1. Manufacturer:
      a. Sonoco Products Company, General Products Division.

B. Forms for Exposed Finish: Plywood, metal, metal-framed plywood faced, or other acceptable panel materials.
   1. Plywood: APA Ref. 1 B-B (Concrete Form), Class I Exterior Grade plywood or B-B or A-C Class I high density overlay concrete form plywood. Form work to provide a smooth, continuous, straight and level surfaces.

C. Forms for Unexposed Finish: Plywood, lumber or metal, with lumber dressed on at least two edges and one side.

D. Form Ties: Prefabricated, adjustable length galvanized steel snap-off ties, with brackets, cones, cornerlocks and other accessories as necessary.

E. Form Release Agent: Commercial formulation compounds that do not bond with, stain or adversely affect concrete.

2.6 REINFORCEMENT

A. Welded Wire Fabric
   1. All Welded Wire Fabric (WWF) shall be mesh fabrication, which meets the requirements of ASTM A 185; and shall be supplied in flat sheets.
   2. Supports
      a. Provide supports for reinforcements including bolsters, chairs and spacers.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Verify all work prepared by others to receive work of this Section and report any defects affecting to the Engineer prior to installation. Commencement of concrete work indicates acceptance of all preparatory work by the others.

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C. Verify requirements for concrete cover over reinforcement.

D. Verify anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not interfere with placing concrete.

3.2 PREPARATION

A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent. Remove laitance, coatings, and unsound materials.

B. In locations where new concrete is doweled to existing work, drill holes in existing concrete, insert steel dowels and pack solid with non-shrink grout.

C. Remove debris and ice from formwork, reinforcement, and concrete substrates.

D. Remove water from areas receiving concrete before concrete is placed.

3.3 FORMING

A. Install forms to the dimensions shown in the Drawings. Forms to be free from surface debris.

3.4 MIXING AND DELIVERY

A. Ready mix and provide concrete from the plant approved by the Engineer.

B. Do not use hand or site mixing unless approved by the Engineer.

C. Batch mix at the central plant constituents, including admixtures except certain corrosion inhibitors and superplasticizers. Premix admixtures solution form and dispensed as recommended by manufacturer.

D. Central plant and rolling stock equipment and methods to conform with Truck Mixer and Agitator Standard of Truck Mixer Manufacturer's Bureau of National Ready-Mixed Concrete Association, and Contract Documents.

E. Transport ready mixed concrete to the site in watertight agitator or mixer trucks loaded not in excess of rated capacities.

F. Discharge concrete at site within one and one-half hours after cement was first introduced into mix. Legally dispose of site concrete not discharged within one and one-half hours.

G. Central mixed concrete to be mixed at the plant for a minimum of five minutes. Begin agitation immediately after premixed concrete is placed in truck and continue without interruption until discharged.

H. Mix transit mixed concrete at mixing speed for at least ten minutes immediately after charging truck followed by agitation without interruption until discharged. Provide concrete from a single plant unless approved by the Engineer in writing.

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I. Retempering of concrete which has partially hardened, that is, mixing with or without additional cement, aggregates, or water, is not be permitted.

3.5 PLACING CONCRETE

A. Concrete not to be pumped without the approval of the Engineer.

B. Do not place concrete with a temperature greater than 85 degrees F.

C. Place concrete in accordance with ACI 301, ACI 318.

D. Notify testing laboratory and Engineer minimum 24 hours prior to commencement of operations.

E. Ensure reinforcement, inserts, embedded parts, formed expansion and contraction joints, and adjacent project elements are not disturbed during concrete placement.

F. Remove water and foreign matter from forms and excavations and, except in freezing weather or as otherwise directed, thoroughly wet wood forms just prior to placing concrete.

G. Do not place concrete on frozen soil and provide adequate protection against frost action during freezing weather.

H. Transport concrete from mixer to place of final deposit as rapidly as practical by methods which prevent separation of ingredients and displacement of reinforcement, and which avoid re-handling. Do not deposit partially hardened concrete.

I. When concrete is conveyed by chutes, use equipment of such size and U-shaped design as to insure continuous flow in chute.
   1. Do not use flat (coal) chutes. Use metal or metal lined chutes and with a continuous slope. Slope not to be less than 25 degrees nor more than 45 degrees from horizontal and to prevent segregation of ingredients.
   2. Provide at the discharge end of the chute with a baffle plate or spout to prevent segregation. If the discharge end of the chute is more than five feet above surface of concrete in forms, use a spout to lower and maintain as near surface of deposit as practicable.
   3. When operation is intermittent, discharge chute into hopper.
   4. Thoroughly clean the chute before and after each run and discharge any debris and water used outside the forms.
   5. Do not allow concrete to flow horizontally over distances exceeding five feet.

J. Place concrete to prevent segregation, and accumulations of hardened concrete on forms or reinforcement above mass of concrete being placed. Use suitable hoppers, spouts with restricted outlets and tremies as required.

K. During and immediately after depositing, compact concrete by means of internal type mechanical vibrators or other tools, or by spading to produce required quality of finish. Vibration to be performed by experienced operators under close supervision and be carried on only enough to produce homogeneity and optimum consolidation without permitting segregation of constituents or "pumping" of air. Operate vibrators at speeds at not less than 7,000 vpm . Do not use vibrators to move concrete. Supplement vibration by proper wooden spade puddling to remove

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bubbles and honeycomb adjacent to visible surfaces. Provide at least one vibrator for every 10 cubic yards of concrete placed per hour, plus one spare. All vibrators to be operable and on site prior to starting placement.

L. Deposit concrete continuously, and in layers of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause formation of seams and planes of weakness within section.

M. If section cannot be placed continuously between planned construction joints, as specified, use field joint and additional reinforcement to preserve structural continuity. Immediately notify the Engineer in any such case.

N. When concrete is placed at or below ambient air temperatures of 40 degrees F or whenever in opinion of Engineer, lower temperatures are likely to occur within 48 hours after placement of concrete, follow cold weather concreting procedures in accordance with ACI 306 and as specified herein. Protect the entire area affected by adequate housing or covering, and heating. Do not use salt, chemicals or other foreign materials in the mix to lower freezing point of concrete.

O. Clean chutes, hoppers, spouts, adjacent work, etc. before and after each run and discharge water and debris outside form

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3.6 CURING AND PROTECTION

A. Protect concrete work against injury from heat, cold, and defacement of any nature during construction operations. Install curing blankets over all concrete structures during curing period.

B. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
   1. Protect concrete footings from freezing for minimum 7 days.

C. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

D. Cure concrete in accordance with ACI 308.1.

3.7 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements, 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Perform field inspection and testing in accordance with ACI 318.

C. Provide free access to Work and cooperate with appointed firm.

D. Submit proposed mix design of each class of concrete to inspection and testing firm for review prior to commencement of Work.

E. Concrete Inspections:
   1. Continuous Placement Inspection: Inspect for proper installation procedures.

2. Periodic Curing Inspection: Inspect for specified curing temperature and procedures.

F. Strength Test Samples:
1. Sampling Procedures: ASTM C172.
2. Cylinder Molding and Curing Procedures: ASTM C31/C31M, cylinder specimens, field cured.
3. Sample concrete and make one set of three cylinders for every 75 cu yds or less of each class of concrete placed each day and for every 5,000 sf (465 sq m) of surface area for slabs and walls.
4. When volume of concrete for any class of concrete would provide less than 5 sets of cylinders, take samples from five randomly selected batches, or from every batch when less than 5 batches are used.
5. Make one additional cylinder during cold weather concreting, and field cure.

G. Field Testing:
1. Slump Test Method: ASTM C143/C143M.
2. Air Content Test Method: ASTM C173/C173M.
3. Temperature Test Method: ASTM C1064/C1064M.
4. Measure slump and temperature for each compressive strength concrete sample.
5. Measure air content in air entrained concrete for each compressive strength concrete sample.

H. Cylinder Compressive Strength Testing:
1. Test Method: ASTM C39/C39M.
2. Test Acceptance: In accordance with ACI 318.
3. Test one cylinder at 7 days.
4. Test two cylinders at 28 days.
5. Dispose remaining cylinders when testing is not required.

I. Core Compressive Strength Testing:
1. Sampling and Testing Procedures: ASTM C42/C42M.
2. Test Acceptance: In accordance with ACI 318.
3. Drill three cores for each failed strength test from concrete represented by failed strength test.

J. Maintain records of concrete placement. Record date, location, quantity, air temperature and test samples taken.

3.8 PATCHING

A. Allow Engineer to inspect concrete surfaces immediately upon removal of forms.

B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Engineer upon discovery.

C. Patch imperfections in accordance with ACI 301.

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3.9 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

B. Repair or replacement of defective concrete will be determined by Architect/Engineer.

C. Do not patch, fill, touch-up, repair, or replace exposed concrete except upon express direction of Architect/Engineer for each individual area.

END OF SECTION

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SECTION 04 40 13 - GRANITE

PART 1 GENERAL

1.1 SUMMARY

A. Section includes all materials, labor, equipment and other incidental items required to furnish and install the work of the Section, including:
   1. Natural Stone Seating

B. Related Sections:
   1. Section 31 11 23 - Aggregates

1.2 REFERENCES

A. ASTM C 97 - Standard Test Methods for Absorption and Bulk Specific Gravity of Dimension Stone.

B. ASTM C 119 - Standard Terminology Relating to Dimension Stone.

C. ASTM C 170 - Standard Test Method for Compressive Strength of Dimension Stone.

D. ASTM C 615 - Standard Specification for Granite Dimension Stone.

E. ASTM C 880 - Standard Test Method for Flexural Strength of Dimension Stone.

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1.3 DEFINITIONS

A. Split Face Finish: Surface resulting from breaking stone along a natural cleavage plane. Surface has projections and depressions; edges are not true.

B. Rock Face Finish: Similar to split face except face of stone at edge is pitched to achieve trued axis lines, thus creating bolder projections from the plane of the axis lines.

C. Sawn Finish: A rough and uneven surface resulting from splitting, pointing, and/or rough sawing the granite.

D. Thermal Finish: Finish produced by application of high temperature flame to the surface. Large surfaces may have shadow lines caused by overlapping of the torch.

E. Cushion Edge Finish: Split face with the edges rounded over and thermal texture to blend the flat top into the split sides.

F. Polished Finish: Mirror gloss, with sharp reflections.

G. Honed Finish: Dull sheen, without reflections.

H. Sandblast Finish: Surface produced by blasting with an abrasive.

1.4 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures: Requirements for Submittals

B. Product Data: Submit manufacturer's product data and installation instructions for each material and product used.

C. Source: Submit location material is being sourced.

D. Shop Drawings: Submit shop drawings indicating material characteristics, dimensions, finishes, details of construction, connections, and relationship with adjacent construction.

E. Samples:

1. Photos of stones to be provided with dimensions.
2. One 6” x 6” representative sample demonstrating stone color and pattern to both the Landscape Architect and Owner of each material specified indicating visual characteristics, color, and finish. Include range samples if variation of finish is anticipated.

1.5 QUALITY ASSURANCE

A. Supplier Qualifications: All granite shall be obtained from quarries having adequate capacity and facilities to meet the specified requirements. Fabrication shall be by a firm equipped to process the material promptly in accordance with specifications.

1.6 DELIVERY, STORAGE AND HANGLING

A. Store granite on timber or platforms at least 3 inches (76 mm) above the ground.

B. Take care to prevent staining during storage.

C. Prevent excessive mud, fluid concrete, or other deleterious materials from coming in contact with and affixing to stone materials.

D. If storage is to be for a prolonged period, place polyethylene or other suitable plastic film between any wood and finished surfaces, and use also as an overall protective covering.

E. Plug all holes during freezing weather to prevent accumulation of water.

F. Do not use salt for melting of ice formed in Lewis holes or on pieces, or for any purpose involving its contact with the granite.

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PART 2 PRODUCTS

2.1 MATERIALS

A. 100% Natural Granite Stone from North American Quarries
   1. Building Stone Standard: ASTM C 615.
   2. Finish: See details
   3. Type: Match granite used for Town of Nantucket Curb.
   4. Granite shall comply with ASTM C 615 for material characteristics, physical requirements, and sampling for selection of granite.
   5. All granite shall be of standard architectural grade, free of cracks, seams, or starts, which may impair its structural integrity or function.
   6. Dimensional Tolerances:
      a. +/-1/2 inch.

B. Attachments:

   1. Stainless Streel Setting Pin
      a. 4”
      b. Stainless steel, ASTM A 666, Type 304.

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PART 3 EXECUTION

3.1 INSTALLATION

A. Verify existing final grades and subbase prior to installation.

B. Confirm locations with Landscape Architect or Owner prior to final placement.

C. Install per drawings and a tolerance of plumb, alignment and level of plus or minus 1/8" in 20'.

3.2 PROTECTION

A. Protect installed products until completion of project.

B. Provide boxing or other suitable protection wherever required, but do not use lumber which may stain or deface the granite.

C. Protect granite work in progress at all times during construction by use of a suitable strong, impervious film or fabric securely held in place.

D. Remove and replace damaged units. Clean using methods recommended by stone supplier.

END OF SECTION

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SECTION 06 13 00 –TIMBER CONSTRUCTION

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes furnishing all materials and labor for constructing the timber boardwalk framing to the lines and grades designated on the Drawings, including foundations, fabricating, erecting, treating, and coating of the timber elements as specified in the Drawings and specifications.

B. Related Sections:

1. Section 06 15 00 – Wood Decking.
2. Section 31 20 00 – Earth Moving.
3. Section 31 60 00 – Helical Piles

1.2 REFERENCES

A. American Wood-Preservers' Association:
1. AWPA M4 - Standard for the Care of Preservative-Treated Wood Products.
2. AWPA U1 - Use Category System: User Specification for Treated Wood.

B. U.S. Department of Commerce National Institute of Standards and Technology:
1. DOC PS 2 - Performance Standard for Wood-Based Structural-Use Panels.
2. DOC PS 20 - American Softwood Lumber Standard.

C. ASTM International:
1. ASTM F593-24 Standard Specification for Stainless Steel Bolts, Hex Cap Screws and Studs.
2. ASTM F880-24 Standard Specification for Stainless Steel Socket, Square Head and Slotted Headless-Set Screws.
3. ASTM F594-24 Standard Specification for Stainless Steel Nuts.

1.3 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures: Requirements for submittals

B. Product Data: Submit manufacturer's product data, installation instructions, and any care or maintenance instructions for each material and product used with product information including type, location produced, additives, performance criteria, and others as required. Submit data on proprietary connection devices. Submit technical data on wood preservative materials, if applicable.

C. Shop Drawings: Submit shop drawings indicating dimension, wood species, lumber sizes, grade, component profiles, drilled holes, fasteners, connectors, erection details, relationship with adjacent construction, and elevation from finished grade.

D. Certify lumber is harvested from Forest Stewardship Council Certified well managed forest.

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E. Warranty: Provide warranty certification document

1.4 DEFINITIONS

A. Dimension Lumber: Lumber of 2 inches nominal or greater.

B. Timber Construction: structural framing.

C. Decking: Finish surface of the structure.

D. Lumber grading agencies, and the abbreviations used to reference them, include the following:
1. ALSC: American Lumber Standard Committee
2. NLGA: National Lumber Grades Authority
3. AWPA: American Wood Protection Association Standards
4. AF&PA: American Forest and Paper Association

1.5 QUALITY ASSURANCE

A. Lumber Grading Agency: Certified by DOC PS 20.

B. Provide products from acceptable manufacturers that have been applied in similar applications.

1.6 QUALIFICATIONS

A. Boardwalk Installer: Company with a licensed carpenter specializing in construction of timber framing with five years minimum experience in lumber installation.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store/stockpile in a dry location in an area free of drainage channels or standing water. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

B. Manufactured materials to be handled and stored in accordance with manufacturers requirements.

1.8 WARRANTY

A. Manufacturer to provide lifetime warranty against structural failure due to rot, fungal decay, or termite damage.

PART 2 - PRODUCTS

2.1 FRAMING TIMBERS

A. General: Provide framing lumber and layout for support and attachment as shown in the Drawings or as required..

B. Lumber: DOC PS 20 and applicable rules of grading agencies indicated. If no grading agency is indicated, provide lumber that complies with the applicable rules of any rules-writing agency

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certified by the ALSC Board of Review. Provide lumber graded by an agency certified by the ALSC Board of Review to inspect and grade lumber under the rules indicated.

1. Factory-mark each piece of lumber with a grade stamp from a grading agency.
2. Treatment plant location.
3. Where nominal sizes are indicated, provide actual sizes required by DOC PS 20 for moisture content specified.
4. Preservative retention level.
5. Provide dressed lumber, S4S, unless otherwise indicated.

C. Boardwalk Framing wood:
   1. Southern yellow pine pressure treated structural lumber with dimensions as shown in the Drawings and meeting the following:
      a. Meeting American Wood Protection Association (AWPA) Standards
      b. Grade 1 or better with a minimum Fc of 1200 psi and conform to AASHTO Standard M 168 for Wood Products.
      c. All lumber to be Ground Contact pressure treated lumber treated to minimum 0.34 pound per cubic foot (pcf) retention.
      d. All timber should be select structural material dressed cut S4S (surfaced four sides).
      e. Select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.
      f. Provided by sole manufacturer.

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2.2 WOOD TREATMENT

A. Free of arsenic and an appropriate Alkaline Copper Quaternary (ACQ) formation for the selected wood materials with minimum retentions of 4 kg/m3 (0.25 lbs/ft3) or 6.4 kg/m3 (0.4 lbs/ft3) for wood used above ground or in ground contact, respectively.

B. LifewoodMicroPro/LifeWood Preservative - MicroPro 200C or MP 200-A Micronized Copper Azole (MCA) Preservative or approved equal.
   a. Manufacturer: Osmose, Inc. Contact: PO Drawer O, 1016 Everee Inn Road, Griffin, GA 30224-0249; Telephone: (800) 241-0240, (770) 233-4200; Fax: (770) 229-5225; E-mail: treatedwood@osmose.com; Web site: www.osmosewood.com.

C. In accordance with AASHTO Standard M 133 and American Wood-Preservers' Association (AWPA) standards.

2.3 WOOD FASTENERS

A. General: Provide fasteners of size and type indicated that comply with requirements specified in the piling design, manufacturers recommendation or as shown in the Drawings.
   1. Framing Timber: All Fasteners, connectors, and hardware to be stainless steel and in accordance with AASHTO Standard M 253, and ASTM A123, A153 or A653 as appropriate, and shall be appropriate for selected timber and associated treatment methods.
   2. Wood connectors to be manufactured by Simpson Strong-Tie, MiTek, or an approved equal.
   3. Connectors to be rated for the load indicated in the Drawings. .

2.4 FABRICATION

A. Fabricate components in accordance with AITC 108, with joints neatly fitted, welded, and ground smooth. Account for shrinkage of timber in design and arrangement of fasteners for connections.

2.5 FINISHES

A. Timber Surfaces Exposed to View: Rough sawn.

B. Galvanizing: ASTM A123/A123M, AASHTO Standard M 253; hot dip galvanize after fabrication.

C. Galvanizing for Nuts, Bolts and Washers: ASTM A153/A153M.

PART 3 - EXECUTION

3.1 PREPARATION

A. Operate all equipment within the Limits of Work in a manner to minimize impacts to the site and resource area.

B. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with the function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

C. Select and cut lumber to eliminate knots and other defects that will interfere with attachment of other work.

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3.2 GENERAL INSTALLATION

A. All wood carpentry and framing are to be installed in accordance with the Drawings and applicable building codes.

B. Set carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit carpentry to other construction; scribe and cope as needed for accurate fit.

C. Treating of cut or exposed surfaces to be completed immediately after cutting and before installation. Brush-on end coat wood preservative per manufacturer’s requirements.

D. Framing Standard: Where not detailed in the Drawings comply with AF&PA's "Details for Conventional Wood Frame Construction," unless otherwise indicated.

E. Securely attach rough carpentry work to substrate by anchoring and fastening as indicated, complying with the following (as applicable):
   1. Table 2304.9.1, "Fastening Schedule," in ICC's International Building Code.
   2. Table 2305.2, "Fastening Schedule," in BOCA National Building Code.
   3. Table 2306.1, "Fastening Schedule," in SBCCI's Standard Building Code.

F. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb, and in indicated alignment until completion of erection and installation of permanent bracing.

G. The wooden frames are to be installed in a manner resulting in a smooth, continuous installation with joints supported at split caps.

H. Fit timbers to pilings, abutments and other construction as indicated on Drawings or per the product manufacturer's requirements. Scribe and cope as needed for accurate fit.

I. Properly install timber structures to adjacent construction and with uniform appearance.

J. Fit timber frame together so that the bolts at expansion joints will be located at the centers of the slotted holes. Treat field-drilled holes in accordance with AWPA C2.

K. Tighten all bolts and extend at least one-fourth inch beyond the nuts. Except where required for adjustments, do not extend bolts more than one-half-inch beyond the nuts.

L. Restore any damaged components. Clean and protect work from damage.

M. After erection, touch-up scratched galvanized surfaces with zinc primer.

N. Do not field cut or alter structural members without approval of Engineer.

3.3 FIELD QUALITY CONTROL

A. Framing: Engineer to perform a field visit to observe framing prior to the installation of decking to confirm location and quality of workmanship.

END OF SECTION

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SECTION 06 15 00 – WOOD DECKING

PART 1 - GENERAL

1.1 SUMMARY

A. This section includes furnishing all materials and labor for the installation of the decking for the boardwalk.

B. Related Sections:
   1. Section 06 13 00 - Timber Construction.

1.2 REFERENCES

A. ASTM International:
   1. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

B. Forest Stewardship Council:
   1. FSC Guidelines - Forest Stewardship Council Guidelines.

C. National Forest Products Association:
   1. NFPA - Lumber Grading Rules.

1.3 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures: Requirements for submittals

B. Product Data: Submit manufacturer's product data and installation instructions for each material and product used including material, dimensions, supplier/manufacture, additives, performance criteria, and other information as required.

C. Samples of Deck Material: Submit two samples, 12 inch in length illustrating wood grain, sand finish.

D. Submit manufacturer's certificate certifying lumber grade.

E. Warranty information.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with the following, AS:
   1. Lumber Grading Agency: Certified by DOC PS 20.
   2. Lumber: DOC PS 20.
   3. Wood Panels: DOC PS 1 or DOC PS 2.
   4. Applicable building codes.

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1.5 QUALIFICATIONS

A. Supplier: Company specializing in manufacturing the lumber specified in this section with minimum five years experience.

B. Installer: Company with a licensed carpenter specializing in construction of heavy timber framing with five years minimum experience in lumber installation.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Stack lumber flat with spacers between each bundle to provide air circulation. Provide for air circulation around stacks and under coverings.

B. Lumber delivered with grade stamping.

PART 2 - PRODUCTS

2.1 SUSTAINABILITY CHARACTERISTICS

A. Certified Wood Materials: Furnish wood materials certified in accordance with FSC Guidelines.

2.2 DECK BOARDS

A. Southern Yellow Pine (Pressure Treated)
   1. Required Specifications:
      a. Dimensions: 5/4” x 6”
      b. Grade: Select
      c. Peeled Lumber
      d. Edge: Square Eased Edge
      e. Kiln Air Dried

B. Add Alternate 1: Black Locust
   1. Required Specifications
      a. Dimensions: 5/4” x 6”
      b. 100% natural and chemical free.
      c. Grade: Premium
      d. Peeled Lumber
      e. Edge: Square Eased Edge
      f. Kiln Air Dried

   2. Suppliers
      a. Robi Decking
         1005 Rundell Street
         Winston-Salem, NC 27105
         Phone: 336-365-2850
         Website: https://robidecking.com/

      b. Black Locust Lumber

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Phone: 888 501 0678
Website: www.blacklocustlumber.com

c. Alderfer Lumber
5532 Flint Valley Road,
Mt Pleasant Mills, PA 17853
Phone: 570-539-2063
www.alderferlumber.com

2.3 ACCESSORIES

A. Wood Fasteners and Anchors:
1. Stainless steel and in accordance with AASHTO Standard M 253 and appropriate for selected timber, associated treatment methods and application.

B. Deck Fasteners (Wood Screws): Deck surface boards are fastened to the decking joists with #8 x 2-1/2-inch stainless steel exterior wood screws meeting the following:
a. Flat-style head
b. Cutting wings on the shaft counter-bore the deck board, helping to prevent fastener spin out.

C. Staples: ASTM F 1667.

D. Power-Driven Fasteners: NES NER-272.

E. Adhesive: APA/EWA AFG-01, waterproof, air cure type, cartridge dispensed.

2.4 WOOD TREATMENT (SOUTHERN YELLOW PINE ONLY)

A. Free of arsenic and an appropriate Alkaline Copper Quaternary (ACQ) formation for the selected wood materials with minimum retentions of 4 kg/m3 (0.25 lbs/ft3) or 6.4 kg/m3 (0.4 lbs/ft3) for wood used above ground or in ground contact, respectively.

B. Lifewood MicroPro/LifeWood Preservative - MicroPro 200C or MP 200-A Micronized Copper Azole (MCA) Preservative or approved equal.

C. Manufacturer: Osmose, Inc. Contact: PO Drawer O, 1016 Everee Inn Road, Griffin, GA 30224-0249; Telephone: (800) 241-0240, (770) 233-4200; Fax: (770) 229-5225; E-mail: treatedwood@osmose.com; Web site: www.osmosewood.com.

D. In accordance with AASHTO Standard M 133 and American Wood-Preservers' Association (AWPA) standards.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify support framing is ready to receive decking and railings.

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3.2 PREPARATION

A. Coordinate placement of support items.

B. Sort and select lumber so that natural characteristics will not interfere with installation or with fastening other materials to lumber. Do not use materials with defects that interfere with the function of member or pieces that are too small to use with minimum number of joints or optimum joint arrangement.

3.3 DECKING

A. Install decking perpendicular to framing members, with ends staggered over firm bearing.

B. Fit butt end deck joints occurring between support members with metal splines to maintain tight, aligned joints.

C. Maintain decking joint space of 3/8 inch maximum.

D. Alter spacing where significant board shrinkage is anticipated with consultation with the manufacturer and approval from the Engineer.

E. Boards to have even, radially cut pieces when on curved sections of boardwalk.

F. Secure deck fasteners.

3.4 SITE APPLIED WOOD TREATMENT

A. Treat cut end with wood treatment with wood preservative.

3.5 TOLERANCES

A. Surface Flatness of Decking Without Load: 1/4 inch in 10 feet maximum, and 1/2 inch in 30 feet maximum.

B. Deck Spacing: 3/16” of an inch.

C. Level Changes: Any vertical change in level between boards must be ¼” or less.

END OF SECTION

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SECTION 12 93 00 - SITE FURNISHINGS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes all materials, labor, equipment and other incidental items required to furnish and install the work of this Section, including:
   1. Benches
      a. Wooden Bench Type 1
      b. Wooden Bench Type 2

B. Related Sections:
   1. Section 03 33 00 – Cast in Place Concrete
   2. Section 32 11 23 – Aggregate
   3. Section 04 40 13 - Granite

1.2 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures: Requirements for submittals

B. Product Data: Submit manufacturer's product data, including installation instructions.

C. Shop Drawings: Submit manufacturer's shop drawings, indicating materials, dimensions, tolerances, welding, fasteners, hardware, mounting, finish and accessories.

D. Samples: Submit manufacturer’s standard color samples.

E. Warranty: Submit manufacturer’s standard warranty.

1.3 QUALITY ASSURANCE

A. Perform Work according to Manufacturer’s requirements

B. Source Limitation: Provide each furnishing with accessories produced by or as otherwise approved by the specified manufacturer.

1.4 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years' documented experience.

B. Fabricator: Company specializing in fabricating products specified in this Section with minimum three years' documented experience.

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1.5 DELIVERY, STORAGE, AND HANDLING

A. Furnishings are shipped from manufacturer completely assembled. Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, and location of installation.

B. Storage: Store according to manufacturer's instructions in a clean, dry area indoors in accordance with manufacturer's instructions. Keep temporary protective coverings in place.

C. Handling: Protect materials and finish from damage during handling and installation.

1.6 WARRANTY

A. Furnish ten-year manufacturer's warranty for wooden benches.

PART 2 PRODUCTS

2.1 WOODEN BENCH TYPE 1:

A. Victor Stanley C-138 Bench
   a. Wood: Kebony
   b. Surface Mounted (Pavers)
   c. Length: 72"
   d. Metal Color: Powder Coated Black
   e. Manufacturer: Victor Stanely

B. Approved Equivalent

2.2 ACCESSORIES

A. Accessory: Additional accessories required in the Drawings and Manufacturer's details to provide a finished fence product.

PART 3 EXECUTION

3.1 EXAMINATION

A. Examine surfaces to receive site furnishings. Notify Landscape Architect of conditions that would adversely affect installation or subsequent utilization of site furnishings. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 PREPARATION

A. Ensure surfaces to receive site furnishings are clean, flat, and level.

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3.3 INSTALLATION

A. Install site furnishings level, plumb, square, accurately aligned, correctly located, and without warp.

B. Bolt: Anchor site furnishings securely in place to supports with concrete anchor bolts, or bolted through wooden block, in accordance with manufacturer's instructions.

C. Use hardware and fasteners in accordance with manufacturer's instructions.

D. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Landscape Architect.

E. Remove and replace damaged components that cannot be successfully repaired as determined by Landscape Architect.

3.4 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements specifies requirements for inspecting and testing.

3.5 CLEANING

A. Section 01 70 00 - Execution and Closeout Requirements specifies requirements for cleaning.

B. Clean site furnishings in accordance with manufacturer's instructions.

C. Remove temporary protective coverings.

D. Do not use harsh cleaning materials or methods that would damage finish.

3.6 PROTECTION

A. Section 01 70 00 - Execution and Closeout Requirements specifies requirements for protecting finished Work.

B. Protect site furnishings from damaged during the remainder of construction. Repair damage as necessary.

END OF SECTION

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SECTION 31 10 00 - SITE CLEARING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Labor, materials and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. Clearing and grubbing.
   2. Removing designated trees, shrubs, and other plant life within the Limit of Work area, as indicated on Drawings.
   3. Excavating and stockpiling topsoil.

B. Related Sections:
   1. Section 02 41 13: Selective Demolition
   2. Section 31 20 00: Earthwork
   3. Section 31 25 00: Erosion and Sedimentation Control
   4. Section 32 92 20: Invasive Species Removal

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1.2 COORDINATION

A. Arrange schedule so as not to interfere with operations of adjacent occupied public streets.

B. Coordinate activities with Owner, Town and all jurisdictional agencies prior to start of work

C. Immediate areas of work will not be occupied during site clearing.

1.3 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures: Requirements for submittals

B. Disposal facility for all material.

1.4 CLOSEOUT SUBMITTALS

A. Furnish disposal receipts on construction waste removed from site. Comply with all federal and State requirements.

1.5 QUALITY ASSURANCE

A. Prior to the commencement of work, obtain the Engineer’s and the Conservation Agent’s approval of staked and/or flagged site clearing.

B. Perform Work in accordance with all federal, state and local permits.

C. Maintain at least one copy of Soil and Groundwater Management Plan on site.

PART 2 PRODUCTS (NOT APPLICABLE)

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing plant life designated to remain is tagged or identified.

B. Flag all invasive plant areas to be removed and disposed for approval by Owner or Landscape Architect.

C. Flag all native, hardwood timbers to be removed from the site. Prior to disposal, stockpile hardwood timbers of 24-inch diameter or greater for potential reuse in locust log check dam. Coordinate with Engineer and Owner prior to disposal.

D. Within the Planting Only Limit of Work – verify vegetation to be removed with Owner or Landscape Architect prior to clearing.

E. Confirm all existing conditions in the area of work, regardless of whether or not they are indicated on the construction Drawings or other record drawings.

F. Should unknown or incorrectly located existing utilities be identified, contact the Engineer immediately for instructions. Provide a scale drawing with the location and any additional information discovered regarding the unknown utility.

G. If necessary, verify that utilities have been disconnected and capped before starting demolition operations.

H. Clearly mark items with the area that are to be protected in place.

3.2 PREPARATION

A. Dig Safe or Call Local Utility Line Information service at 1-888-DIG-SAFE (1-888-344-7233) not less than three working days before performing Work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Prior to altering any utilities, obtain consent of utility service provider.
   1. Arrange with the utility service providers to shut off utilities to be disturbed as indicated on the Drawings and inform Owner and Engineer of anticipated interruption.

C. Verify all Erosion and Sediment control measures are properly installed prior to beginning work.

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3.3 PROTECTION

A. Locate, identify, and protect utilities indicated to remain, from damage.

B. Protect trees, plant growth, and features designated to remain, as shown on the drawings.

C. Protect bench marks, survey control points, existing structures and site elements to remain from damage or displacement.

3.4 CLEARING AND GRUBBING

A. Keep the limit of clearing and grubbing to a minimum with the proposed area of construction. Phase the site work in a manner to minimize areas of exposed soil. Clear and grub only those areas which are actively under construction or will be under construction within 14 days.

B. Remove vegetation and root mass for Invasive species below the surface to a minimum depth of 18”. Do not mix invasive vegetation or soil with other, non-invasive, vegetation or soil

C. Remove trees and shrubs within the limit of work as indicated on Drawings. Remove stumps, and root system to depth of 18 inches, surface rock, and other obstructions.
   1. Within the Planting Only Limit of Work – verify vegetation to be removed prior to clearing.
   2. Do not remove trees, shrubs, and other vegetation indicated to remain or be re-located.
   3. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct new construction. Notify the Engineer prior to any root cutting.
   4. Grind stumps and remove roots, obstructions, and debris extending to a depth of 18 inches below grade.
   5. Mechanical grubbing is prohibited within the tree protection zones indicated on Drawings, and all grubbing is to be done by hand methods.
   6. Chip removed woody material and dispose off-site, unless noted otherwise on the Drawings.

D. Do not use herbicide for clearing unless approval is received from Owner and Conservation Commission.

3.5 REMOVAL

A. Remove and properly dispose of cleared material.

B. Remove all surplus soil and unsuitable soil as indicated in the Soil and Groundwater Management Plan.

C. Remove debris, rock, and extracted plant life from site.

D. Remove paving, and boardwalk

E. Remove abandoned utilities. Indicated removal termination point for underground utilities on Record Documents.

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F. Continuously clean-up and remove trash, construction debris and waste materials from site. Do not allow materials to accumulate on site.

G. Separate recyclable materials removed during site clearing and store/stockpile without intermixing with other materials and reuse as indicated or transport them to a recycling facility.

H. Do not burn or bury materials on site. Leave site in clean condition.

3.6 TOPSOIL EXCAVATION

A. See Soil and Groundwater Management Plan.

B. Remove sod/grass before excavation of topsoil.

C. Excavate topsoil from upland areas to the depths encountered without mixing with underlying soils and foreign materials for use in finish grading.
   1. Remove trash, debris, weeds, roots and other waste materials from stockpiled topsoil.

D. Do not excavate wet topsoil.

E. Transport topsoil and place in small stockpiles in locations requiring placement of topsoil.

F. Stockpile in area designated on site to a height not exceeding **8** feet and protect from erosion.
   1. Do not stockpile within the tree protection zones indicated on Drawings.
   2. Stockpile topsoil away from the edge of excavations, do not intermix with subsoil.
   3. Grade and shape stockpiles to drain surface water.
   4. Cover to prevent windblown dust contamination by air borne weed seed.
   5. Install temporary erosion control devices for all stockpiled soil, as indicated on Drawings and/or as directed by the Engineer to protect adjacent properties and/or resource areas.

G. Do not remove topsoil from site.

END OF SECTION

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SECTION 31 20 00 - EARTH MOVING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes: Provide labor, materials and equipment necessary to complete the work of this Section, including:
   1. Removal of subsoil, excavating and trenching
   2. Backfilling
   3. Cutting, grading, filling, rough contouring, and compacting for restored wetlands, constructed wetlands, parking, sidewalks, walkways and landscape installation.

B. Related Sections:

   1. Section 03 30 00 - Cast-In-Place Concrete: Concrete materials.
   2. Section 31 25 00 – Erosion and Sedimentation Controls
   3. Section 31 37 00 – Riprap and Rock Lining
   4. Section 32 11 23 – Aggregates
   5. Section 32 91 19 - Landscape Grading
   6. Section 32 92 19 - Seeding
   7. Section 32 93 00 - Plants
   8. Section 33 05 14 – Manholes and Structures
   9. Section 33 05 15 – Drain Basins
   10. Section 33 41 13 – Storm Drainage Piping
   11. Section 33 47 30 - Bioretention

1.2 REFERENCES

A. Local utility standards when working within 24 inches of utility lines.

B. American Association of State Highway and Transportation Officials:
   1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

C. ASTM International:
   1. ASTM C136 - Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates.
   2. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lb/ft3 (600 kN-m/m3)).
   3. ASTM D1556 - Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method.
   4. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
   5. ASTM D2167 - Standard Test Method for Density and Unit Weight of Soil in Place by the Rubber Balloon Method.
   6. ASTM D2419 - Standard Test Method for Sand Equivalent Value of Soils and Fine Aggregate.
   7. ASTM D2434 - Standard Test Method for Permeability of Granular Soils (Constant Head).

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8. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).
9. ASTM D2922 - Standard Test Method for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.3 DEFINITIONS

A. Unauthorized Excavation: Excavation below subgrade elevations or beyond indicated lines and dimensions on Drawings or without approval by Engineer.

B. Landscaped Areas: Areas not covered by structures, walks, roads, paving, or parking.

C. Structures: Boardwalk, footings, retaining walls, slabs, curbs, or other man-made stationary features constructed above or below the ground surface.

D. Subgrade: Surface or elevation remaining after completing excavation, or top surface of a fill or backfill immediately below subbase, drainage fill, or topsoil materials.

E. Utility: Any buried pipe, duct, conduit, or cable.

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1.4 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures: Requirements for Submittals

B. Excavation Work Plan: Describe area to be cleared, access points and stockpile and staging areas used during each excavation phase, and swamp mat location

C. Product Data: For the following:
1. Swamp / Mud Mat

D. Materials Source: Submit name of imported materials source.

E. Disposal facilities.

F. Material Shipping Record and certified wight tickets from the disposal facility.

G. Dust monitoring record

1.5 CLOSEOUT SUBMITTALS

A. Project Record Documents: Accurately record actual locations of utilities remaining by horizontal dimensions, elevations or inverts, and slope gradients.

B. Receipts from soil disposal facilities including quantity of material delivered and date delivered.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with the Soil and Groundwater Management Plan, Army Corps of Engineers Permit, Water Quality Certificate, and all federal, state and local permits.

B. Maintain at least one copy or each document and permit on site.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Cold Weather Requirements:
   1. Excavation: When temperatures below 32 degrees F are anticipated, do not excavate to final required elevations for concrete work unless concrete can be placed immediately.
   2. Backfilling: When backfilling below 32 degrees F, the following procedures must be followed:
      a. Remove frozen ground in its entirety from beneath and five feet beyond the area of fill placement.
      b. Fill material to consist of selected fill free of all frozen chunks that exceed four inches in size. Material transported to the project site must only consist of material excavated from below the frost depth.
      c. End of the work day: Cover the area of fill placement with insulated blankets. Other means of protection (straw, wood chips, etc.) may also be used for protection provided it is approved by the Engineer.
      d. Following work day: Remove the insulated blankets and/or strip the area of all frozen material as specified previously.
      e. Upon establishing the subgrade elevations, protect the grades with insulated blankets or place additional material that will adequately insulate the ex-posed earth surface from frost. Strip additional or protective material just prior to pouring concrete.

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PART 2 PRODUCTS

2.1 SOIL MATERIALS

A. Satisfactory Soils for General Backfill (imported or excavated):
   1. Excavated and re-used material. Imported borrow.
   2. Material, graded free of lumps larger than 6 inches, rocks larger than 3, organic material, and debris.
   3. ASTM D2487 Unified Soil Classification Groups GW, GP, GM, SW, SP, and SM or a combination of these groups.
   4. Provide borrow from off-site borrow sources that have no known releases or disposal of oil and/or hazardous materials and invasive species.
   5. Immediately notify the Engineer if satisfactory soils are not maintained within 2 percent of optimum moisture content at the time of compaction.

B. Unsatisfactory Soils for General Backfill (imported or excavated):
   1. Includes imported borrow or excavated and re-used material.
   2. ASTM D2487 Unified Soil Classification Groups GC, SC, CL, ML, OL, CH, MH, OH, and PT according to ASTM D 2487, or a combination of these groups.
   3. Contains rock or gravel larger than 3 inches in any dimension, debris, oil and or/ hazardous waste, frozen materials, vegetation, invasive species and other deleterious matter.

C. Hazardous Materials or Soils
   1. Soil, sediment, and groundwater sampling has been conducted at this Site. Refer to the Soil and Groundwater Management Plan.

D. Impervious Fill: Clayey gravel and sand mixture capable of compacting to a dense state.

E. Berm/Embankment fill (low permeability material):

1. Free of roots, stumps, wood, rubbish, stones greater than 6 inches, frozen or other objectionable materials.
2. Conforming to ASTM D2487 Unified Soil Classification GC, SC, CH, or CL with at least 30 percent passing the No.200 sieve.

2.2 ACCESSORIES

A. Geotextile Fabric: Non woven drainage geotextile made from polyolefins, polyesters, or polyamides with the following minimum properties according to ASTM D 4659 and referenced standard test methods:
1. Grab Tensile Strength: 120 lbf (533 N); ASTM D 4632.
2. Tear Strength: 50 lbf (222 N); ASTM D 4533.
3. Puncture Resistance: 70 lbf (311 N); ASTM D 4833.
4. Water Flow Rate: 120 gpm per sq. ft. (4885 L/min per sq. m); ASTM D 4491.
5. Apparent Opening Size: No. 70 (0.212 mm); ASTM D 4751.

2.3 SOURCE QUALITY CONTROL

A. Testing and Analysis of Subsoil Material: Perform in accordance with ASTM D1557 or AASHTO T180.

B. When tests indicate materials do not meet specified requirements, change material and retest.

C. Furnish materials of each type from same source throughout the Work.

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PART 3 EXECUTION

3.1 EXCAVATION EXAMINATION

A. Verify site conditions.

B. Verify survey benchmark and intended elevations for the Work as indicated on Drawings

C. Verify locations of invasive plants.

D. Notify Engineer of unexpected subsurface conditions and discontinue affected work in area until notified to resume work.

3.2 EXCAVATION PREPARATION

A. Dig Safe at 1-888-DIG-SAFE (1-888-344-7233) not less than three working days before performing Work.
1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Prior to altering any utilities, obtain consent of utility service provider.

C. Identify required lines, levels, contours, and datum.

D. Notify utility company to remove and relocate utilities.

E. Flag invasive plant areas for Owner to review and approval.

3.3 PROTECTION

A. Maintain and protect above and below grade utilities indicated to remain.

B. Protect plant life, lawns, and other features remaining as portion of final landscaping.

C. Protect bench marks, survey control points, existing structures, fences, sidewalks, paving, and curbs from excavating equipment and vehicular traffic.

D. Prevent displacement or loose soil from falling into excavation; maintain soil stability.

E. Protect newly graded areas from traffic, freezing, erosion and over compaction.

F. Implement dust controls during site activities necessary to mitigate fugitive dust emissions. The action level for soil particles at the site perimeter shall be the National Ambient Air Quality Standard (NAAQS) of 0.15 milligrams per cubic meter.

3.4 UNDERGROUND UTILITIES

A. Abandoned utilities:
   1. Permanently close open ends of abandoned underground utilities, exposed by ex-cavations, which extend outside the limits of the area to be excavated.

3.5 GENERAL EXCAVATION

A. Remove invasive plant soil areas to a minimum depth of 12”. If roots are still encountered excavate another 6”.

B. Following invasive plant soil removal, Excavate subsoil to accommodate restored wetland, constructed wetland boardwalk, sidewalks, walkways, landscape installation and drainage structures as indicated on the drawings.

C. Trim excavation. Remove loose matter.

D. Remove lumped subsoil, boulders, and rock up to 1 cu yd measured by volume.

   1. Remove rock to lines and grades required to permit installation of permanent construction as indicated on Drawings without exceeding the following dimensions:

      a. 24 inches outside of concrete forms other than at footings;
      b. 12 inches outside of concrete forms at footings;

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c. 6 inches outside of minimum required dimensions of concrete cast against grade;
d. 6 inches beneath bottom of concrete slabs on grade;
e. 6 inches beneath pipe in trenches, and the greater of 24 inches wider than pipe or 42 inches wide;
f. As indicated on the Drawings.

E. Notify Engineer of unexpected subsurface conditions.

F. Correct areas over excavated as directed by Landscape Architect/Engineer.

G. Remove excess and unsuitable material from site as outlined in Soil and Groundwater Management Plan.

H. Stockpile subsoil in area designated on site to depth not exceeding 8 feet and protect from erosion.

I. Repair or replace items indicated to remain damaged by excavation.

3.6 EXCAVATING - TREE ROOT ZONES

A. Mechanical excavation practices are prohibited within the tree root zones as indicated on Drawings. All excavating is to be done by hand methods with the use of an Air Spade or approved equivalent such that the existing tree roots are maintained to the maximum extent practicable.

B. Cut minor roots and branches of trees indicated to remain in a clean and careful manner where such roots and branches obstruct new construction. Notify the Engineer/Landscape Architect prior to any root cutting.

C. Excavation of soil must occur within the same week as the proposed grading activity or surface material placement. At no time will the exposed roots of the existing trees be allowed to dry out. Tree roots will be hand watered during any period when they are exposed.

3.7 SUBSOIL EXCAVATING

A. Excavate subsoil and topsoil from areas designated.

B. Stockpile excavated material meeting requirements for subsoil materials and topsoil materials if applicable per the Soil and Groundwater Management Plan

C. If excavated materials intended for fill and backfill include unsatisfactory soil materials and rock, replace with satisfactory soil materials, if needed.

D. Remove excess excavated materials, subsoil and topsoil not intended for reuse, from site.

E. Remove excavated materials not meeting requirements for subsoil materials and topsoil materials from site.

F. Remove groundwater as needed by pumping to keep excavations dry in accordance with Section 31 23 19 – Dewatering.

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G. Excavate subsoil required to meet restored wetland elevations.

H. Proof roll bearing surfaces. Fill soft spots with fill and compact uniformly to 95 percent of maximum density.

I. Correct unauthorized excavation at no cost to Owner.

J. Backfill over-excavated areas under in accordance with specifications, Soil and Groundwater Management Plan and as directed by the Engineer.

K. Do not excavate wet subsoil or excavate and process wet material to obtain optimum moisture content.

L. When excavating through roots, perform Work by hand and cut roots with sharp axe.

3.8 TRENCHING

A. Excavate for storm drains, sanitary sewer, ducts, water, gas, other utilities and piping per Drawings.

B. Excavate trenches to indicated gradients, lines, depths, and elevations. Cut trenches sufficiently wide to enable installation of utilities and allow inspection.

C. Hand trim excavation and leave free of loose matter. Hand trim for bell and spigot pipe joints.

D. Support pipe bells, joints, and conduit, during placement and compaction of bedding fill.

E. Remove projecting stones and sharp objects along trench subgrade.

F. Coordinate backfilling with utilities testing and testing agency.

G. Install warning tape directly above utilities, 12 inches below finished grade, except 6 inches below subgrade under pavements and slabs.

H. Backfill trenches to required contours and elevations.

I. Place and compact fill materials as for backfilling.

3.9 SHEETING AND SHORING

A. Sheet, shore, and brace excavations to prevent danger to persons, structures and adjacent properties and to prevent caving, erosion, and loss of surrounding subsoil.

B. Support trenches more than 5 feet deep excavated through unstable, loose, or soft material. Provide sheeting, shoring, bracing, or other protection to maintain stability of excavation.

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C. Design sheeting and shoring to be left in place as part of the completed Work, cut off minimum 18 inches below finished grade.

D. Repair damage caused by failure of the sheeting, shoring, or bracing and for settlement of filled excavations or adjacent soil.

E. Repair damage to new and existing Work from settlement, water or earth pressure or other causes resulting from inadequate sheeting, shoring, or bracing.

3.10 LINES AND GRADES

A. Lay pipes to lines and grades indicated on Drawings.
   1. Landscape Architect/Engineer reserves right to make changes in lines, grades, and depths of utilities when changes are required for Project conditions.

B. Use laser-beam instrument with qualified operator to establish lines and grades.

3.11 UNAUTHORIZED EXCAVATION

A. Immediately notify the Engineer prior to the commencement of any unauthorized excavation or backfilling work.

B. Backfill unauthorized excavation under footings, foundation bases, or retaining walls with compacted select granular material without altering the required footing elevation. Elsewhere, backfill and compact unauthorized excavation as specified for authorized excavation of the same classification.

3.12 BACKFILL PREPARATION

A. Compact subgrade to density requirements for subsequent backfill materials.

B. Scarify subgrade surface to depth of 6 inch.

C. Proof roll to identify soft spots; fill and compact to density equal to or greater than requirements for subsequent fill material.

D. Replace unsatisfactory soil with compacted backfill or fill material.

E. Survey locations of underground utilities for As-built Drawings and Record Documents.

F. Test and inspect underground utilities as specified.

G. Remove concrete formwork.

H. Remove trash and debris.

I. Install permanent or temporary horizontal bracing on horizontally supported walls

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J. Reconstruct subgrades damaged by freezing temperatures, frost, rain, accumulated water, or construction activities without additional compensation.

K. If unsatisfactory soil is encountered immediately notify Engineer before any work commences.

3.13 BACKFILLING

A. Backfill systematically, as early as possible, to allow maximum time for natural settlement. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

B. Place and compact backfill in excavations promptly.

C. Place backfill and fill soil materials in layers to specified depth for material compacted by heavy compaction equipment, and not more than 4 inches in loose depth for material compacted by hand-operated tampers.

D. Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

E. Fill voids with approved backfill materials while shoring and bracing, and as sheeting is removed.

F. Backfill areas to contours and elevations indicated on Drawings.

G. Use unfrozen and unsaturated materials.

H. Place geotextile fabric over unstable subsoil.

I. Place material in continuous layers as follows:

1. Soil Materials: Maximum 8 inches compacted depth.
2. Structural Fill Materials: Maximum 8 inches compacted depth.
3. Granular Fill: Maximum 8 inches compacted depth.
4. Trench Fill: Maximum 6 inches compacted depth when in paved area, 8 inches compacted depth when outside paved area.

J. Employ placement method that does not disturb or damage other work.

K. Employ placement method so not to disturb or damage structures to remain.

L. Maintain optimum moisture content of backfill materials to attain required compaction density.

M. Do not leave more than 50 feet of trench open at end of working day.

N. Protect open trench to prevent danger to Owner and / or the public.

O. Make gradual grade changes. Blend slope into level areas.

P. Remove surplus backfill materials from site.

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3.14 FILLING (GRADING)

A. Uniformly grade areas to a smooth surface, free of irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations as indicated on Drawings.
   1. Provide a smooth transition between adjacent existing grades and new grades.
   2. Cut out soft spots, fill low spots, and trim high spots to comply with required surface tolerances.

B. Fill areas to contours and elevations with unfrozen materials.

C. Place material in continuous layers as follows:

   1. Subsoil Fill: Maximum 8 inches compacted depth.
   2. Structural Fill: Maximum 6 inches compacted depth.
   3. Granular Fill: Maximum 8 inches compacted depth.

D. Maintain optimum moisture content of fill materials to attain required compaction density.

E. Make grade changes gradual. Blend slope into level areas.

F. Trim and rough grade area within the grading limits to a depth sufficient below the finish grades to accommodate topsoil, pavement and other finished surfaces.

G. Repair or replace items indicated to remain damaged by excavation or filling.

3.15 STOCKPILING

A. Stockpile materials on site at locations indicated on the plans and as outlined in the Soil and Groundwater Management Plan.

B. Stockpile in sufficient quantities to meet Project schedule and requirements.

C. Separate differing materials with dividers or stockpile apart to prevent mixing.

D. Prevent intermixing of soil types or contamination.

E. Direct surface water away from stockpile site to prevent erosion or deterioration of materials.

F. Cover to prevent windblown dust.

G. Stockpile soil materials away from edge of excavations.

H. Do not store within drip line of remaining trees.

I. For soil stockpiles left overnight, provide silt sock, strawbales, silt fence, or a combination of silt fence with strawbales around the stockpile perimeter.

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3.16 STOCKPILE CLEANUP

A. Remove stockpile, leave area in clean and neat condition. Grade site surface to prevent free standing surface water.

3.17 TOLERANCES

A. Top Surface of Backfilling within Building Areas and Underground Tanks: Plus or minus 1/2 inch from required elevations.

B. Top Surface of Backfilling under paved Areas or surface stormwater features: Plus or minus 1/2 inch required elevations.

C. Top Surface of Backfilling under lawn, restored wetland or other landscape: Plus or minus 1" from required elevations.

3.18 FIELD QUALITY CONTROL

A. Repair and reestablish grades to specified tolerances where graded surfaces have been disturbed or altered due to construction activities, weather conditions or other means.

B. Perform inspection of excavation and controlled fill operations in accordance with applicable code.

C. Request visual inspection of bearing surfaces by before installing subsequent work.

D. Perform inspection of foundations in accordance with applicable code.

E. Perform laboratory material tests

F. Perform in place compaction tests in accordance with the following:

1. Density Tests: ASTM D1556, ASTM D2167, or ASTM D2922.
2. Moisture Tests: ASTM D3017.

G. When tests indicate Work does not meet specified requirements, remove Work, replace, compact, and retest.

H. Frequency of Tests: Initial Testing by Owner. Contractor to accommodate testing agency. Additional testing due to inadequate work by Contractor.

I. Proof roll compacted fill surfaces under slabs-on-grade, pavers, paving, and other site features as required.

3.19 SOIL MOISTURE CONTROL

A. Uniformly moisten or aerate subgrade and each subsequent fill or backfill soil layer before compaction to within 2 percent of optimum moisture content.
   1. Do not place backfill or fill soil material on surfaces that are muddy, frozen, or contain frost or ice.

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2. Remove and replace, or scarify and air dry otherwise satisfactory soil material that exceeds optimum moisture content by 2 percent and is too wet to compact to specified dry unit weight.

3.20 PROTECTION OF FINISHED WORK

A. Reshape and re-compact fills subjected to vehicular traffic during construction.

END OF SECTION

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SECTION 31 23 19 - DEWATERING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes all materials, labor, equipment and other incidental items required to furnish and install the work of the Section, including:
   1. Dewatering requirements to control groundwater and surface water runoff within areas of excavation to elevation to permit Work to be completed on dry and stable subgrade and to prevent flooding of excavations, trenches and adjacent properties, and the loosening and saturation of soils.
   2. Surface water control system to remove sediment and control the rates and volumes of disposal of surface and subsurface waters removed from the work areas.
   3. The protection of adjacent and downgradient environmental resources and properties.

B. Related Sections:

   1. Section 31 10 00 – Site Clearing.
   2. Section 31 20 00 – Earth moving.
   3. Section 31 25 00 – Erosion and Sedimentation Controls.

C. Refer to the Soil and Groundwater Management Plan

1.2 DEFINITIONS

A. Dewatering includes the following:
   1. Lowering of ground water table and intercepting horizontal water seepage to prevent ground water from entering excavations and trenches.
   2. Disposing of removed water.

B. Surface Water Control: Removal of surface water within open excavations.

1.3 PERFORMANCE REQUIREMENTS

A. Dewatering system to:
   1. Lower water table within areas of excavation to elevation to permit Work to be completed on dry and stable subgrade.
   2. Prevent damage to adjacent properties, buildings, structures, utilities, and facilities from construction operations.
   3. Prevent loss of fines, quick condition, or softening of foundation subgrade.
   4. Maintain stability of sides and bottoms of excavations and trenches.
   5. Retain all sediment on-site within the limit of work.
   6. Prevent sediment discharge and degradation of the resource area(s).
   7. Meet all requirements of the Dewatering and Remediation General Permit (DRGP).

B. Dewatering is required for surface and below grade construction, especially within or adjacent to the wetland resource areas. Excavated sediment and all other parts of the construction site shall

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be dewatered and kept free of standing water and muddy conditions as necessary for the proper execution of the work.

C. Furnish, install, operate, and maintain all drains, sumps, pumps, casings, well points, and all other equipment required to properly dewater the site as specified in this Section and the Drawings. Specify dewatering discharge locations.

D. Furnish and install dewatering containment areas for pretreatment in accordance with approved dewatering plan, Town of Nantucket Discharge Permit, and applicable state and federal permits.

E. Provide means to retain and bypass stormwater runoff for precipitation events exceeding onsite retention volume at elevation 5.0.

1.4 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures: Requirements for submittals

B. Submit, in writing to the Engineer, a proposed plan for dewatering before commencing with any construction activity for which dewatering may be required. Acceptance of this plan or the waiving of the plan requirement will not relieve the Contractor of the responsibilities for completing the specified work. At a minimum, the dewatering plan shall include planning dewatering methodologies, description of management protocols for performing excavation and stockpiling of excavated material (including decanting), method of transport of exported material, design calculations for demonstrating adequacy of proposed system, arrangement, locations and depths of all dewatering system components, stockpile, staging, and dewatering containment area locations, means for monitoring turbidity and other required contaminants, and points of pumping and discharge of water.

C. Submit Town of Nantucket Sewer Department, Stormwater Division Permit for Connection/Discharge to the Stormwater Collection System.

D. Shop Drawings:
1. Indicate dewatering pump locations, pipe sizes and capacities, grades, surface water control devices, pipes, valves, sediment bag or fractionation tank size and location, and water disposal methods and locations.
2. Include a description of methods sediment export from site and water disposal.
3. Include locations and methods for export-sediment decanting prior to transport.
4. Include a description of erosion control at discharge locations.

1.5 QUALITY ASSURANCE

A. Comply with SWPPP issued under National Pollutant Discharge Elimination System (NPDES) and Construction General Permit, and Dewatering and Remediation General Permit (DRGP) requirements for storm water and dewatering discharge from construction sites.

B. Do not allow water to accumulate in on-going excavations. Provide and maintain the dewatering system to remove promptly, and to dispose of properly, all water entering excavations to keep them dry until the proposed work is completed.

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C. See Soil and Groundwater Management Plan

1.6 COORDINATION

A. Coordinate work to permit earth moving operations to be completed on dry stable substrate.

PART 2 PRODUCTS

2.1 DEWATERING EQUIPMENT

A. Select dewatering equipment to meet specified performance requirements.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify existing conditions before starting work.

3.2 PREPARATION

A. Protect the resource area and the existing adjacent buildings, structures, and improvements from damage caused by dewatering operations.

3.3 DEWATERING SYSTEM

A. Install and maintain the dewatering system in accordance with approved dewatering plan per submittal and all federal, state and local permitting requirements.

B. Locate system components to allow continuous dewatering operations without interfering with stockpiles and containment area locations, installation of permanent Work and existing public rights-of-way, sidewalks, and adjacent buildings, structures, and improvements.

C. Excavate sump pits in sizes and to depth as specified in the dewatering plan or as required to meet performance requirements.

D. Notify the Engineer and Town of any changes required to accommodate field conditions and, on completion of the dewatering system installation, revise and resubmit the information required to show the installed system.

E. Do not discharge water to protected environmental resources without treatment to remove suspended solids, sediments and pollutants.

3.4 SURFACE WATER CONTROL SYSTEM

A. Divert surface water and seepage water within excavation areas into sumps and pump water into drainage channels, storm drains, and/or settling basins in accordance with requirements of all permits, the dewatering plan and/or as shown on the Drawings. With prior Town permit and

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Engineer approval, alternative discharge locations into the Town's drainage system may be acceptable.

B. Control and remove unanticipated water seepage into excavation.

3.5 SYSTEM OPERATION AND MAINTENANCE

A. Operate dewatering system, as necessary, until earthwork is complete.

B. Modify dewatering and surface water control systems when operation causes or threatens to cause damage to the resource area, stormwater drainage system, receiving water body, new construction, existing site improvements, or adjacent property.

3.6 WATER DISPOSAL

A. Discharge water into dewatering bag, settling basins, fracturing tank and or other treatment systems basins at locations shown on approved dewatering plan, that comply with all applicable state and federal permit regulations and Town conditions for Discharge to the stormwater system.

3.7 SYSTEM REMOVAL

A. Remove dewatering and surface water control systems after dewatering operations are discontinued.

B. Remove sumps, unless indicated otherwise by the Engineer.

C. Repair damage caused by dewatering and surface water control systems or resulting from failure of systems to protect property and resource areas.

3.8 FIELD QUALITY CONTROL

A. After dewatering system is installed, perform pumping test to determine when selected pumping rate lowers water level below pump intake. Adjust pump size, speed, or discharge volume as needed to ensure proper operation and capacity of the existing drainage system.

END OF SECTION

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SECTION 31 25 00 - EROSION AND SEDIMENTATION CONTROLS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Labor, materials and equipment necessary to install proper control measures to prevent erosion, siltation and sedimentation of the Project site and adjacent and off-site areas.

B. Related Sections:
1. Section 31 10 00 - Site Clearing
2. Section 31 20 00 – Earth Moving
3. Section 31 23 19 – Dewatering
4. Section 31 37 00 – Riprap
5. Section 32 92 19 - Seeding
6. Section 32 91 19 - Landscape Grading

1.2 SUBMITTALS

A. Section 01 33 00 – submittal Procedures: Requirements for submittals.

B. Product Data: Product Data: Submit data on tubular sediment barrier, erosion control blanket, catch basin inserts, compost blanket product and compost testing, swamp / mud mat

C. Temporary Seed Mix. See Section 32 92 19 - Seeding

1.3 QUALITY ASSURANCE

A. Perform Work in accordance with the requirements of the Stormwater Pollution Prevention Plan (SWPPP) and all applicable permits.

PART 2 PRODUCTS

2.1 MATERIAL

A. Tubular Sediment Barrier: Tubular netting filled with water permeable compost material meeting the following requirements:
1. Compost:
   a. Derived from a well-decomposed source of organic matter.
   b. Free of weeds, refuse, contaminants or other materials toxic to plant growth. Non-composted products will not be accepted.
2. Tubular Netting:
   a. One continuous barrier.
   b. Twelve inches in diameter.
   c. Equal to the following:
      1) Silt Soxx by Filtrexx
      2) Silt Sock

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3) FilterMitt by Phase II Stormwater Products, Inc.

B. Erosion Control Blanket: machined produced 100% biodegradable blanket. Equal to:
1. North American Green Bionet 150BN
2. East Coast Erosion Control ECS-2B
3. GeoSolutions Excel SS-2 All Natural

C. Catch basin Inserts: permeable geotextile fabric that mounts under the grate of catch basins.
1. Equal to the following:
a. ACF Environmental Silt Sack
b. UltraTech International, Inc. Ultra-Drain Guard
c. Enpac 1341 Catch Basin Insert

D. Temporary Stabilization Practices:
1. Wood fiber cellulose temporary mulch, 35 pounds per 1,000 square feet.
2. Tackafier for anchoring mulch or straw: a non-petroleum based liquid bonding agent specifically made for anchoring straw.
3. Provide natural (jute, wood excelsior) covering with suitable staples or anchors to secure to ground surface. Do not use wire staples and non-biodegradable coverings for any area that will be mown turf.
4. Temporary vegetative cover for graded areas must be undamaged and free of undesirable weed seed. See Section 32 92 19 - Seeding

E. Compost Blanket
1. Compost shall be a well-decomposed humus material derived from the aerobic decomposition of biodegradable matter, free of viable weed seeds and other plant propagules (except airborne weed species), foreign debris such as glass, plastic, etcetera and substances toxic to plants. Compost shall be suitable for use as a soil amendment and shall support the growth of ornamental nursery stock and seed establishment. Compost shall be in a shredded or granular form and free from hard lumps.
2. Biosolids and peat are not acceptable as source materials.
3. Composted material with an unpleasant odor, such as that of ammonia or fecal material shall berejected by the Engineer.
a. Properties:
1) pH 6.0-8.5
2) Soluble Salt Concentration: Max 5
3) Moisture Content: 30-60% (wet weight)
4) Organic Matter Content 25%-65% (dry weight)
5) Stability <4
6) Maturity (plant bioassay) >80/80
7) Physical Contaminants (Man-made inert material) <0.5% (dry weight)

F. Construction Entrance Materials
1. Stone size: ASTM designation C-33, size No. 2 (1-1/2 inches to 2-1/2 inches).
2. Base Course: Crushed stone.

G. Swamp / Mud Mat
1. Heavy duty interlocking Composite Mat System or Wooden / Timber Mat System sized to handle equipment proposed to complete site work.

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a. Manufacturers:
   1) Viking Mat Company
   2) Spartan Mat
   3) Approved Equivalent

H. Temporary Seeding
   1. See Section 32 92 19 - Seeding

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify compacted subgrade or stabilized soil is acceptable and ready to support devices and imposed loads.

B. Verify gradients and elevations of base or foundation for other work are correct.

3.2 PREPARATION

A. Install control measures prior to construction to prevent erosion, siltation and sedimentation of construction areas, adjacent areas and off-site areas in the following work areas:
   1. Soil stockpiles, storage and staging areas;
   2. Cut and fill slopes and other stripped and graded areas;
   3. Constructed and existing swales and ditches;
   4. Construction and Restored Wetland areas.
   5. As indicated on Drawings

B. Provide additional means of erosion and sediment control as required for continued or unforeseen erosion problems.

3.3 GENERAL

A. Install and maintain site erosion and sediment controls as indicated on Drawings.

3.4 STABILIZED CONSTRUCTION ENTRANCE AND SWAMP / MUD MATS

A. Place stone entrances and mats in locations indicated on Drawings.

B. Length: As indicated on Drawings.

C. Thickness: As indicated on Drawings.

D. Width: Not less than full width of all points on ingress or egress, as indicated on Drawings.

E. Washing: Spray wash truck wheels leaving the Project site, when necessary, to remove sediment prior to entrance onto public right-of-way. Perform wheel washing in an area stabilized with crushed stone which drains into an approved sediment trap or sediment basin. Prevent all

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sediment from entering any storm drain, ditch, or watercourse through the use of straw bales, catchbasin inserts, silt fence or other approved methods.

F. Maintenance: Maintain the entrance to prevent tracking or flowing of sediment onto public rights-of-way. Provide periodic top dressing with additional stone as conditions demand. Repair and/or clean devices used to trap sediment. Sediment spoiled, dropped, washed or tracked onto public rights-of-way must be removed immediately.

3.5 TUBULAR SEDIMENT BARRIER

A. See Drawings and manufacturer's recommendations for installation.

3.6 SITE STABILIZATION

A. Incorporate erosion control devices indicated on Drawings into the Project at the earliest practicable time.

B. Construct, stabilize and activate erosion controls before site disturbance within tributary areas of those controls.

C. Do not exceed 35 feet height for stockpile(s) and waste pile(s). Slope stockpile(s) sides at 2: 1 or flatter.

D. Provide appropriate temporary stabilization of any disturbed area on which activity has ceased and which will remain exposed for more than 14 days.
   1. Provide temporary seed mix as indicated in Section 32 92 19 - Seeding
      a. Water the seeded areas as required until satisfactory establishment.
      b. After establishment, cut seed heads to ensure annual seed does not spread.
   2. During non-germinating periods, apply mulch at recommended rates.

E. Provide permanent stabilization of disturbed areas which are either at finished grade or will not be disturbed within one year in accordance with permanent seeding specifications or as indicated on Drawings with one of the following:
   1. Application of Bonded Fiber Matrix hydroseed seed mix as specified.
   2. Placement of erosion control blanket as indicated on Drawings.

F. Stabilize diversion channels, sediment traps, and stockpiles immediately.

3.7 COMPOST BLANKET

A. Do not apply compost blanket until the engineer has approved the site and soil conditions.

B. Vertically track slopes to increase soil roughness.

C. Thoroughly mix seed with media prior to application.

D. Compost blanket shall be pneumatically applied (blown on) to a minimum depth of one half to one inch.

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E. Cover 100% of the exposed soil area.

3.8 SLOPE STABILIZATION (SLOPES OF 4:1 OR GREATER)

A. Do not leave disturbed areas and slopes unattended or exposed for excessive periods of time such as the inactive Winter season. Provide appropriate stabilization practices as indicated on Drawings on disturbed area as soon as possible, but not more than 14 days after the construction activity in that area has temporarily or permanently ceased.

B. Reinforce temporary areas having a slope greater than 4:1 with erosion control blankets or approved equivalent until the site can be properly stabilized.

C. Provide permanent slope stabilization immediately after the placement of topsoil. Provide permanent stabilization as indicated on Drawings with one of the following:
1. Apply hydroseed seed mix as specified. See Section 32 92 19 – Seeding
2. Application of Bonded Fiber Matrix hydroseed seed mix as specified.
3. Placement of erosion control blanket as indicated on Drawings.

D. Apply hydroseed seed mix as specified.

3.9 EROSION CONTROL BLANKET

A. As indicated on Drawings and/or manufacturer's recommendations for installation.

3.10 CATCH BASIN INSERTS

A. As indicated on Drawings and/or manufacturer's recommendations for installation.

3.11 FIELD QUALITY CONTROL

A. Inspect erosion and sediment control devices and stabilized slopes on a weekly basis and after each rainfall event of .25 inch or greater. Make necessary repairs of identified problems within 24 hours to ensure erosion and sediment controls are in good working order. Reset or replace materials as required.

B. When field visits indicate Work does not meet specified requirements, repair and/or replace Work.

C. Any deviation from the requirements provided must be approved by the Engineer.

3.12 CLEANING

A. When sediment accumulation in sedimentation structures has reached a point one-third depth of sediment barrier or device, remove and dispose of sediment.

B. Do not damage structure or device during cleaning operations.

C. Do not permit sediment to erode into construction or site areas or natural waterways.

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D. Clean channels when depth of sediment reaches approximately one half channel depth.

3.13 PROTECTION

A. Do not permit construction traffic over stabilized areas.

B. Protect Project site stabilization from elements, flowing water, or other disturbance until vegetation established.

END OF SECTION

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SECTION 31 37 00 – RIPRAP AND ROCK LINING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes all materials, labor, equipment and other incidental items required to furnish and install the work of this section, including:
   1. Rock or Riprap placed loose.
   2. Geotextile Fabric.
   3. Geomembrane Liner.

B. Related Sections:
   1. Section 31 12 00 – Earth Moving.
   2. Section 31 25 00 – Erosion and Sedimentation Controls
   3. Section 32 11 23 – Aggregates.
   4. Section 32 91 19 – Landscape Grading.

1.2 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures: Requirements for submittals

B. Product Data: Submit data for rock and geotextile fabric.

C. Sample: One 5-gallon sample of stone to confirm size, color and shape

D. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.3 QUALITY ASSURANCE

A. Furnish each aggregate material from a single source throughout the Work.

B. Perform Work in accordance with State of Massachusetts Department of Transportation Standard Specifications and Supplements, latest edition, Boston, Massachusetts.

PART 2 PRODUCTS

2.1 MATERIALS

A. Rock:
   1. Rip Rap for flared ends
      a. Native Nantucket Stone; irregular shaped rock; solid and nonfriable; Minimum d50 = 6”, meeting MassDOT standard specification section 258.
   2. Overflow Spillway, Monitoring Spillway, Locust Log Check Dam, and Level Spreader: Naturally occurring, rounded river stone; dimensions as shown on Drawings.

B. Geotextile Fabric: Refer to Section 31 20 00 - Earth Moving.

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PART 3 EXECUTION

3.1 EXAMINATION

A. Do not place rock, riprap, or riprap bags over frozen or spongy subgrade surfaces.

3.2 PLACEMENT

A. Place geotextile fabric over substrate, lap edges and ends.

B. Place rock and riprap as indicated on drawings.

END OF SECTION

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SECTION 31 60 00 - HELICAL PILES AND ANCHORS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Helical piles and anchors for foundations for structures.

B. Related Requirements:
   1. Section 06 13 00 – Timber Construction
   2. Section 06 15 00 – Wood Decking
   3. Section 31 10 00 – Site Clearing
   4. Section 31 20 00 – Earth Moving

C. Description of Work
   1. This work pertains to furnishing all necessary material, engineering, supervision, tools, equirpment and installing Helical Piles, Helical Anchors, and Bracket Assemblies shown in the Contract in accordance with the Drawings and this specification. Each Helical Pile and Helical Anchor shall be installed at the location and to the elevation, length, installation torque, and allowable capacities shown on the Plans and specifications. This work also pertains to load testing and pre-loading Helical Piles and Helical Anchors where required.

1.2 DEFINITIONS

A. Pile Design Professional Engineer: Individual or firm responsible for the design of Helical Piles, Helical Anchors and Brackets. Professional must be registered in the State of Massachusetts to stamp pile calculations and drawings.

B. Contractor: The person/firm responsible for performing the Helical Pile work.

C. Coupling: Central steel shaft connection means formed as integral part of the plain extension shaft material. For Type SS & RS Helical Piles, couplings are internal or external sleeves, or hot upset forged sockets.

D. Coupling Bolt(s): High strength, structural steel fasteners used to connect Helical Pile segments together. For Type SS segments, the coupling bolt transfers axial load. For Type RS segments, the coupling bolts transfer both axial and torsional forces.

E. Helical Extension: Helical Pile foundation component installed immediately following the lead or starter section, if required. This component consists of one or more helical plates welded to a central steel shaft of finite length. Function is to increase bearing area.

F. Helix Plate: Generally round steel plate formed into a ramped spiral. The helical shape provides the means to install the helical pile, plus the plate transfers load to soil in end bearing. Helix plates are available in various diameters and thickness.

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G. HELICAL PULLDOWN® Micropile: A small diameter, soil displacement, cast-in-place Helical Pile, in which most of the applied load is resisted by the central steel shaft and steel reinforcement, if installed. Load transfer to soil is both end bearing and friction. United States Patent 5,707,180, Method and Apparatus for Forming Piles In-Situ. A.k.a. HPM.

H. Helical Pile: A bearing type foundation element consisting of a lead or starter section, helical extension (if so required by site conditions), plain extension section(s), and a pile cap. A.k.a. helical screw pile, screw pile, helical screw foundation.

I. Installation Torque(T): The resistance generated by a Helical Pile when installed into soil. The installation resistance is a function of the soil type, and size and shape of the various components of the Helical Pile.

J. Lead Section: The first Helical Pile foundation component installed into the soil, consisting of single or multiple helix plates welded to a central steel shaft. A.k.a. Starter Section.

K. Pile Cap: Connection means by which structural loads are transferred to the Helical Pile. The type of connection varies depending upon the requirements of the project and type of Helical Pile material used.

L. Round Shaft (RS): Round steel pipe central Shaft elements ranging in diameter from 2-7/8” to 10”. A.k.a. Hollow Shaft (Type HS), Type T/C, Type PIF.

M. Plain Extension: Central steel shaft segment without helix plates. It is installed following the installation of the lead section or helical extension (if used). The segments are connected with integral couplings and bolts. Plain extensions are used to extend the helix plates beyond the specified minimum depth and into competent load bearing stratum.

N. Safety Factor: The ratio of the ultimate capacity to the working or design load used for the design of any structural element.

O. Square Shaft (SS): Solid steel, round-cornered-Square central Shaft elements ranging in size from 1-1/4” to 2-1/4”. A.k.a. Type SQ.

P. Torque Strength Rating: The maximum torque energy that can be applied to the helical pile foundation during installation in soil, a.k.a. allowable, or safe torque.

1.3 REFERENCE STANDARDS

A. This specification is based on nationally recognized codes and standards including the references listed below. In case of a conflict between the reference and this specification, this specification shall govern.

B. American Society for Testing and Materials (ASTM):
1. ASTM A36/A36M Structural Steel
2. ASTM A123-02 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
3. ASTM A153-05 Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware

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4. ASTM A450/A450M-07 Standard Specification for General Requirements for Carbon and Low Alloy Steel Tubes
5. ASTM D1143/D1143M-07 Standard Test Method for Piles Under Static Axial Compressive Load
6. ASTM D3689 Standard Test Method for Individual Piles Under Static Axial Tensile Load
7. ASTM D3966-07 Standard Test Method for Piles Under Lateral Loads

C. American Society of Mechanical Engineers (ASME):
1. ANSI/ASME Standard B18.2.1-1996, Square and Hex Bolts and Screws, Inch Series

D. Occupational Safety and Health Administration (OSHA):
1. Excavation Safety Guidelines

E. ICC-Evaluation Services, Inc.:
1. AC358 Acceptance Criteria for Helical Foundation Systems and Devices

F. American Welding Society
1. ANSI/AWS B2.1-00 Standard for Welding Procedure and Performance Qualification

1.4 ALLOWABLE TOLERANCES

A. Centerline of Helical Piles shall not be more than 2 inches from indicated plan location.

B. Helical Pile plumbness shall be within 2 degrees of design alignment.

C. Top elevation of Helical Pile shall be within 1 inch of the design vertical elevation.

1.5 PREINSTALLATION MEETINGS

A. Convene minimum one week prior to commencing Work of this Section.

1.6 SUBMITTALS

A. Contractor shall submit to the Engineer for review and approval, Shop Drawings (stamped by a professional engineer licensed in the state of Massachusetts) and specifications for the Helical Piles and Helical Anchors intended for use on the project prior to ordering material. The Shop Drawings shall include the following:
1. Helical Pile and Helical Anchor product identification number(s) and designation(s)
2. Maximum allowable mechanical compression and tensile strength of the Helical Piles and Helical Anchors
3. Number of Helical Piles and Helical Anchors and respective design allowable capacities from the Drawings
4. Planned installation depth and the number of lead and extension sections
5. Preliminary helical configuration (number and diameter of helical bearing plates)
6. Manufacturer’s recommended capacity to installation torque ratio
7. Minimum final installation torque(s)
8. Product identification numbers and designations for all Bracket Assemblies and number and size of connection bolts or concrete reinforcing steel detail

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9. Corrosion protection coating on Helical Piles, Helical Anchors, and Bracket Assemblies

B. Installer information:
   1. Evidence the Contractor has completed training in the proper methods of installation of Helical Piles and Helical Anchors and the mounting of Brackets.
   2. Evidence of having installed Helical Piles and Helical Anchors on at least ten (10) projects, including project name, number and type of Helical Piles or Helical Anchors, project location, and client contact information.
   3. Resume of Contractor's foreman including experience in the oversight of Helical Pile and Helical Anchor installation on at least five (5) projects in the last five (5) years, including project name, number and type of Helical Piles or Helical Anchors installed, project location, and client contact information.
   4. List of installation and testing equipment and detailed description of proposed method of installation and load testing Helical Piles and Helical Anchors (if testing is required).

C. Contractor's Pile Design Professional shall submit engineering stamped (PE licensed professional) design calculations for the Helical Piles, Helical Anchors, and Brackets intended for use on the project. The Stamped Drawings shall include the following:
   1. Reduction in shaft dimension and strength by the sacrificial thickness anticipated based on corrosion loss over the design life for project soil conditions.
   2. Considerations for downdrag, buckling, and expansive soils (as appropriate).
   3. Minimum installation depth to reach bearing stratum and to achieve pullout capacity (if required).
   4. Soil bearing and pullout capacity.
   5. Lateral resistance of the shaft (if required).
   6. Estimated pile head movement at design loads.

D. Contractor to submit calibration information certified by an independent testing agency for the torque measurement device and all load testing and monitoring equipment to be used on the project. Calibration information shall have been tested within the last year of the date submitted. Calibration information shall include, but is not limited to, the name of the testing agency, identification number or serial number of device calibrated, and the date of calibration.

E. Contractor to submit the Helical Pile Load Test to the Owner.

F. Warranty: Manufacturer and Contractor shall provide a Five (5) year warranty against manufacturing defects on the Helical Piles, Helical Anchors, Bracket products, and other helical appurtenances from the date of substantial completion as approved by the Owner. Warranty shall include that the Underpinning System and Foundation Products will be free of defects in material and workmanship from the date of approved substantial completion of the installation of the Helical Underpinning System. Should the Products listed or Underpinning System fail to perform as intended, manufacturer shall repair or replace the Products or Underpinning System at no cost to the Owner. If failure is found contractor shall be responsible for evaluation, labor, removal or re-installation of the Products or Underpinning System.

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1.7 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements specifies requirements for submittals.

B. Project Record Documents: Record actual locations of piles.

C. Warranty, Operation and Maintenance Data.

1.8 QUALIFICATIONS

A. Due to the special requirements for manufacture and quality control of Helical Piles, Helical Anchors, and Brackets, all Helical Piles, Helical Anchors and Brackets shall be obtained from a company specializing in the manufacturing and distribution of these products. Approved manufacturers shall be as follows:
   1. Earth Anchoring – Contact Diana Rossi 610-609-6072
   2. A.B. Chance Company
   3. Magnum Piering, Inc.;
   4. PierTech Systems;
   5. RamJack Foundation Solutions;
   6. Viking Helical Anchors.
   7. Goliath Tech.

B. Due to the special requirements for installation of Helical Piles, Helical Anchors, and Brackets, all Helical Piles, Helical Anchors, and Brackets shall be installed by an organization specializing in the installation of those products.
   1. Evidence the Contractor has completed training in the proper methods of installation of Helical Piles and Helical Anchors and the mounting of Brackets.
   2. A recent company brochure indicating experience in this type of work.
   3. Evidence of having installed Helical Piles and Helical Anchors on at least ten (10) projects, including project name, number and type of Helical Piles or Helical Anchors, project location, and client contact information.
   4. Resume of Contractor's foreman including experience in the oversight of Helical Pile and Helical Anchor installation on at least five (5) projects in the last five (5) years, including project name, number and type of Helical Piles or Helical Anchors installed, project location, and client contact information.
   5. List of installation and testing equipment and detailed description of proposed method of installation and load testing Helical Piles and Helical Anchors (if testing is required).
   6. Current ANSI/AWS welding certificate and documentation of welder experience within the last 5 years (if welding is required).

C. Due to the special requirements for design of Helical Piles, Helical Anchors, and Brackets, all Helical Piles, Helical Anchors, and Brackets shall be designed and stamped by a licensed engineer professional specialized in the engineering and design of Helical Piles and Helical Anchors. The submittal shall include:
   1. The curriculum vitae of the designated Pile Design Professional indicating at least ten (10) years experience in this type of work as well as graduate education in structural and/or geotechnical engineering.

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2. Evidence of Pile Design Professional having designed Helical Piles and Helical Anchors on at least ten (10) projects, including project name, number and type of Helical Piles or Helical Anchors, project location, and client contact information.
3. Professional errors and omissions liability insurance certificate.
4. Evidence of current license to practice engineering in the project state.
5. A product catalog and all necessary technical data sufficient to qualify the proposed product substitution.
6. Evidence showing manufacturer has at least ten (10) years experience in the design and manufacture of Helical Piles and Helical Anchors.
7. Current ICC-ES product evaluation report or complete description of product testing and engineering calculations used to assess product capacity.
8. Current ISO 9001:2008 certification.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials in manufacturer's packaging including application instructions.

B. All Helical Pile, Helical Anchor, and Bracket Assemblies shall be free of structural defects and protected from damage. Store Helical Piles, Helical Anchors, and Bracket Assemblies on wood pallets or supports to keep from contacting the ground. Damage to materials shall be cause for rejection.

C. Field Measurements: Verify field measurements prior to fabrication. Indicate field measurements on Shop Drawings.

1.10 WARRANTY

A. Furnish five-year manufacturer's warranty for manufacturer’s defects.

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PART 2 PRODUCTS

2.1 HELICAL PILES, HELICAL ANCHORS, AND BRACKETS

A. Unless noted otherwise, it is the Contractor’s Pile Design Professional’s responsibility to select the appropriate size and type of Helical Piles, Helical Anchors, and Brackets to support the design loads shown on the Drawings. These specifications and the Drawings provide minimum requirements to aid the Contractor in making appropriate materials selections. The size and number of helical bearing plates must be such that the Helical Piles and Helical Anchors achieve the appropriate torque and capacity in the soils at the site within the minimum and maximum length requirements. Failure to achieve proper torque and capacity shall result in Contractor replacing Helical Piles and Helical Anchors as appropriate to support the required loads.

B. The design strength of the helical bearing plates, shaft connections, brackets, and the pile shaft itself shall be sufficient to support the design loads specified on the Drawings times appropriate service load factors. In addition, all Helical Piles and Helical Anchors shall be manufactured to the following criteria.

1. Central Shaft: The central shaft shall consist of a high strength structural steel tube meeting the requirements of ASTM A450.
2. Helical Bearing Plates: One or more helical bearing plates shall be affixed to the central shaft. Helical bearing plates shall be attached to central shafts via fillet welds continuous on top and bottom and around the leading edges. Helical bearing plates shall be cold pressed into a near perfect helical shape that when affixed to the central shaft are perpendicular with the central shaft, of uniform pitch, and such that the leading and trailing edges are within 3/8 inch of parallel. Average helical pitch shall be within plus or minus 1/4 inch of the thickness of the helical bearing plate.
3. Corrosion Protection: Helical Piles, Helical Anchors, and Brackets shall be hot-dip galvanized (per ASTM A123 or A153 as applicable).
4. Shaft Connections: The Helical Pile and Helical Anchor shaft connections shall consist of an external sleeve connection or a welded connection. External sleeve connections shall be in-line, straight and rigid and shall have a maximum tolerable slack of 1/16-inch. Welded connections shall consist of a full penetration groove weld all-around the central shaft. Shaft connections shall have a flexural strength at least as great as the shaft itself.
5. Bolts: Bolt holes through the external sleeve and central shaft shall have a diameter that is 1/16th inch greater than the bolt diameter. Bolts and nuts used to join Helical Pile and Helical Anchor sections at the shaft connections shall be bare steel, epoxy coated, or zinc coated to match the corrosion protection used for the central shaft. All Helical Pile and Helical Anchor bolts shall be securely snug tightened.
6. External sleeve: External sleeve Helical Pile and Helical Anchor shaft connections shall consist of a high strength structural steel tube outer sleeve meeting the requirements of ASTM A450. The outer sleeve shall be welded to the central shaft via a continuous fillet weld all-around.
7. The fillet weld shall have a throat thickness equal to the external sleeve tube thickness.

C. Helical Piles and Helical Anchors shall be fitted with a manufactured Bracket that facilitates connection to the structure. Brackets shall be rated for the design loads shown on the Drawings. Brackets shall be affixed to the end of Helical Piles and Helical Anchors via bolts, plug welds, or continuous penetration welds meeting the requirements for shaft connections given previously in these specifications.

PART 3 EXECUTION

3.1 EXAMINATION

A. Contractor shall take reasonable effort to locate all utilities and structures above and underground in the area of the Work. Contractor shall pot hole to determine the exact location of underground utilities and buried structures within a distance from a Helical Pile or Helical Anchor equal to three times the maximum helix diameter. Contractor is responsible for protection of utilities and structures shown on the Drawings. Costs of avoiding, relocating, or repair of utilities not shown on Drawings shall be paid by Owner as extra work.

B. Contractor shall review Drawings and Contract Documents to determine subsurface conditions for sizing and installation of Helical Piles and Helical Anchors. In addition, Contractor shall make a site visit to observe conditions prior to the start of Work.

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C. If excavation is required for proper installation of Helical Piles and Helical Anchors, Contractor shall make safe excavations in accordance with OSHA standards. All excavations greater than 20 feet in depth or not in strict accordance with OSHA standard details shall be designed by a registered design professional specializing in the design of excavations and shoring. The costs of all excavations, shoring, and related design to be born by the Contractor unless noted otherwise in the Contract.

D. Contractor to notify Engineer at least 24 hours prior to installation of Helical Piles or Helical Anchors to schedule quality assurance observations required on the Drawings.

3.2 INSTALLATION EQUIPMENT

A. Torque Motor: Helical Piles and Helical Anchors should be installed with high torque, low RPM torque motors, which allow the helical plates to advance with minimal soil disturbance. The torque motor shall be hydraulic power driven with clockwise and counter-clockwise rotation capability. The torque motor shall be adjustable with respect to revolutions per minute during installation. Percussion drilling equipment shall not be permitted. The torque motor shall have torque capacity equal to or greater than the minimum final installation torque required for the project. The connection between the torque motor and the installation rig shall have no more than two pivot hinges oriented 90 degrees from each other. Additional hinges promote wobbling and affect lateral capacity.

B. Installation Equipment: The installation equipment shall be capable of applying adequate crowd and torque simultaneously to ensure normal advancement of the Helical Piles and Helical Anchors. The equipment shall be capable of maintaining proper alignment and position.

C. Drive Tool: The connection between the torque motor and Helical Pile and Helical Anchor shall be in-line, straight, and rigid, and shall consist of a hexagonal, square, or round kelly bar adapter and helical shaft socket. To ensure proper fit, the drive tool shall be manufactured by the Helical Pile manufacturer and used in accordance with the manufacturer's installation instructions.

D. Connection Pins: The central shaft of the Helical Pile or Helical Anchor shall be attached to the drive tool by ASME SAE Grade 8 smooth tapered pins matching the number and diameter of the specified shaft connection bolts. The connection pins should be maintained in good condition and safe to operate at all times. The pins should be regularly inspected for wear and deformation. Pins should be replaced with identical pins when worn or damaged.

E. Torque Indicator: A torque indicator shall be used to measure installation torque during installation. The torque indicator can be an integral part of the installation equipment or externally mounted in-line with the installation tooling. The torque indicator shall be capable of torque measurements with a sensitivity of 500 ft-lb or less. Torque indicators shall have been calibrated within 1-year prior to start of Work. Torque indicators that are an integral part of the installation equipment shall be calibrated on-site. Torque indicators that are mounted in-line with the installation tooling shall be calibrated either on-site or at an appropriately equipped test facility. Indicators that measure torque as a function of hydraulic pressure shall be re-calibrated following any maintenance performed on the torque motor. Torque indicators

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shall be re-calibrated if, in the opinion of the Engineer, reasonable doubt exists as to the accuracy of the torque measurements.

3.3 INSTALLATION PROCEDURES

A. The number and size of helical blades shall be determined by the Contractor's Pile Design Professional in order to achieve the required torque and tensile/bearing capacity for the soil conditions at the site. The ratio of design load to the total area of the helical bearing plates shall not exceed the Allowable Bearing Capacity.

B. Connect the lead section to the Torque Motor using the Drive Tool and Connection Pins. Position and align the Lead Section at the location and to the inclination shown on the Drawings and crowd the pilot point into the soil. Advance the Lead Section and continue to add Extension Sections to achieve the Termination Criteria. All sections shall be advanced into the soil in a smooth, continuous manner at a rate of rotation between 10 and 40 revolutions per minute. Snug tight all coupling bolts.

C. Constant axial force (crowd) shall be applied while rotating Helical Piles and Helical Anchors into the ground. The crowd applied shall be sufficient to ensure that the Helical Pile and Helical Anchor advances into the ground a distance equal to at least 80% of the blade pitch per revolution during normal advancement.

D. The manufacturer's torsional strength rating of the Helical Pile or Helical Anchor shall not be exceeded during installation.

E. Bolt hole elongation due to torsion of the shaft of a Helical Anchor at the drive tool shall be limited to ¼ inch. Helical Anchors with bolt hole damage exceeding this criterion shall be uninstalled, removed, and discarded.

F. When the Termination Criteria of a Helical Pile or Helical Anchor is obtained, the Contractor shall adjust the elevation of the top end of the shaft to the elevation shown on the Drawings or as required. This adjustment may consist of cutting off the top of the shaft and drilling new holes to facilitate installation of Brackets to the orientation shown on the Drawings. Alternatively, installation may continue until the final elevation and orientation of the pre-drilled bolt holes are in alignment. Contractor shall not reverse the direction of torque and back-out the Helical Pile or Helical Anchor to obtain the final elevation.

G. The Contractor shall install Brackets in accordance with Helical Pile manufacturer's details or as shown on the Drawings.

H. All Helical Pile and Helical Anchor components including the shaft and Bracket shall be isolated from making a direct electrical contact with any concrete reinforcing bars or other non-galvanized metal objects since these contacts may alter corrosion rates.

3.4 TERMINATION CRITERIA

A. Helical Piles and Helical Anchors shall be advanced until all of the following criteria are satisfied.

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1. Axial capacity is verified by achieving the final installation torque as provided by the Pile Design Professional.
2. Minimum depth is obtained. The minimum depth shall be as required for bearing capacity and soil conditions, that which corresponds to the planned bearing stratum, or the depth at which the final installation torque is measured, whichever is greater. In addition, Helical Anchors shall be advanced until the average torque over the last three (3) feet equals or exceeds the required final installation torque. In general, in cohesive and fine granular soils, the helices must be installed at least five diameters of the largest helix below the ground surface for their torque vs. capacity relationship to be valid. (A.B. Chance Company "Technical Manual," 2000, p. 10). In dense granular soils such as sands and gravels, compression capacity may remain valid at depths less than five helix diameters below ground surface but tension capacity may not. Careful evaluation and/or testing may be necessary.

B. If the torsional strength rating of the Helical Pile or Helical Anchor and/or the maximum torque of the installation equipment has been reached or Augering occurs prior to achieving the minimum depth required, the Contractor shall have the following options:
   1. Terminate the installation at the depth obtained subject to the review and acceptance of the Engineer and Owner.
   2. Remove the Helical Pile or Helical Anchor and install a new one with fewer and/or smaller diameter helical bearing plates or with dual cutting edge helical bearing plates. The new helical configuration shall be subject to review and acceptance of the Engineer and Owner.
   3. Remove the Helical Pile or Helical Anchor and pre-drill a 4-inch diameter pilot hole in the same location and reinstall the anchor/pile.
   4. If the obstruction is shallow, remove the Helical Pile or Helical Anchor and remove the obstruction by surface excavation. Backfill and compact the resulting excavation and reinstall the anchor/pile.
   5. Remove the Helical Pile or Helical Anchor and relocate 1-foot to either side of the installation location subject to the review and acceptance of Engineer and Owner.
   6. Reverse the direction of torque, back-out the Helical Pile or Helical Anchor a distance of 1 to 2 feet and attempt to reinstall by decreasing crowd and Augering through the obstruction.
   7. Remove the Helical Pile or Helical Anchor and sever the uppermost helical bearing plate from the Lead Section if more than one helical bearing plate is in use, or reshape the helical bearing plates to create a special tapered edge by cutting with a band saw. Reinstall the anchor or pile with revised helical bearing plate configuration.
   8. If these methods above are not successful then the Contractor shall halt installation work until the matter can be resolved upon mutual satisfaction of Contractor, Owner, and Engineer. Boulders less than or equal to one cubic yard (1-cy) shall be considered removable at no extra charge. Boulders or bedrock greater than 1-cy that must be removed for piles that cannot be relocated in the vicinity of the foundation will be paid for at a mutually agreed upon unit price.

C. If the final installation torque is not achieved at the contract length, the Contractor shall have the following options, which shall be implemented in the order provided unless otherwise approved by the Engineer:
   1. Until the maximum depth is achieved (if any), install the Helical Pile or Helical Anchor deeper using additional Extension Sections.

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2. Remove the Helical Pile or Helical Anchor and install a new one with additional and/or larger diameter helical bearing plates.
3. Decrease the rated load capacity of the Helical Pile or Helical Anchor and install additional Helical Piles or Helical Anchors. The rated capacity and additional unit location shall be subject to the review and acceptance of the Engineer and Owner.

3.5 FIELD QUALITY CONTROL

A. The Contractor shall provide the Engineer and Owner copies of installation records within 48 hours after each installation is completed. These installation records shall include, but are not limited to, the following information:
   1. Name of project and Contractor.
   2. Name of Contractor's supervisor during installation.
   3. Date and time of installation.
   4. Name and model of installation equipment.
   5. Type of torque indicator used.
   6. Location of Helical Pile or Helical Anchor by grid location, diagram, or assigned identification number.
   7. Type and configuration of Lead Section with length of shaft and number and size of helical bearing plates.
   8. Type and configuration of Extension Sections with length and number and size of helical bearing plates, if any.
   9. Installation duration and observations.
   10. Total length installed.
   11. Final elevation of top of shaft and cut-off length, if any.
   12. Final plumbness or inclination of shaft.
   13. Installation torque at minimum three-foot depth intervals.
   14. Final installation torque.
   15. Comments pertaining to interruptions, obstructions, or other relevant information.
   16. Verified axial load capacity.

B. Unless specified otherwise on the Drawings or by local codes, the Engineer, the Pile Design Professional, or an inspection agency accepted by the Engineer shall observe and document at least 10 percent of Helical Pile and Helical Anchor installations.

C. Vertical or horizontal movement greater than or equal to one (1) inch in any direction in the first year caused by heaving or settlement shall be considered pile failure. The Contractor shall remove any section found to have failed during this period and re-design and replace the section(s) as required at no additional cost to the Owner.

3.6 LOAD TESTING

Load tests shall be performed to verify the suitability and capacity of the proposed Helical Pile, and the proposed installation procedures prior to installation of production helical piles. Four sacrificial test helical piles shall be constructed immediately prior to the start of work on the production piles. The Owner shall determine the number of pre-production tests, their location, acceptable load and movement criteria, and the type(s) of load direction (i.e., tension, compression, or both). Additional purpose of pre-production tests is to empirically verify the ultimate capacity to the average installing torque of the Helical Pile for the project site.

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Pre-production Helical Pile installation methods, procedures, equipment, and overall length shall be identical to the production Helical Piles to the extent practical except where approved otherwise by the Owner. The Contractor shall submit for review and acceptance the proposed Helical Pile load testing procedure. The pre-production test proposal shall be in general conformance with ASTM D1143 and/or D-3689.

END OF SECTION

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SECTION 32 11 23 - AGGREGATES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes all materials, labor, equipment and other incidental items required to furnish and install the work of the Section, including::
   1. Aggregate subbase.
   2. Aggregate base course.
   3. Aggregates for drainage and subsurface storage.

B. Related Sections:
   1. Section 31 20 00 – Earthwork
   2. Section 32 12 16 – Asphalt Paving
   3. Section 32 13 13 – Concrete Paving
   4. Section 32 14 00 – Pavers
   5. Section 32 16 40 – Granite Curb
   6. Section 32 05 14 – Manholes and Structures
   7. Section 33 05 15 – Drain Basins
   8. Section 33 41 13 – Storm Drainage Piping
   9. Section 33 47 30 – Bioretention

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1.2 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures: Requirements for submittals

B. Product Data:
   1. Submit data for geotextile fabric.

C. Samples: Submit, in air-tight containers, 2 lb sample of each type of aggregate.

D. Materials Source: Submit name of aggregate materials suppliers.

1.3 QUALITY ASSURANCE

A. Furnish each aggregate material from a single source throughout the Work.

B. Perform Work in accordance with Local, State and Federal Standards.

1.4 DELIVERY AND STORAGE

A. Trucks must cover 100%of the load’s exposed surface from the time of loading until immediately before dumping, including standing time waiting to dump.

1.5 ENVIRONMENTAL CONDITIONS

A. Placement is not recommended if the forecasted weather is too cold or wet to allow the material to dry for 1-2 days after placement.

PART 2 PRODUCTS

2.1 BASE, SUBBASE AND DRAINAGE/STORAGE STONE

A. Base and Subbase materials consisting of durable crushed rock used for foundational support for roadways, sidewalks, and utility structures (e.g., drainage and sanitary sewer manholes; septic tanks; concrete pads for electrical transformers, seating benches, lighting fixtures).

B. Drainage and Storage materials consisting of durable washed or double washed crushed rock or native stone used for surface and subsurface drainage and/or retention storage for stormwater control measures, foundation drains, and dewatering activities.

C. Crushed Stone (MassDOT)
1. Durable crushed rock consisting of angular fragments, free from a detrimental quantity of thin, flat, elongated pieces or durable crushed gravel stone obtained by artificial crushing of boulders or fieldstone. The crushed stone must be free from clay, loam, or deleterious material.
2. Reasonably free from clay, loam or deleterious material and not more than 1.0% of satisfactory material passing a No. 200 sieve will be allowed to adhere to the crushed stone. Where crushed stone is to be used for surfacing, this requirement is not to be more than 0.5% of satisfactory material passing a No. 200 sieve.
3. Percentage of wear, by the Los Angeles test, of not more than 45.
4. Uniformly blended according to the grading requirements for the respective stone sizes shown as specified on the Drawings:
   a. Table 1 (MassDOT – Table M2.01.0-1: Tabulation of Stone Sizes)

	Percent Passing By Weight				
MassDOT	M2.01.1 & M2.02.2	M2.01.2	M2.01.4	M2.01.5	M2.01.6
Sieve Size	1-1/2 in.	1-1/4 in.	3/4-in.	½ in.	3/8”
2 inches	100				
1 ½ inch	95-100	100			
1 ¼ inch		85-100			
1 inch	35-70		100		
3/4 inch	0-25	10-40	90-100		
5/8 inch				100	
1/2 inch		0-8	10-50	85-100	100
3/8 inch			0-20	15-45	85-100
No. 4			0-5	0-15	20-50
No. 8				0-5	0-15

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D. Crushed Stone (AASHTO M43)
   a. #2 crushed stone is a combination of assorted sized material that ranges from 1 1/2″ through 2 1/2″ which has been crushed and compacted in size, then processed through a square screen 3″ in size.
   b. #57 smaller particles, typically between ⅜ and 1-inch in diameter.
   c. Sizes and Gradations for AASHTO stone #s (material size):
      1) Table 2

AASHTO M43 Sizes of Coarse Aggregate

Material Size	Nominal Size[1]	Amounts Finer Than Each Sieve (Square Openings) Percentage by Weight													
	inches	4	3-1/2	3	2-1/2	2	1-1/2	1	3/4	1/2	3/8	1/4	No. 4	No. 8	No. 16
	mm	100	90	75	63	50	37.5	25	19	12.5	9.5	6.3	4.75	2.36	1.18
1	3½ - 1½	100	90-100		25-60		0-15		0-5						
2	2½ - 1½			100	90-100	35-70	0-15		0-5						
24	3½ - 0½			100	90-100		25-60		0-10	0-5					
3	2 - 1				100	90-100	35-70	0-15		0-5					
357	2 - No. 4				100	95-100		35-70		10-30			0-5		
4	1½ - ¾					100	90-100	20-55	0-15		0-5				
467	1½- No. 4					100	95-100		35-70		10-30		0-5		
5	1 - ½						100	90-100	20-55	0-10	0-5				
56	1 - ?						100	90-100	40-75	15-35	0-15		0-5		
57	1 - No. 4						100	95-100		25-60			0-10	0-5	
6	¾ - ?							100	90-100	20-55	0-15		0-5		
67	¾ - No. 4							100	90-100		20-55		0-10	0-5	
68	¾ - No. 8							100	90-100		30-65		5-25	0-10	
7	½ - No. 4								100	90-100	40-70		0-15	0-5	
78	½ - No. 8								100	90-100	40-75		5-25	0-10	
8	? - No. 8									100	85-100		10-30	0-10	0-5

[1] Numbered Sieves are those of the United States Standard Sieve Series

E. 3/8” Pea Gravel
   a. Native double washed Stone (clean and free from clay, loam or other plastic material)
   b. Gradation: See Table 1 above

F. Dense Grade (MassDOT)
   1. Sub-base material combining crusher-run coarse aggregates of crushed stone (trap only, meeting M2.01.0,1), and fine aggregates uniformly premixed with a predetermined quantity of water.
   2. Coarse aggregate
      a. Hard, durable particles of fragments of stone. Materials that break up when alternately frozen and thawed or wetted and dried shall not be used.
      b. Percentage of wear, by the Los Angeles test, of not more than 45.
   3. Fine Aggregate: Natural or crushed sand.
   4. The composite material is to be free from clay, loam or other plastic material, and conform to the following grading requirements:
      a. Table 3 (MassDOT - Table M2.01.7-1, Gradation Requirements for Dense Graded Crushed Stone for Sub-base)

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Sieve Size	Percent Passing by Weight
2 in.	100
1 ½ in.	70-100
¾ in.	50-85
No. 4	30-55
No. 50	8-24
No. 200	3-10

2.2 FINE AGGREGATE MATERIALS

A. Fine Aggregate (Sand): Natural river or bank sand; washed; free of silt, clay, loam, friable or soluble materials, and organic matter; graded in accordance with ASTM C-33 within the following limits:

B. Table 4 (ASTM C-33)

Sieve Size	Percent Passing by Weight
No. 4	95-100
No. 8	80-100
No. 16	50-85
No. 30	25-60
No. 50	5-30
No. 100	0-10
No. 200	0

C. Dense Grade
1. See Section 2.1 E.

D. Pea Gravel
1. See Section 2.1 C.

2.3 SOURCE QUALITY CONTROL

A. When tests indicate materials do not meet specified requirements, change material and retest.

2.4 ACCESSORIES

A. Geotextile Fabric: as indicated on the Drawings.

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PART 3 EXECUTION

3.1 EXAMINATION

A. Verify compacted substrate is dry and ready to support imposed loads.
   1. Proof roll substrate in minimum two perpendicular passes to identify soft spots.
   2. Remove soft substrate and replace with compacted fill as specified in Section 31 20 00

B. Verify substrate has been inspected, gradients and elevations are correct.

3.2 PREPARATION

A. Correct irregularities in substrate gradient and elevation by scarifying, reshaping, and re-compacting.

B. If fill is required, compact subgrade soil in accordance with Section 31 20 00.

C. Excavate sandy loam and loamy sand topsoil from areas to be paved prior to base installation.

D. Do not place fill on soft, muddy, or frozen surfaces.

E. All trail drainage concerns must be addressed before TSA placement.

F. TSA should be placed with a cross-slope as indicated on the drawings. This same cross-slope should be established in the trail base materials before TSA placement.

3.3 AGGREGATE BASE PLACEMENT (AS APPLICABLE)

A. Where required, install geotextile fabric over subgrade in accordance with manufacturer's instructions.
   1. Lap ends and edges minimum 6 inches.
   2. Anchor fabric to subgrade when required to prevent displacement until aggregate is installed.

B. Spread aggregate over prepared substrate to total compacted thickness indicated on Drawings.

C. Roller compact aggregate to 95 percent maximum density.

D. Level and contour surfaces to elevations, profiles, and gradients indicated on Drawings.

E. Add small quantities of fine aggregate to coarse aggregate when required to assist compaction.

F. Maintain optimum moisture content of fill materials to attain specified compaction density.

G. Use mechanical tamping equipment in areas inaccessible to compaction equipment.

3.4 TOLERANCES

A. Maximum Variation From Flat Surface: 1/2 inch measured with 10 foot straight edge.

B. Maximum Variation From Thickness: 1/4 inch.

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C. Maximum Variation From Elevation: 1/2 inch.

3.5 FIELD QUALITY CONTROL

A. Perform compaction testing in accordance with AASHTO T180.

B. When tests indicate Work does not meet specified requirements, remove Work, replace and retest.

C. Frequency of Tests: One test for every 1000 square yards of each layer compacted aggregate.

3.6 COMPACTION

A. Compact materials to 95 percent of maximum density as determined from test strip, in accordance with ASTM D2940.

END OF SECTION

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SECTION 32 12 16 - ASPHALT PAVING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes all materials, labor, equipment and other incidental items required to furnish and install the work of the Section, including:
   1. Asphalt materials.
   2. Aggregate materials.
   3. Asphalt paving base course, binder course, and wearing course.
   4. Asphalt paving overlay for existing paving.
   5. Surface slurry.

B. Related Requirement:
   1. Section 31 20 00 - Earth Moving
   2. Section 32 11 23 – Aggregates
   3. Section 33 05 13 - Manholes and Structures

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1.2 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials:
   1. AASHTO M17 - Standard Specification for Mineral Filler for Bituminous Paving Mixtures.
   2. AASHTO M29 - Standard Specification for Fine Aggregate for Bituminous Paving Mixtures.
   3. AASHTO M140 - Standard Specification for Emulsified Asphalt.
   4. AASHTO M208 - Standard Specification for Cationic Emulsified Asphalt.
   5. AASHTO M288 - Standard Specification for Geotextile Specification for Highway Applications.
   6. AASHTO M320 - Standard Specification for Performance-Graded Asphalt Binder.
   7. AASHTO M324 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
   8. AASHTO MP1a - Standard Specification for Performance-Graded Asphalt Binder.

B. Asphalt Institute:
   1. AI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot- Mix Types.
   2. AI MS-2 – Asphalt Plant Manual
   3. AI MS-19 - Basic Asphalt Emulsion Manual.
   4. AI SP-2 - Superpave Mix Design.

C. U.S. Army Corp OF Engineers
   1. UN-13 (CE MP-ET) – Hot Mix Asphalt Handbook

D. ASTM International:
   1. ASTM C1371-2004a - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
   2. ASTM C1549-2004 - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.

3. ASTM D242 - Standard Specification for Mineral Filler For Bituminous Paving Mixtures.
4. ASTM D692 - Standard Specification for Coarse Aggregate for Bituminous Paving Mixtures.
5. ASTM D946 - Standard Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction.
6. ASTM D977 - Standard Specification for Emulsified Asphalt.
7. ASTM D1073 - Standard Specification for Fine Aggregate for Bituminous Paving Mixtures.
8. ASTM D1188 - Standard Test Method for Bulk Specific Gravity and Density of Compacted Bituminous Mixtures Using Coated Samples
9. ASTM D2027 - Standard Specification for Cutback Asphalt (Medium-Curing Type).
10. ASTM D2397 - Standard Specification for Cationic Emulsified Asphalt.
11. ASTM D2726 - Standard Test Method for Bulk Specific Gravity and Density of Non-Absorptive Compacted Bituminous Mixtures.
12. ASTM D2950 - Standard Test Method for Density of Bituminous Concrete in Place by Nuclear Methods.
13. ASTM D3381 - Standard Specification for Viscosity-Graded Asphalt Cement for Use in Pavement Construction.
14. ASTM D3515 - Standard Specification for Hot-Mixed, Hot-Laid Bituminous Paving Mixtures.
15. ASTM D3549 - Standard Test Method for Thickness or Height of Compacted Bituminous Paving Mixture Specimens.
16. ASTM D3910 - Standard Practices for Design, Testing, and Construction of Slurry Seal.
17. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
18. ASTM E408- Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
19. ASTM E903 - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
20. ASTM E1918- Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
21. ASTM E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

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1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data:
   1. Submit product information for asphalt and aggregate materials.
   2. Submit mix design with laboratory test results supporting design.
      a. Design mix submittal to follow the format indicated in the Asphalt Institute Manual MS-2, Marshall Stability Method; and include the following:
         1) Type/name of the mix.
         2) Gradation analysis.
         3) Grade of asphalt cement used
         4) Marshall Stability (lbs.).
         5) Flow and effective asphalt content (percent).

C. Manufacturer's Certificate: Certify Products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Mixing Plant: Conform to Massachusetts Department of Transportation Standards**.**

B. Obtain materials from same source throughout.

C. Perform Work in accordance with MassDOT Standard and Town Standard.

D. Perform work within public rights-of-way in accordance with the rules, regulations and requirements of the Public Agency having control and ownership of such rights-of-way.

1.5 QUALIFICATIONS

A. Installer: Company specializing in performing work of this section with minimum 5 years documented experience and approved by manufacturer.

1.6 AMBIENT CONDITIONS

A. Do not place asphalt mixture between November 1 and March 1.

B. Do not place asphalt mixture when ambient air or base surface temperature is less than 40 degrees F, or surface is wet or frozen.

C. Apply tack coat only when the ambient temperature is above 40°F, and when the temperature has been above 35°F for 12 hours immediately prior to application. Do not apply when base is wet, contains excess moisture, or during rain.

D. The required temperature of the bituminous pavement mixture, within a tolerance of plus or minus 15°F, when delivered at the site, will be governed by the temperature of the base upon which the mix is placed, as follows:

Base Temperature in Degrees F	Required Material Temperature in Degrees F For Course Thickness in Inches			
	1	1-1/2	2	3 and Greater
35-40	-	305	295	280
41-50	310	300	285	275
51-60	300	295	280	270
61-70	290	285	275	265
71-80	285	280	270	265
81-90	275	270	265	260
91 & over	270	265	260	255

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PART 2 PRODUCTS

2.1 ASPHALT PAVING

A. Performance / Design Criteria:
1. Paving: Design for main street arteries.

B. Asphalt Materials:
1. Asphalt Cement: Comply with AASHTO M-226/ASTM D 3381; Table 2 for grades AC-10, AC-20, or AC-30, AR-8000, viscosity grade, depending on local mean annual air temperature, as follows:

Temperature Condition	Asphalt Grades
Cold, mean annual air temperature < 7 degrees C) 45 degrees F)	AC-10 85/100 pen.
Warm, mean annual air temperature Between 7 degrees C (45 degrees F) And degrees C (75 degrees F)	AC-20 60/70 pen.
Hot, mean annual air temperature > 24 degrees C (75 degrees F)	AC-30

2. Tack Coat: AASHTO M140 or ASTM D2397; SS-1h, CSS-1, or CSS-1h; diluted emulsified asphalt, one part water to one part emulsified asphalt setting type.

C. Aggregate Materials:
1. Coarse Aggregate: In accordance with State Department of Transportation Standards.
2. Fine Aggregate:
a. 100% Natural sand
b. 100% Stone sand
c. A blend of natural sand and stone sand
d. The fine aggregate, as delivered to the mixer, must meet the following gradation requirement:

	Percent Passing	
Sieve	Minimum	Maximum
3/8 inch	95	100
No. 8	70	95
No. 50	20	40
No. 200	2	16

e. In the fine aggregate sieve analysis (passing No. 8), the amount between two successive sieves (No. 16, 30, 50, and 100) not to exceed 33 percent of the fine aggregate total.
3. Mineral Filler: ASTM D242 or AASHTO M17; Rock or slag dust, Portland cement, or other inert material or finely ground mineral particles, free of foreign matter.

D. Reclaimed Asphalt Pavement (RAP): Provide material obtained from the highways or streets by crushing, milling, or planing existing hot mix asphalt pavements.

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1. Proportion of RAP to virgin aggregate for base course mixtures and intermediate course mixtures maximum amounts:
   a. 40% for drum mix plants
   b. 20% for modified batch plants.
   c. 10% for surface course mixtures.

2.2 MIXES

A. Use dry material to avoid foaming. Mix uniformly.

B. Asphalt Paving Mixtures: Designed in accordance with MassDOT Standard and Town Standard.

2.3 ACCESSORIES

A. Geotextile Fabric: AASHTO M288; non-woven, polypropylene or Geogrid sub-base reinforcement Model TriAx TX5 manufactured by Tensar International Corporation or Engineer approved equal.

B. Sealant: ASTM D6690, Type II or Type III; hot applied type.

2.4 SOURCE QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.

B. Submit proposed mix design of each class of mix for review prior to beginning of Work.

C. Hot-Mix Asphalt: Dense, hot-laid, hot-mix asphalt plant mixes approved by MASSDOT Specifications and designed according to procedures in AI MS-2, "Mix Design Methods for Asphalt Concrete and Other Hot-Mix Types".

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PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify utilities indicated under paving are installed with excavations and trenches backfilled and compacted.

C. Verify compacted subbase is dry and ready to support paving and imposed loads.
   1. Proof roll subbase with heavy pneumatic-tired equipment in minimum two perpendicular passes to identify soft spots.
   2. Remove soft subbase and replace with compacted fill as specified in Section 31 23 23.

D. Verify gradients and elevations of base are correct.

E. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

F. Proceed with paving only after the Engineer inspects and approves the finished subbase and base and unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Coordinate paving operations with all other work, especially underground utility construction, to prevent covering up unfinished or uninspected work and loss of time or labor by improper scheduling.

B. Prepare subbase in accordance with MassDOT and Town Standards.

C. Apply a uniform coating of an approved tack coat material on vertical surfaces of structures and existing pavement surfaces in contact with new bituminous pavement. Prevent splattering or staining of exposed surfaces above finished grade during the application. Clean, repair or replace exposed surfaces that are stained as a result of incorrect application.

D. Thoroughly clean with a self-propelled sweeper all existing paved surfaces to be overlaid. Broom sweep until areas inaccessible by power sweeper.

3.3 DEMOLITION

A. Saw cut and notch existing paving as indicted on Drawings.

B. Clean existing paving to remove foreign material, excess joint sealant and crack filler from paving surface.

C. Repair surface defects in existing paving to provide uniform surface to receive new paving.

3.4 COLD MILLING

A. Clean existing pavement surface of loose and deleterious material immediately before cold milling.

B. Remove existing asphalt pavement by cold milling to grades and cross sections as indicated on Drawings.

C. Perform milling by machinery suitable for the type and size of project.

3.5 INSTALLATION

A. Install pavements in the location and to the grades as indicated on Drawings.

B. Install pavement courses at thickness as indicated on Drawings.

C. Subbase:
1. Prepare subbase in accordance with MassDOT and Town Standards.

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D. Primer:
   1. Apply primer in accordance with MassDOT and Town Standards.
   2. Use clean sand to blot excess primer.

E. Tack Coat:
   1. Apply tack coat in accordance with MassDOT and Town Standards.
   2. Apply tack coat to contact surfaces of curbs and gutters.
   3. Coat surfaces of manholes, catch basin frames and other covers with oil to prevent bond with asphalt paving. Do not tack coat these surfaces.

F. Single Course Asphalt Paving:
   1. Install Work in accordance with MassDOT and Town Standards.
   2. Place asphalt within 24 hours of applying primer or tack coat.
   3. Place asphalt wearing course to thickness indicated on Drawings.
   4. Compact paving by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
   5. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks.

G. Double Course Asphalt Paving:
   1. Place asphalt binder course within 24 hours of applying primer or tack coat.
   2. Place binder course to thickness indicated on Drawings.
   3. Place wearing course within 24 hours of placing and compacting binder course. When binder course is placed more than 24 hours before placing wearing course, clean surface and apply tack coat before placing wearing course.
   4. Place wearing course to thickness indicated on Drawings.
   5. Compact each course by rolling to specified density. Do not displace or extrude paving from position. Hand compact in areas inaccessible to rolling equipment.
   6. Perform rolling with consecutive passes to achieve even and smooth finish, without roller marks.

H. Meeting Existing Pavements
   1. Sawcut the existing pavements to produce a uniform, smooth joint surface. Sawcut neat, straight, even lines with straight vertical edges free from irregularities. Do not damage the pavement to remain.
   2. Full-Depth Pavement: Sawcut to the full depth of the pavement prior to placement of any new pavement. Apply tack coat to the sawcut surface immediately prior to the installation of the new abutting bituminous pavement material to provide a bond between the old and new pavement. The new compacted pavement surface must be finished flush with the abutting pavement.
   3. Bituminous Pavement Overlays: Sawcut existing pavement to a minimum depth of one and one half inches. Prior to completing overlays, taper existing pavements by grinding one-half inches deep at the sawcut face and taper to zero inches deep at the following distances:
      a. Six feet from the sawcut face in driveways and parking areas.
      b. Twelve feet in roadways.

   Clean and apply an asphalt emulsion tack coat immediately prior to placement of the overlay. The new compacted surface at the joint must be flush with the abutting existing pavement.

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I. Surface Slurry
   1. Install uniform thickness surface slurry over existing paving in accordance with ASTM D3910.
   2. Allow slurry to cure.
   3. Roll paving to achieve uniform surface.

3.6 TOLERANCES

A. Flatness: Maximum variation of 1/4 inch measured with 10 foot straight edge.

B. Scheduled Compacted Thickness: Within 1/4 inch.

C. Variation from Indicated Elevation: Within 1/2 inch.

3.7 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Requirements for inspecting, testing.

B. Asphalt Paving Mix Temperature: Measure temperature at time of placement.

C. Asphalt Paving Thickness: ASTM D3549; test one core sample from every 1000 square yards compacted paving.

D. Owner to provide and Independent Testing Laboratory to perform testing of in-place bituminous pavement courses for compliance with requirements for thickness, density and surface smoothness. Top and base courses will be randomly tested with a calibrated nuclear gauge or Engineer approved equal. If density tests are found to be not in conformance with the specifications, additional core samples are to be provided at the same interval listed above for the paved surface for further testing. Pavement samples will be tested for conformance with the mix design. If additional core samples are found to be not in conformance with the specifications, remove and replace pavement at no expense to the Owner. Fill core samples with bituminous or cement concrete.

E. Compaction: Perform the field density test for in-place materials by examination of field cores or nuclear gauge testing and provide a minimum compacted density of 95% of laboratory Marshall Density in accordance with one of the following standards:
   1. Bulk Specific Gravity and Density of Compacted Bituminous Mixture Using Paraffin-Coated Specimens: ASTM D-1188.
   2. Bulk Specific Gravity of Compacted Bituminous Mixtures Using Saturated Surface Dry Specimens: ASTM D-2726.

F. Remove and replace areas of insufficient compaction in compliance with the specifications.

3.8 PROTECTION

A. No vehicular traffic or loads permitted on the newly completed pavement until adequate stability has been attained, the material has cooled sufficiently to prevent distortion or loss of fines, and the pavement has achieved a maximum temperature of 140 degrees F.

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B. If the climatic or other conditions warrant it, the period of time before opening to traffic may be extended at the discretion of the Engineer.

3.9 FINAL CLEAN UP

A. Clean all pavement surfaces with proper sweeping machinery.

B. Except for material indicated to be recycled, remove excavated materials from Project site and legally dispose of them in an approved landfill.

END OF SECTION

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SECTION 32 13 13 - CONCRETE PAVING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes all materials, labor, equipment and other incidental items required to furnish and install the work of the Section, including:
   1. Aggregate subbase, base course.
   2. Concrete paving for:
      a. Brick and Flagstone Base

B. Related Requirements:
   1. Section 31 20 00 – Earth Moving
   2. Section 32 11 23 - Aggregates
   3. Section 33 05 14 - Manholes and Structures

1.2 REFERENCE STANDARDS

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A. American Association of State Highway and Transportation Officials:
   1. AASHTO M324 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.

B. American Concrete Institute:
   1. ACI 301 - Specifications for Structural Concrete.
   2. ACI 304 - Guide for Measuring, Mixing, Transporting, and Placing Concrete.

C. ASTM International:
   1. ASTM A184/A184M - Standard Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement.
   2. ASTM A185/A185M - Standard Specification for Steel Welded Wire Fabric, Plain, for Concrete Reinforcement.
   3. ASTM A497/A497M - Standard Specification for Steel Welded Wire Fabric, Deformed, for Concrete Reinforcement.
   4. ASTM A615/A615M - Standard Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
   5. ASTM A706/A706M - Standard Specification for Low-Alloy Steel Deformed and Plain Bars for Concrete Reinforcement.
   6. ASTM A767/A767M - Standard Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement.
   7. ASTM A775/A775M - S Standard Specification for Epoxy-Coated Steel Reinforcing Bars.
   8. ASTM A884/A884M - Standard Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement.
   9. ASTM A934/A934M - Standard Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars.
   10. ASTM C31/C31M - Standard Practice for Making and Curing Concrete Test Specimens in the Field.
   11. ASTM C33 - Standard Specification for Concrete Aggregates.

12. ASTM C39/C39M - Standard Test Method for Compressive Strength of Cylindrical Concrete Specimens.
13. ASTM C94/C94M - Standard Specification for Ready-Mixed Concrete.
14. ASTM C143/C143M - Standard Test Method for Slump of Hydraulic Cement Concrete.
15. ASTM C150 - Standard Specification for Portland Cement.
16. ASTM C172 - Standard Practice for Sampling Freshly Mixed Concrete.
17. ASTM C173/C173M - Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method.
18. ASTM C231 - Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method.
19. ASTM C260 - Standard Specification for Air-Entraining Admixtures for Concrete.
20. ASTM C309 - Standard Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
21. ASTM C494/C494M - Standard Specification for Chemical Admixtures for Concrete.
22. ASTM C595 - Standard Specification for Blended Hydraulic Cements.
23. ASTM C618 - Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Concrete.
24. ASTM C979 - Standard Specification for Pigments for Integrally Colored Concrete.
25. ASTM C989 - Standard Specification for Ground Granulated Blast-Furnace Slag for Use in Concrete and Mortars.
26. ASTM C1017/C1017M - Standard Specification for Chemical Admixtures for Use in Producing Flowing Concrete.
27. ASTM C1064/C1064M - Standard Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete.
28. ASTM C1116 - Standard Specification for Fiber-Reinforced Concrete and Shotcrete.
29. ASTM C1315 - Standard Specification for Liquid Membrane-Forming Compounds Having Special Properties for Curing and Sealing Concrete.
30. ASTM C1371[-2004a] - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
31. ASTM C1549[-2004] - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
32. ASTM D1751 - Standard Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
33. ASTM D1752 - Standard Specification for Preformed Sponge Rubber and Cork Expansion Joint Fillers for Concrete Paving and Structural Construction.
34. ASTM D6690 - Standard Specification for Joint and Crack Sealants, Hot Applied, for Concrete and Asphalt Pavements.
35. ASTM E408[-1971(1996)e1] - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
36. ASTM E903[-1996] - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
37. ASTM E1918[-1997] - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
38. ASTM E1980[-2001] - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

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B. Product Data:
   1. Submit data on concrete materials, joint filler, admixtures, and curing compounds.

C. Design Data:
   1. Submit concrete mix design for each concrete strength. Submit separate mix designs when admixtures are required for the following:
      a. Hot and cold weather concrete work.
   2. Identify mix ingredients and proportions, including admixtures.
   3. Identify chloride content of admixtures and whether or not chloride was added during manufacture.

D. Source of Mix
   1. Submit concrete source, method and timeframe for transportation.

E. Source Quality Control Submittals: Indicate results of shop tests and inspections.

1.4 CLOSEOUT SUBMITTALS

A. Provide testing results to Owner.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 301 and MassDOT standards.

B. Obtain cementitious materials from same source throughout.

C. Perform Work in accordance with Local, State and Federal Standards.

1.6 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing Products specified in this section with minimum three years documented experience.

B. Installer: Company specializing in performing work of this section with minimum five years documented experience.

1.7 AMBIENT CONDITIONS

A. Section 01 50 00 - Temporary Facilities and Controls: Ambient conditions control facilities for product storage and installation.

B. Do not place concrete when base surface temperature is less than 40 degrees F, or surface is wet or frozen.

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PART 2 PRODUCTS

2.1 AGGREGATE SUBBASE

A. Aggregate Subbase: As specified in Section 32 11 23.

2.2 CONCRETE PAVING

A. Form Materials:

B. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.
   1. Use flexible or curved forms for curves with a radius 100 feet or less.
   2. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

C. Reinforcement
   1. Plain-Steel Welded Wire Reinforcement: ASTM A 185, fabricated from as-drawn steel wire into flat sheets.
   2. Deformed-Steel Welded Wire Reinforcement: ASTM A 497, flat sheet.
   3. Reinforcing Bars: ASTM A 615/A 615M, Grade 60; deformed.
   4. Galvanized Reinforcing Bars: ASTM A 767/A 767M, Class II zinc coated, hot-dip galvanized after fabrication and bending; with ASTM A 615/A 615M, Grade 60 deformed bars.
   5. Steel Bar Mats: ASTM A 184/A 184M; with ASTM A 615/A 615M, Grade 60, deformed bars; assembled with clips.
   6. Plain Steel Wire: ASTM A 82, as drawn.
   7. Deformed-Steel Wire: ASTM A 496.
   8. Joint Dowel Bars: Plain steel bars, ASTM A 615/A 615M, Grade 60. Cut bars true to length with ends square and free of burrs.
   9. Tie Bars: ASTM A 615/A 615M, Grade 60, deformed.
   10. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice."
   11. Zinc Repair Material: ASTM A 780.

D. Fiber Reinforcement
   1. Synthetic Fiber: Monofilament or fibrillated polypropylene fibers engineered and designed for use in concrete pavement, complying with ASTM C 1116, Type III.

E. Concrete Materials:
   1. Cementitious Material: Use one of the following cementitious materials, of the same type, brand, and source throughout the Project:
      a. Portland Cement: ASTM C 150, Type I or II. Supplement with the following:
         1) Fly Ash: ASTM C 618, Class C or F.
         2) Ground Granulated Blast-Furnace Slag: ASTM C 989, Grade 100 or 120.
   2. Normal-Weight Aggregates: ASTM C 33, Class 4S coarse aggregate, uniformly graded. Provide aggregates from a single source.

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3. Water: ASTM C 94/C 94M.
4. Air-Entraining Admixture: ASTM C 260.
5. Chemical Admixtures: ASTM C 494/C 494M, of type suitable for application, certified by manufacturer to be compatible with other admixtures and to contain no more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

2.3 MIXES

A. Concrete Mix
   1. Prepare design mixtures, proportioned according to ACI 301, with the following properties:
      a. Compressive Strength (28 Days): 3500 psi.
      b. Maximum Water-Cementitious Materials Ratio at Point of Placement: 0.45.
      c. Slump Limit: 4 inches, plus or minus 1 inch.
      d. Air Content: 6 percent plus or minus 1.5 percent for 3/4-inch nominal maximum aggregate size.
   2. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.
   3. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 requirements as follows:
      a. Fly Ash or Pozzolan: 25 percent.
      b. Ground Granulated Blast-Furnace Slag: 50 percent.
      c. Combined Fly Ash or Pozzolan, and Ground Granulated Blast-Furnace Slag: 50 percent, with fly ash or pozzolan not exceeding 25 percent.
   4. Synthetic Fiber: Uniformly disperse in concrete mix at manufacturer's recommended rate, but not less than 1.0 lb/cu. yd.

B. CONCRETE MIXING
   1. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M and ASTM C 1116. Furnish batch certificates for each batch discharged and used in the Work.
      a. When air temperature is between 85 deg F and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature

2.4 FINISHES

A. Shop Finishing - Reinforcement:
   1. Galvanized Finish for Steel Bars: ASTM A767/A767M, Class I, hot dip galvanized after fabrication.
   2. Epoxy Coated Finish for Steel Bars: ASTM A934/A934M.

B. Epoxy Coated Finish for Steel Wire: ASTM A884/A884M; Class A, using ASTM A934/A934M.

C. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, nonglazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery with emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

2.5 ACCESSORIES

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D 1752, cork or self-expanding cork.

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B. Curing Compound: ASTM C309, Type 1 Class A.

C. Absorptive Cover: AASHTO M 182, Class 2, burlap cloth

D. Concrete sealant to be a ready-to-use water-based, VOC compliant silane/siloxane water repellent and chloride screen for the protection of concrete and masonry surfaces. Sealant to be low odor and be alkaline stable to protect horizontal and vertical surfaces from moisture intrusion and chemical attack of chloride salts. Manufacturers to be Saltguard® WB by Prosoco, Sil-Act ATS42 by Advance Chemical Technologies Co., Bayguard 244 by Bay Oil Company, or Engineer approved equal. Product to meet the following performance requirements:
   1. NCHRP 244 Series II Reduction of Water Absorption (compared to untreated control) 88%
   2. ASTM E 514 Wind-Driven Rain Penetration (percent reduction of control) 91%
   3. ASTM C 672 Scaling Resistance Exposure to De-Icing Chemicals and Freeze/Thaw Cycles – no mass loss; no scaling.
   4. Resistance to: Sunlight -- Excellent; Alkalinity -- Excellent
   5. Surface Appearance (after application) - No change

E. Joint Sealers: Cold applied self-leveling joint sealant.

2.6 SOURCE QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Testing and Inspection Services: Provide mix design.

B. Submit proposed mix design of each class of concrete to appointed firm for review prior to commencement of Work.

C. Tests on cement, aggregates, and mixes will be performed to ensure conformance with specified requirements.

D. Test samples in accordance with ASTM C94/C94M.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation examination.

B. Verify compacted subgrade is dry and ready to support paving and imposed loads.
   1. Proof roll subbase in minimum two perpendicular passes to identify soft spots.
   2. Remove soft subbase and replace with compacted fill.

C. Verify gradients and elevations of base are correct.

D. Proceed with paving only after unsatisfactory conditions have been corrected.

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3.2 PREPARATION

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for installation preparation.

B. Moisten substrate to minimize absorption of water from fresh concrete.

C. Remove loose material from compacted subbase surface immediately before placing concrete.

D. Coat surfaces of manhole and catch basin frames with oil to prevent bond with concrete paving.

E. Notify Architect/Engineer minimum 24 hours prior to commencement of concreting operations.

3.3 INSTALLATION

A. Subbase:
   1. Aggregate: Install as specified in Section 32 11 23.

B. Forms:
   1. Place and secure forms and screeds to correct location, dimension, profile, and gradient.
   2. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Reinforcement:
   1. Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.
   2. Clean reinforcement of loose rust and mill scale, earth, ice or other bonding reducing materials.
   3. Place reinforcing as indicated on Drawings.
   4. Interrupt reinforcing at contraction and expansion joints.
   5. Place dowels/reinforcing to achieve paving and curb alignment as detailed.
   6. Repair damaged galvanizing/epoxy coating to match shop finish.

D. Placing Concrete:
   1. Coordinate installation of snow melting components.
   2. Place concrete in accordance with ACI 301.
   3. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
   4. Place concrete using the slip form technique.
   5. Ensure reinforcing, inserts, embedded parts, formed joints are not disturbed during concrete placement.
   6. Place concrete continuously over the full width of the panel and between predetermined construction joints. Do not break or interrupt successive pours such that cold joints occur.
   7. Place concrete to indicated pattern.
   8. Screed pavement surfaces with a straightedge and strike off.
   9. Commence initial floating using bull floats or darbies to provide an open textured and uniform surface plane before excess moisture or bleed water appears on the surface. Do not disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

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10. Cold-Weather Placement: Comply with ACI 306.1 and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
    a. When air temperature has fallen to or is expected to fall below 40 deg F, uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F and not more than 80 deg F at point of placement.
    b. Remove snow, ice, or frost from subbase surface before placing concrete. Do not place concrete on frozen surfaces.
    c. Do not use frozen materials or materials containing ice or snow.
    d. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mix designs.
11. Hot-Weather Placement: Comply with ACI 301 and as follows when hot-weather conditions exist:
    a. Cool ingredients before mixing to maintain concrete temperature below 90 deg F at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water.
    b. Cover steel reinforcement with water-soaked burlap so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.
    c. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

E. Joints
1. General: Form construction, isolation, and contraction joints and tool edgings true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline, unless otherwise indicated.
2. When joining to existing paving, place traverse joints to align with previously placed joints unless otherwise indicated.
3. Construction Joints: Set construction joints at side and end terminations of pavement and at locations where pavement operations are stopped for more than one-half hour unless pavement terminates at isolation joints.
4. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, walks, other fixed objects, and where indicated.
5. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, to match jointing of existing adjacent concrete pavement.
6. Edging: Tool edges of pavement and joints in concrete after initial floating with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes. Eliminate tool marks on concrete surfaces.

F. Finishing:
1. Float Finishing
    a. General: Do not add water to concrete surfaces during finishing operations.
    b. Float Finish: Begin the second floating operation when bleed-water sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats, or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

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1) Medium-to-Coarse-Textured Broom Finish: Provide a coarse finish by striating float-finished concrete surface 1/16 to 1/8 inch deep with a stiff-bristled broom, perpendicular to line of traffic.

c. Slip-Resistive Aggregate Finish: Before final floating, spread slip-resistive aggregate finish on pavement surface according to manufacturer's written instructions.
   1) Cure concrete with curing compound recommended by slip-resistive aggregate manufacturer. Apply curing compound immediately after final finishing.
   2) After curing, lightly work surface with a steel wire brush or abrasive stone and water to expose nonslip aggregate.

2. Sidewalk Paving: Light broom and trowel joint edges. Wood float.
3. Inclined Vehicular Ramps: Broomed perpendicular to slope.
4. Place curing compound sealer on exposed concrete surfaces immediately after finishing.

G. Curing and Protection
1. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.
2. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.
3. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.
4. Comply with ACI 306.1 for cold-weather protection.
5. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
6. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.
7. Curing Methods: Cure concrete by moisture-retaining-cover curing or curing compound, as follows:
   a. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches, and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
   b. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

3.4 TOLERANCES

A. Comply with tolerances of ACI 117 and as follows:
1. Elevation: 1/4 inch.
2. Thickness: Plus 3/8 inch, minus 1/4 inch.
3. Surface: Gap below 10-foot- long, unleveled straightedge not to exceed 1/4 inch.
4. Joint Spacing: 3 inches.
5. Contraction Joint Depth: Plus 1/4 inch, no minus.
6. Joint Width: Plus 1/8 inch, no minus.

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3.5 FIELD QUALITY CONTROL

A. Testing Agency: CONTRACTOR to engage a qualified independent testing and inspecting agency to perform field tests and inspections and prepare test reports.

B. Testing Services: Test composite samples of fresh concrete obtained (ASTM C 172) according to the following requirements:
   1. Testing Frequency: Obtain at least 1 composite sample for each 100 cu. yd. or fraction thereof of each concrete mix placed each day.
      a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing to be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
   2. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mix. Perform additional tests when concrete consistency appears to change.
   3. Air Content: ASTM C 231, pressure method; one test for each composite sample, but not less than one test for each day's pour of each concrete mix.
   4. Concrete Temperature: ASTM C 1064; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
   5. Compression Test Specimens: ASTM C 31/C 31M; cast and laboratory cure one set of three standard cylinder specimens for each composite sample.
   6. Compressive-Strength Tests: ASTM C 39/C 39M; test 1 specimen at 7 days and 2 specimens at 28 days.
   7. A compressive-strength test: The average compressive strength from 2 specimens obtained from same composite sample and tested at 28 days.

C. Strength of each concrete mix will be satisfactory if average of any 3 consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.

D. Report test results in writing to Engineer within 48 hours of testing. Reports of compressive-strength tests to include Project identification, name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

E. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.

F. Additional Tests: Perform additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect.

G. Remove and replace concrete pavement where test results indicate that it does not comply with specified requirements.

H. Additional testing and inspecting, at CONTRACTOR's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

I. Prepare test and inspection reports.

J. Inspect reinforcing placement for size, spacing, location, support.

K. Testing firm will take cylinders and perform slump and air entrainment tests in accordance with ACI 301.

L. Maintain records of placed concrete items. Record date, location of pour, quantity, air temperature, and test samples taken.

3.6 CONCRETE SEALING

A. Sealant to be applied to all new exposed concrete surfaces per the manufacturer's requirements, unless otherwise noted in the Drawings. Application thickness to be as required per the manufacturer to ensure product performance.

B. Application: Prior to application Contractor to review material safety sheets and manufacturer procedures. Do not dilute or alter. Mix well before application.

C. Cleanup: Contractor to clean tools, equipment and surfaces affected by over spray with soap and warm water.

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3.7 REPAIRS AND PROTECTION

A. Immediately after placement, protect paving from premature drying, excessive hot or cold temperatures, and mechanical injury.

B. Remove and replace concrete pavement that is broken, damaged, or defective or that does not comply with requirements in this Section.

C. Drill test cores, where directed by Architect, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory pavement areas with portland cement concrete bonded to pavement with epoxy adhesive.

D. Protect concrete from damage. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by removing surface stains and spillage of materials as they occur.

E. Maintain concrete pavement free of stains, discoloration, dirt, and other foreign material. Sweep concrete pavement not more than two days before date scheduled for Substantial Completion inspections.

END OF SECTION

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SECTION 32 14 00 - PAVERS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes all materials, labor, equipment and other incidental items required to furnish and install the work of the Section, including.
   1. Flagstone pavers
   2. Brick pavers
   3. Cobble pavers
   4. Sand bed and sand joints.
   5. Cementitious bed and mortar joints.

B. Related Sections:
   1. Section 03 30 00 – Cast in Plant Concrete
   2. Section 32 20 00 - Earth Moving

1.2 REFERENCES

A. ASTM International:
   1. ASTM C33 - Standard Specification for Concrete Aggregates.
   2. ASTM C144 - Standard Specification for Aggregate for Masonry Mortar.
   3. ASTM C150 - Standard Specification for Portland Cement.
   4. ASTM C270 - Standard Specification for Mortar for Unit Masonry.
   5. ASTM C1371[-2004a] - Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
   6. ASTM C1549[-2004] - Standard Test Method for Determination of Solar Reflectance Near Ambient Temperature Using a Portable Solar Reflectometer.
   7. ASTM E408[-1971(1996)e1] - Standard Test Methods for Total Normal Emittance of Surfaces Using Inspection-Meter Techniques.
   8. ASTM E903[-1996] - Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
   9. ASTM E1918[-1997] - Standard Test Method for Measuring Solar Reflectance of Horizontal and Low-Sloped Surfaces in the Field.
   10. ASTM E1980[-2001] - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.

1.3 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures: Requirements for submittals

B. Shop Drawings: Indicate layout of pavers dimensions of paved areas, elevations, and affected adjacent construction.

C. Product Data: Submit characteristics of paver unit, dimensions, special shapes, setting materials, color and manufacturer.

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D. Samples: Submit five samples each of brick pavers, and flagstone pavement illustrating style, size, color range and surface texture of units being provided to Engineer and Owner.

E. Testing Reports: Test reports for each type of paving brick are to be submitted to the engineer or owner's representative for approval. Testing reports are to be completed by an independent laboratory and shall show:
   1. Modulus of rupture (for units complying with ASTM C-1272)
   2. Compressive Strength
   3. 24 Hr. Cold Water Absorption
   4. Saturation Coefficient (for units complying with ASTM C-902)
   5. Weather Classification (for units complying with ASTM C-902)
   6. Efflorescence

F. Certificates: Prior to delivery, submit to architect, engineer or owner's representative certificates attesting compliance with the applicable ASTM Specifications for physical requirements and weathering classification.

G. Manufacturer's Installation Instructions: Submit substrate requirements and installation methods.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with MassDOT Standards.

B. Installer shall have a minimum 5 years experience with similar materials and shall have a record of successful projects of comparable size.

C. Brick Test: Test in accordance with ASTM C 67, with the following additional requirements:
   1. Brick shall meet the requirements of either the abrasions index or volumetric abrasion loss. The brick shall meet the requirements of either column (1) or (2) of Table 2 for the applicable traffic or installation intended. The abrasion index is calculated from the cold absorption in percent and the compression strength in pounds per square inch.

1.5 MOCK-UP

A. Construct mock-up for each material, 5 feet wide (brick) or 4' wide (Flagstone) by 6 feet long, including concrete base, setting bed, pavers, curbs, joints, edging color range, texture, and workmanship.

B. Locate where directed by Engineer.

C. Incorporate accepted mockup as part of Work.

D. Do not start work until architect, engineer or owner has accepted the sample panel. Do not alter or destroy approved panel until work is completed and accepted by the owner or owner's representative.

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1.6 ENVIRONMENTAL REQUIREMENTS

A. Maintain cementitious materials and substrate surface to minimum of 50 degrees F (10 degrees C) prior to, during, and 48 hours after completion of Work.

B. At end of working day or during rainy weather, cover work exposed to weather with waterproof coverings, securely anchored.

PART 2 PRODUCTS

2.1 PAVER MATERIALS

A. Clay Paving Brick: Pedestrian and Light traffic Paving Brick shall conform to the latest revision of ASTM C 902.
   1. Type: GLEN-GERY 53DD
   2. Dimensions: 3 5/8" x 2 ¼" x 8"
   3. Provide brick similar in texture and physical properties for the entire paving areas to those available for inspection at the engineer's or owner's representative office.

B. Flagstone Paver
   1. Natural stone, 2" thick min., Thermal finished granite or blue stone with blue coloring sourced within the regional area.

C. Cobble Pavers
   1. 4" x 4" x 4" granite cobble stones, natural finish.

2.2 SAND BED MATERIALS

A. Sand for Setting Bed and Joint Filler: ASTM C33, clean washed river or bank sand.

2.3 CEMENTITIOUS MATERIALS

A. Portland Cement: ASTM C150 Type I, color per Owner.

B. Sand: ASTM C144; sharp, coarse, clean, screened sand, free of organic material.

C. Water: Potable, not detrimental to mix.

D. Color: Mineral type, non-fading.

2.4 MIXES

A. Joint Mortar: Portland cement mix conforming to the following:

Property	Value
Compressive Strength (28 day)	3000 psi
Slump	1 to 2 inches
Air Entrainment	5 to 7 percent

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B. Add admixtures to cementitious mixes.

C. Thoroughly mix ingredients in quantities needed for immediate use.

D. Use cementitious mixes within two hours after mixing. Do not re-temper.

2.5 SOURCE QUALITY CONTROL

A. Fabrication Tolerances for Stone Units: Within 1/8 inch of actual dimensions.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify substrate is level, smooth, capable of supporting pavers and imposed loads, and ready to receive Work of this section.

B. Verify gradients and elevations of substrate are correct.

3.2 INSTALLATION - SAND SETTING BED

A. Spread sand evenly over prepared substrate to thickness of 1” unless noted otherwise.

B. Dampen and roller compact sand to level and even surface.

C. The Screed sand should not be disturbed. Where needed, edge restraints shall be installed to the proper elevation in a manner to eliminate any possible lateral (horizontal) movement of the pavers.

D. Place paver units in pattern indicated on the drawings, from straight reference edge. Brick with soldier course on the edge, as indicated on drawings.

E. Place half units, special shaped units, and curbs at edge and interruptions. Maintain tight, evenly spaced joints.
   1. Joint Width: minimum: 1/16” max: 1/8inches (3 mm).

F. Sprinkle sand over surface, sweep into joints and moisten. Recover with additional sand until firm joints are achieved. Remove excess sand. Vibrate the pavers into the sand using a plate vibrator capable of 3000 to 5000 lbs. centrifugal force. The plate vibrator must have a rubber plate or roller feet to avoid chipping the pavers.

G. After the first pass of the plate vibrator, sweep mortar sand into the joints and vibrate again. Repeat the process until the joints are full, until units are firmly bedded, level, and to correct elevation and gradients.

H. Remove excess sand.

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I. The final surface elevation shall be flush with adjacent construction, and the maximum variation in level shall be within +/- 3/8".

3.3 INSTALLATION – MORTAR BED (FLAGSTONE)

A. Lay 1" mortar bed, screed level. Screed only as much mortar as stone that can be layed before mortar begins to set. Stones to be free of any dirt or debris.

B. Set stones level. Tap stones with a rubber mallet to level and provide consistent contact with mortar bed. Compensate for variations in thickness by adding or removing mortar.

C. Keep joint spaces between ¼" – ¾"

D. Grout joints with a float. Clean excess grout from stone before grout sets.

E. The Final surface elevation shall be flush with adjacent construction and the maximum variation in level shall be within +/- 3/8".

3.4 CLEANING

A. Do not clean curb or pavers until pavers and mortar are dry.

B. Clean soiled surfaces using cleaning solution. Do not harm pavers, joint materials, or adjacent surfaces.

C. Use non-metallic tools in cleaning operations.

D. Rinse surfaces with clean water.

E. Broom clean paving surfaces. Dispose of excess sand.

3.5 PROTECTION OF FINISHED WORK

A. Do not permit traffic over unprotected paver surface.

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SECTION 32 16 40 - GRANITE CURB

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Labor, materials, and equipment necessary to complete the work of this Section, including but not limited to the following:
   1. Granite curbs.

B. Related Sections:

   1. Section 31 20 00 – Earth Moving.
   2. Section 32 12 16 - Asphalt Paving.
   3. Section 32 13 13 - Concrete Paving.

1.2 COORDINATION

A. Coordinate the Work with pavement placement for road, parking areas and sidewalks.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit unit configuration, dimensions, and installation instructions.

C. Shop Drawings: Indicate layout of curbs, dimensions of paved areas, elevations, and affected adjacent construction.

1.4 DELIVERY, STORAGE AND HANDLING

A. Deliver and protect in accordance with the manufacturer’s recommendations.

PART 2 PRODUCTS

2.1 GRANITE CURB

A. Curb to be either sloped granite or vertical granite in the locations shown in the Drawings

B. Match existing curb as to color, appearance and dimensions.

C. Curbs to be reclaimed / antique granite curbing. Straight pieces to be a minimum of 3 feet long. Curb segments on curves with radius of 100 feet or less to be shaped to the required curvature, with the ends split on radial lines.

D. Indicated dimensions for curb segments to not vary more than 2 inches for depth and 1 inch for width.

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E. Top and front surfaces to be true planes at right angles to each other, as seen with a straight edge. No projection greater than 3/4 inch or depression greater than 1/2 inch on the split surfaces will be acceptable. Top surface to not vary more than 1/8 inch.

F. Drill holes will not be permitted in exposed curb surfaces.

G. Provide transition curbs at all sidewalk ramps as indicated on Drawings.

H. Curb Foundation and footing: As indicated on Drawings.

2.2 CONFIGURATION

A. Nominal Size: 18 inches high, 6 inches wide.

B. Profile: Rectangular cross section with sloped vertical faces, square ends.

2.3 CEMENTITIOUS MATERIALS

A. Portland Cement: ASTM C150 Type I, grey color.

B. Sand: ASTM C33; sharp, coarse, clean, screened sand, free of organic material.

C. Premixed Grout Mortar

D. Water: Potable, not detrimental to mix.

E. Color: Mineral type, non-fading.

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2.4 MIXES

A. Cementitious Bed: Portland cement mix conforming to the following:

Property	Value
Compressive Strength (28 day)	3000 psi
Slump	3 to 4 inches
Air Entrainment	5 to 7 percent

B. Joint Mortar: Portland cement mix conforming to the following:

Property	Value
Compressive Strength (28 day)	3000 psi
Slump	1 to 2 inches
Air Entrainment	5 to 7 percent

C. Add admixtures to cementitious mixes.

D. Thoroughly mix ingredients in quantities needed for immediate use.

E. Use cementitious mixes within two hours after mixing. Do not re-temper.

PART 3 EXECUTION

3.1 PREPARATION

A. Confirm subbase has been properly compacted to 95% compaction.

3.2 INSTALLATION

A. Install in accordance with Section 501 of the Massachusetts Highway Department (MHD) Standard Specifications for Highways and Bridges and as indicated on Drawing.

B. Set curb to line and grade on a foundation of one cubic foot dense grade gravel for each linear foot of curb installed or as shown in the Drawings. Ram all spaces under the curb so that it is completely supported throughout the entire length.

C. Provide curb expansion joints at 5’ O.C.

D. Butt curb joint sections together to provide a tight joint. Carefully fill the joints between curbstones (both front and back) or edging with cement mortar and neatly point on the top, front and back. After pointing the curbstones or edging, clean all excess mortar forced out of the joints.

E. Maximum joint width tolerance: 3/8 inches to 1/2 inches.

F. Install concrete footing and sub base material as shown in the Drawings.

G. Install joint sealer where curb abuts existing walls, posts, buildings, and fixed structures or appurtenance.

H. All curbs to be installed at the reveal and slope as shown in the Drawings.

I. Install transition curb at all walkway ramps and curb endings as indicated on Drawings.

J. Curb Replacement: Sawcut edge a minimum of 12” from curb.

K. Install units without damage to shape or finish. Replace or repair damaged units.

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SECTION 32 32 30 – VEGETATED WALL

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Labor, materials and equipment necessary to install of the vegetated wall.
1. Furnishing structural geogrid reinforcement, and Geomodular Bag and Interlocking Plate units as shown on the construction drawings.
2. Storing, cutting, and placing structural geogrid reinforcement, and retention system as specified herein and as shown on the construction drawings.
3. Furnishing sealed design calculations and construction drawings for vegetate wall retention system; providing supplier representatives for pre-construction meeting with Contractor and Engineer.
4. Excavation, placement, and compaction of reinforced fill and backfill material as specified herein and as shown on the construction drawings.

B. Related Sections:
1. Section 31 20 00 – Earth Moving
2. Section 32 91 19 - Landscape Grading
3. Section 32 92 19 – Seeding

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1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)
1. D4354 - Practice for Sampling of Geosynthetics for Testing.
2. D4355 - Test Method for Deterioration of Geotextiles from Exposure to Ultraviolet Light and Water (Xenon-Arc Type Apparatus).
3. D5321 - Test Method for Determining the Coefficient of Soil and Geosynthetic or Geosynthetic and Geosynthetic Friction by the Direct Shear Method.
4. D6638 (modified) - Standard Test Method for Determining Connection Strength Between Geosynthetic Reinforcement and Segmental Concrete Units (Modular Concrete Blocks).
5. D6706 – Standard Test Method for Measuring Geosynthetic Pullout in Soil.

B. Geosynthetic Research Institute (GRI)
1. GRI-GG4 (b) - Determination of the Long-Term Design Strength of Flexible Geogrids.

C. Federal Highway Administration (FHWA)
1. FHWA NHI 10-024 & 10-025 - Mechanically Stabilized Earth Walls and Reinforced Soil Slopes (Volumes I & II).
2. FHWA NHI-09-087- Corrosion/Degradation of Soil Reinforcements for Mechanically Stabilized Earth Walls and Reinforced Soil Slopes.

D. Geosynthetic Accreditation Institute (GAI) - Laboratory Accreditation Program (LAP).

E. National Transportation Product Evaluation Program (NTPEP).

F. International Standards Organization (ISO) – 9001:2015.

G. AASHTO LRFD Bridge Construction Specifications, 4th Edition, with 2020, 2022, and 2023 Interim Revisions.

H. NCMA Design Manual for Segmental Retaining Walls, 3rd Edition.

1.3 DESIGN AND PERFROMACE REQUIREMENTS

A. Subabse and based design as required by manufacturer.

B. The Interlocking Plates must provide a measured mechanical connection between the geogrid and the Bags. The connection strength between the geogrid and the facing units under a normal stress of 300 lb/ft shall be at least 396 lb/ft at 0.75 in of facing displacement. Connection testing determined by ASTM D6638.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Submit 1 set of detailed design calculations, construction drawings, and shop drawings for approval at least 30 days prior to the beginning of construction of the vegetated wall. The calculations and drawings shall be prepared and sealed by a Professional Engineer, licensed in the region.

C. Samples:
1. Geogrid and Interlocking Plate unit samples.

D. Product Dates:
1. Interlocking Plates
2. Geomodular Bag
3. Geogrid (if required by Engineering calculations)
4. High performance-Flexible Growth Medum
5. Fill material sieve and soil nutritional analysis
6. Fertilizer & Manufacturer Fertilizer recommendation.

E. Official Installer Certificate, Manufacturer's installation instructions, and product data sheets for the geogrid soil reinforcement and Geomodular Bags, to meet the requirements set forth in the respective material specifications.

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F. Manufacturer ISO 9001 certificates.

4.2 CLOSE OUT SUBMITTALS

A. Submit as-built drawings that confirm the geometries and materials installation conform to the locations shown on the construction drawings.

7.1 QUALITY ASSURANCE

A. Perform Work in accordance with the requirements of the Drawings and Manufacturer instructions.

B. Manufacturer Qualifications: Manufacturer with a minimum for five years documented experience with the products specified and provides:
   a. Valid ISO 9001 certificate
   b. Mill Certificates for the Bag material and Plate resin
   c. Type III Environmental Product Declaration
   d. Record of all national and regional certifications

C. Installer Qualifications: Installer experienced in performing work of this section that has specialized in installation of work similar to that required for this project. Installer must also be able to provide skilled workman with satisfactory record of performance on landscaping or wall projects of comparable size and quality.

D. The designs are to be stamped and signed by a registered Professional Engineer in the state of Massachusetts, with a minimum five years documented experience for this type of wall system.

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10.2 DELIVERY , STORAGE AND HANDLING

A. Storage and Protection
   1. Prevent excessive mud, wet concrete, epoxy, or other deleterious materials from coming in contact with and affixing to the geogrid materials.
   2. Prevent any ecotoxic, acid, or alkaline materials from coming in contact with the products.
   3. Store at temperatures above -20 degrees F.
   4. All geotextile materials to be palletized, covered and or wrapped for transport and while on site.

B. Protect materials during handling and installation to prevent damage.

10.3 PROJECT CONDITIONS

A. Maintain environmental conditions recommended by manufacturer for desired results. Do not install products under conditions outside manufacturer's absolute limits.

B. In cold weather, do not use frozen materials or materials coated with ice or frost, and do not build on frozen base or wet, saturated or muddy subgrade.

C. Protect partially completed porous paving against damage from other construction traffic when work is in progress.

10.4 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

PART 11 PRODUCTS

A. Geomodular Bag - 70% 1000hr UV stabilized, no greater than 3.8oz/yd, J seam, chain stitched, and sewn with UV stabilized PP threads. Supplier to provide current Mill Certificates from an ISO 9001 certified non-woven manufacturer.

B. Interlocking Plate - 100% Post Consumer Recycled PP spiked connection Plate, with a minimum of 11 spiked connection points, 2 serrated directional geogrid strips, and providing a positive, certified lab-tested connection value to the Geomodular Bag.

C. Bag Fill Material

1. Walls, slopes and above high-water line Applications:
    a. Freely draining soils and granular materials cleaned of all debris, roots, branches, stones in excess of US Sieve No.5 (.16”) in diameter and other deleterious materials.
    b. Soils contaminated with calcium chloride as well as toxic materials and petroleum products shall be removed.
    c. Organic additive materials must be a viable commercial compost product tested for nutritional content. Properties to be confirmed with a combined sieve and nutritional analysis completed within the last month
    d. Properties:
        1) Approximate Organic Content: 30% by total mixed volume.
        2) Granular Content smaller than No.5 sieve and larger than No.60 sieve in: 70% by volume.
        3) Total fines (passing the #200 sieve) of mixed Bag medium: Less than 12% by mass.
        4) Percolations shall be such that no standing water is visible 60 minutes after at least 10 minutes of moderate to heavy rain or irrigation.

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D. Tidal or rapid drawdown applications:

1. Clean granular material with coefficient of uniformity ranging from 1 to 4 with material size ranging from ¾" in gravel to US Sieve No.20.

E. High Performance-Flexible Growth Medium –

1. 100% recycled, thermally refined virgin wood fibers
2. 100% biodegradable interlock fibers
3. Physical Properties:
    a. Mass/Unit Area: ASTM D65661 g/m2 (oz/yd2) ≥ 390 (11.6)
    b. Thickness: ASTM D65251 mm (in) ≥ 5.6 (0.22)
    c. Ground Cover: ASTM D65671 % ≥ 99
    d. Water-Holding: Capacity ASTM D7367 % ≥ 1,700
    e. Material Color: Observed Green
4. Environmental Properties:
    a. Biodegradability ASTM D5338 n/a Yes
    b. Ecotoxicity EPA 2021.0 % 48-hr LC50 > 100%
    c. Effluent Turbidity Large Scale5 NTU < 250
5. Performance Properties:
    a. Cover Factor 2 Large Scale5 n/a ≤ 0.01
    b. Percent Effectiveness 3 Large Scale5 % ≥ 99
    c. Functional Longevity 4 ASTM D5338 months ≤ 18
    d. Cure Time Observed hours 0-2
    e. Vegetation Establishment ASTM D73221 % ≥ 800
6. Product Composition:
    a. 80% - Thermally Processed 6 (within a pressurized vessel) 100% Recycled Virgin Wood Fibers

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b. 10% - Wetting agents (including high-viscosity colloidal polysaccharides, cross-linked biopolymers, and water absorbents)

c. 5% - Crimped Biodegradable Interlocking Fibers

d. 5% - Micro-Pore Granules

F. Fertilizer

1. Fertilizer per manufacturer recommendation.

G. Structural Geogrid –

1. All geogrid material shall have a valid NTPEP REGEO evaluation report. The geogrid shall be manufactured with fibers consisting of long-chain synthetic polymers composed of at least 95 percent by weight of polyolefins or polyesters. They shall form a stable network such that the filaments or yarns retain their dimensional stability relative to each other, including selvages.

2. The geogrid shall be sufficiently labeled for easy identification in the field, this includes labels on the rolls and in the roll core indicating original manufacturer, style name, roll size, and tracking roll number. The material must also be labeled on the material itself for easy identification once the roll has been unwrapped and unrolled.

3. T_{ULT} shall be the minimum average roll value (MARV) ultimate tensile strength as tested per ASTM D6637, Method B. Testing by ASTM D6637, Method A (single rib) is not allowed in the determination of wide width tensile strength or Long-Term Design Strength (LTDS). Tal or LTDS, are determined per AASHTO, FHWA, GRI, and NCMA guidelines where LTDS = $T_{ULT}/(RF_{CR} x RF_{ID} x RF_D)$. $RF_{CR} = 1.45$; $RF_D = 1.15$; $RF_{ID} = 1.05$ (Sand); $RF_{ID} = 1.10$ (Sandy Gravel); $RF_{ID} = 1.25$ (Gravel).

a. Calculation of the allowable reinforcement tension shall use the following method: Allowable reinforcement Tension:The allowable reinforcement tension, Ta, at the end of the service life shall consider the time-temperature creep characteristics of the reinforcement, environmental degradation, construction induced damage and an overall factor of safety.

$$T_a = \frac{T_{ult}}{RF_D \times RF_{ID} \times RF_{CR} \times FS_{UNC}}$$

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b. where:

1) T_{ult} = Ultimate (or yield tensile strength) from wide width tensile strength tests (ASTM D4595 or ASTM D6637).
2) RF_D = Durability reduction factor is dependent on the susceptibility of the geosynthetic to be attacked by any microorganisms, chemicals, thermal oxidation, hydrolysis and stress cracking and can vary partially from 1.1 to 2.0.
3) RF_{ID} = Installation damage reduction factor that can range from 1.05 to 3.0, depending on backfill gradation and product mass per unit weight.
4) RF_{CR} = Creep reduction factor is the ratio of the ultimate strength (T_{ult}) to the creep limit strength obtained from laboratory creep tests for each product, and can typically vary from 1.5 to 5.0.
5) FS_{UNC} = Overall factor of safety or load factor to account for uncertainties in the geometry of the structure, fill properties, reinforcement properties, and externally applied loads, and shall be no less than 1.5. In no case shall the product $RF_D \times RF_{ID} \times RF_{CR}$ be less than 2.0.EXECUTION

11.2 EXAMINATION

A. Before beginning installation, verify site conditions are as indicated on the Drawings. Notify the Landscape Architect if site conditions are not acceptable. Do not begin preparation or installation until unacceptable conditions have been corrected.

11.3 PREPARATION

A. Prepare the subsoil and topsoil prior to installation as indicated on the Drawings and in accordance with manufacturer requirements.

11.4 VEGETATED WALL INSTALLATION

A. Install MSE bags and plates in accordance with manufacturer's instructions, and engineer stamped drawings.

B. Backfill materials shall be placed and compacted in lifts not to exceed 200 mm where hand compaction equipment is used and not more than 300 mm where heavy compaction equipment is used.

C. Only lightweight hand-operated equipment shall be allowed within 0.75 meters of the front face of the facing units.

D. At the end of each day of operation, the Contractor shall slope the last lift of reinforced backfill away from the facing units to direct runoff away from the wall face. The Contractor shall not allow surface runoff from adjacent areas to enter the wall construction site.

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11.5 VEGETATION

A. See Drawings for plants and seeding. Vegetation coverage is achieved through single or combined methods during and/or after construction. Thoroughly water the installation prior to any vegetation method.

B. Hydroseed with a High-Performance Flexible Growth medium, with installation precedence at the prescribed wall or slope face angle. Minimum application rate is 80lbs/1000ftsq. Seed mixtures shall be purchased from accredited sources with guaranteed standard germination rates see Section 32 92 19 - Seeding.

C. Fertilizer – Install fertilizer per the manufacturer recommendation.

D. Plants
1. Do not cut Bags positioned below the Normal High Water Mark.
2. Plant rooted plants by positioning the root ball between or behind the Bags.
3. Up to 3 live plugs (up to 4” diameter) per bag. Refer for manufacturer instructions for installation.

E. If needed, reinstall growth medium and reseed to achieve 90% coverage.

11.6 MAINTENANCE

A. Watering: Light, frequent irrigation during establishment period and continued as needed based on local climate conditions. Geomodular bags to be soaked through to encourage deep root growth.

B. Maintain seed in accordance with manufacturer's instructions and as specified in Section 32 92 19 Seeding.

C. END OF SECTION

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SECTION 32 91 16 – REINFORCED TURF

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Labor, materials and equipment necessary to install grass reinforcement mesh system.

B. Related Sections:
1. Section 31 20 00 – Earth Moving
2. Section 32 91 19 - Landscape Grading
3. Section 32 92 19 – Seeding
4. Section 32 93 00 - Plants

1.2 DESIGN AND PERFROMACE REQUIREMENTS

A. Subbase and based design as indicated on the Drawings.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

a. Product Data: Manufacturer's data sheets on each product to be used, including:
1) Preparation instructions and recommendations.
2) Storage and handling requirements and recommendations.
3) Installation methods.

b. Shop Drawings: Submit manufacturer's shop drawings including laying pattern and anchoring.

c. Samples: Submit manufacturers samples of each product specified.

d. Manufacturer's Certificates:
1) Certify products meet or exceed specified requirements.
2) ISO Certification certifying manufacturers quality management system is currently registered to ISO 9001:2000 quality standards.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with the requirements of the Drawings.

B. Manufacturer Qualifications: Manufacturer with a minimum for five years documented experience with the products specified and with ISO Certification certifying material compliance for GrassProtecta.

C. Installer Qualifications: Installer experienced in performing work of this section that has specialized in installation of work similar to that required for this project. Installer must also be able to provide skilled workman with satisfactory record of performance on landscaping or paving projects of comparable size and quality.

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1.5 DELIVERY , STORAGE AND HANDLING

A. Store products in manufacturer's unopened packaging until ready for installation.

B. Protect materials during handling and installation to prevent damage.

1.6 PROJECT CONDITIONS

A. Maintain environmental conditions recommended by manufacturer for desired results. Do not install products under conditions outside manufacturer's absolute limits.

B. Do not begin installation of porous pavements until all hard surface paving adjacent to porous pavement areas, including concrete walks and asphalt paving, is completed.

C. In cold weather, do not use frozen materials or materials coated with ice or frost, and do not build on frozen base or wet, saturated or muddy subgrade.

D. Protect partially completed porous paving against damage from other construction traffic when work is in progress.

E. Protect turf paving from traffic until grass root system has matured for at least 3 to 4 weeks. Use barricades to only permit accessible by emergency and fire equipment during and after installation. Install products under conditions recommended by manufacturer for desired results.

1.7 SEQUENCING

A. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

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PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer:
1. Core Landscape Product; PO Box 1545, Comox BC, Canada V9M 8A2. 1-855-777-2673. Web Site: https://www.coregravel.ca/
2. TYPAR BodPave; 70 Old Hickory BLVD. Old Hickory, TN 37138
3. TRUEGrid Paver. 1-855-355-GRID
4. Or approved equivalent.

2.2 MATERIAL

A. Turf Reinforcement:
1. Materials:
a. Grid
1) Polyethylene: 50% virgin, 50% Recycled.
2) Color: Green.

3) Chemical resistance: Excellent.
4) UV resistance: Excellent
5) Cell Dimension: 2.4in x 1.6 in x0.1mm
6) Cell Wall Thickness: 0.1”
7) Crush Resistance (unfilled): >41,000 lbs/sq.ft
8) Load Bearing Capacity (filled): >62,000 lbs/sq.ft

B. Accessories:
1. Use supplier recommended accessories.

C. Sub-base reinforcement: geogrid.

PART 3 EXECUTION

3.1 EXAMINATION

A. Before beginning installation, verify site conditions are as indicated on the Drawings. Notify the Landscape Architect if site conditions are not acceptable. Do not begin preparation or installation until unacceptable conditions have been corrected.

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3.2 PREPARATION

A. Prepare the subsoil and topsoil prior to installation as indicated on the Drawings and Section 32 91 19 and 32 92 19.

3.3 GRASS REINFORCING MESH INSTALLATIONENERAL

A. Install Turf reinforcement in accordance with manufacturer's instructions.

B. Provide modification as indicated on the Drawings.
1. Upon completion of installation place 2” of topsoil on top on the reinforcement per Section 32 91 19 Landscape Grading and Section 32 92 19 Seeding.

3.4 SEEDING

A. See Drawings and Section 32 92 19 Seeding for proper seeding and seed mix requirements.

3.5 PROTECTION

A. Allow the grass to grow to 90% coverage until allowing traffic over surface.

B. Protect reinforced turf from traffic until grass root system has matured for at least 4 to 8 weeks. Use barricades that only permit access by emergency and fire equipment during and after installation.

C. Notify the Owner and/or the Engineer one week prior to removing the barricades to verify the grass has established per Section 32 92 19 Seeding.

3.6 MAINTENANCE

A. Maintain grass in accordance with manufacturer's instructions and as specified in Section 32 92 19 Seeding.

END OF SECTION

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SECTION 32 91 19 - LANDSCAPE GRADING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes all materials, labor, equipment and other incidental items required to furnish and install the work of the Section, including:
   1. Topsoil testing.
   2. Soil amendments.
   3. Placement and final grading of topsoil for finish landscaping.

B. Related Sections:
   1. Section 31 20 00 – Earth Moving.
   2. Section 31 25 00 – Erosion and Sediment Controls.
   3. Section 32 13 13 – Concrete Paving.
   4. Section 32 14 00 – Pavers.
   5. Section 32 92 19 – Seeding.
   6. Section 32 93 00 – Plants.

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1.2 REFERENCES AND STANDARDS

A. AOAC: Association of Official Agricultural Chemists.

B. ASTM International: American Society of Testing Materials International.

C. American Association of State Highway and Transportation Officials:
   1. AASHTO T180 - Standard Specification for Moisture-Density Relations of Soils Using a 4.54-kg (10-lb) Rammer and a 457-mm (18-in.) Drop.

D. ASTM International:
   1. ASTM D698 - Standard Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft3 (600 kN-m/m3)).
   2. ASTM D1557 - Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft3 (2,700 kN-m/m3)).
   3. ASTM D2487 - Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System).

E. UMTC: University of Massachusetts Transportation Center, "Manufactured Loam using Compost Material - Phase 1: Feasibility", October 1966 or latest update.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures

B. Topsoil
   1. Soil Analysis:

a. Reports indicating and interpreting test results for complete topsoil and soil components.
b. All Tests performed by the University of Massachusetts Cooperative Extension Service or equivalent in accordance with current standards of Association of Official Agricultural Chemists or other testing laboratory as approved by the LANDSCAPE ARCHITECT. See Scction 1.4 Quality Assurance for soil sampling procedures
c. Testing reports to include the following for the stockpiled topsoil and finished planting soil that may require amendments to meet the specifications and recommendations:
    1) Mechanical gradation (sieve analysis) and USDA soil classification
    2) Percent organic matter
    3) Chemical analysis for the following elements:
        a) Soluble salts.
        b) Carbon: nitrogen ratio
        c) Potassium
        d) Phosphorus
        e) Magnesium
        f) Calcium
        g) Acidity (pH)
        h) Testing for the following heavy total metals as required by the USEPA
            (1) Lead, Nickel, Cadmium, Zinc, Copper, arsenic and selenium.

2. Soil analysis to include amendment recommendations for the following:
    a. Turf/Lawn
        1) Lawn-New Establishment
        2) Lawn-Maintenance
    b. Home Grounds, Gardens, & Landscaping
        1) Flowers, Roses & Herbs
        2) Deciduous Trees, Shrubs & Vines-New Establishment
        3) Needle Leaf Trees & Shrubs-New Establishment
3. Submit reports at least one (1) month before any delivery of materials.
4. Submit topsoil soil analysis results to the following for confirmation of recommended soil amendments:
    a. Landscape Architect
    b. Owner
    c. Landscape Contractor
    d. Seed supplier

C. Soil Additives and amendments per soil analysis recommendations : Product or testing certificates signed by manufacturers certifying that their products comply with specified requirements:
    1. Manufacturers' certified analysis for all products specified.
    2. Analysis for other amendments, such as organic compost, by the University of Massachusetts Agricultural Extension Service or other approved testing laboratory, made according to methods established by the AOAC, where applicable, and as required in this Specification.

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3. Sieve and salt analysis of sand proposed as a planting soil amendment or component.

D. Organic Material: A letter certifying source and composition of organic material proposed for use as a soil amendment indicating compliance with UMTC "Article 5.4 Standard Compost Specifications for Massachusetts" and meets requirements. Letter must also give description of product and recommendations for use as a planting soil component or amendment.

E. Samples:
1. Topsoil: Submit 2lb sample of each type of soil fill to the Landscape Architect.
2. Organic Material: Submit 2lb sample of each type to Landscape Architect.

F. Materials Source: Submit name of imported materials source.

G. Manufacturer's Certificate: Certify products meet or exceed specified requirements.

1.4 QUALITY ASSURANCE

A. Furnish each topsoil material from single source throughout the Work.

B. Prior to delivery or spreading, submit a minimum of two (2) approved sample test results of planting soil from each proposed location or source.
1. Mix and obtain composite topsoil samples for testing to ensure the topsoil conform to the specifications. Collect composite samples from the stockpiles and source or material to be delivered to the site. Submit prototype topsoil mixes to Laboratory at least 30 days before intended use on site, to allow for reformulation and retesting if test results are rejected.
2. Provide samples to both Landscape Architect and testing laboratory and have testing report sent directly to the Landscape Architect.

C. Do not order or deliver materials until required samples, certifications, manufacturers' literature and test results have been reviewed by the Landscape Architect. Delivered materials must be from the same source as the submitted samples.

D. The Landscape Architect may compare each soil delivery to the site with submission samples. Any deviations from the approved materials identified will require resubmission and further testing be performed. The Landscape Architect or reserves the right to reject on or after delivery any material that does not meet specifications or match approved samples. Use of unapproved topsoil will result in rejection and removal.

E. When tests indicate materials do not meet specified requirements, change material and retest.

F. Maintain one copy on site.

1.5 ENVIRONMENTAL REQUIREMENTS

A. Weather Limitations: Proceed with grading only when existing and forecasted weather conditions permit.

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PART 2 PRODUCTS

2.1 MATERIAL

A. Topsoil Source:
1. Reuse surface soil stockpiled on-site if adequate stockpile areas are available.
2. Supplement with imported topsoil from off-site sources when on-site reusable quantities are insufficient.
3. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least four inches deep; do not obtain from agricultural land, bogs or marshes.

B. Topsoil:
1. Soil Reusable excavated and Imported borrow
   a. Fertile, friable, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots;
2. USDA Textural Classification: Sandy Loam.
3. Reasonably free of roots, rocks larger than 1/2 inch, subsoil, debris, large weeds, and foreign matter.
   a. Screening: Double screened.
4. Free of other extraneous materials harmful to plant growth
5. Acidity range (pH) of 5.5 to 7.0.
6. Containing the minimum of 4 percent and maximum of 10 percent organic matter by weight.
7. Soluble salt content (Electrical Conductivity):
   a. Conductivity not to exceed 900 ppm (0.9 mmhos/cm) in soil.
      1) Naturally Stripped Topsoil: .01-.25 mmhos/cm
      2) Loam borrow manufactured from organic compost: not to exceed levels recommended for the specific plantings (.01-.75 mmhos/cm)
   b. Salt content will lower the longer the soil is spread on site, with rain and aging of the organic component. If salt content of the topsoil is too high, as determined by the LANDSCAPE ARCHITECT, the salt content must be within approved ranges by the time the soil is spread on site and plants installed, or planting will be delayed or soil rejected and will require replacement with an approved planting soil.
8. Nutrient Ranges:
   a. Magnesium: 60-200 ppm
   b. Phosphorus: 10- 100 ppm.
   c. Potassium to exceed 120 – 300 ppm.
9. Amend topsoil per soil analysis recommendations for plant and seed establishment.

C. Organic matter proposed as a soil amendment: Natural or manufactured mature, composted organic material
1. Comply with UMTC "Article 5.4 Standard Compost Specifications for Massachusetts" and that the compost is mature.
2. Produced by a DEP approved composting vendor of material originating from mature leaf compost, mature composted animal manure, other aged, composted vegetable materials such as brewer’s waste, or chemically tested toxin-free

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processed sludge products (biosolids), composted with wood products, safe for plants, humans and soil organisms (Class A or Type I).

3. Organic matter manufactured from sludge and other biowaste materials or manure to be aged for at least one (1) year without exception and have no objectionable biowaste odor.
4. Do not use raw (uncomposted or unprocessed) or incompletely composted organic matter.
5. Refer also to requirements included in [Section 32 93 00 – Plants for Soil Amendments for Planting Soil

2.2 SOURCE QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements**:** Testing and Inspection Services Testing and analysis of soil material.

B. Testing and Analysis of Topsoil Material: Perform in accordance with ASTM D698, ASTM D1557, or AASHTO T180.

C. Prior to delivery, analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.

D. Provide recommendation for fertilizer and lime application rates for specified seed mix as result of testing.

E. All topsoil delivered to the site must match the samples approved by the Landscape Architect. Additional testing of topsoil delivered to the site will be required if it does not appear to be consistent with previously tested samples.

F. When tests indicate materials do not meet specified requirements, amend soil l and retest.

G. Furnish materials of each type from same source throughout the Work.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Section 31 20 00 - Earthmoving: Verification of rough grading, trench backfilling and subbase has been contoured and compacted before starting work.

C. Verify compliance with requirements and for conditions affecting performance of work of this Section prior to starting any work. Report any defect, such as incorrect grading, incorrect subgrade elevations, improper compaction or drainage problems, to the LANDSCAPE ARCHITECT prior to beginning Work. Do not proceed with installation until unsatisfactory conditions have been corrected. Commencement of Work indicates acceptance of filled subgrade areas to and responsibility for Work.

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1. When conditions detrimental to work are encountered including, but not limited to, incorrect grading, adverse drainage conditions, poor soil conditions, or invasive species problems, immediately notify the Owner and Landscape Architect before beginning any Work.

D. Verify the location of the irrigation system and protect during operations.

3.2 PREPARATION

A. Coordinate topsoil placement with other Work of this contract being performed on the Project site.

B. Protect landscaping and other features remaining as final Work.

C. Protect existing structures, fences, sidewalks, utilities, paving, and curbs.

D. Immediately notify Landscape Architect if adjustments in grades and alignments are necessary to avoid interference with unforeseen conditions encountered.

E. Protect subgrade areas scheduled for planting or stormwater infiltration systems from traffic and erosion.

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3.3 SUBGRADE PREPARATION

A. Eliminate uneven areas and low spots.

B. Remove debris, roots, branches, stones, in excess of 1 inch in size. Remove contaminated subsoil.

C. Scarify surface to depth of 6 inches where topsoil is scheduled. Scarify in areas where equipment used for hauling and spreading topsoil has compacted subsoil.

3.4 PLACING TOPSOIL

A. Place topsoil in areas where seeding, sodding, and planting is required as indicated on Drawings. Place topsoil during dry weather. Do not spread if either the topsoil or subgrade is frozen, muddy, compacted or excessively wet.

B. Fine grade topsoil to eliminate rough or low areas. Maintain profiles and contour of subgrade. Fill depressions caused by settlement with additional topsoil and regrade and rake until a smooth and even finished grade is created.

C. Remove roots, weeds, rocks, and foreign material while spreading.

D. Manually spread topsoil close to plant material, building, and boardwalks to prevent damage.

E. Lightly compact placed topsoil.

F. Remove surplus subsoil and topsoil from site.

G. Leave stockpile area and site clean and raked, ready to receive landscaping.

3.5 COMPACTION

A. Seeding areas to be drill seeded or hydroseeded: Roll and compact bed before seeding. Compact with a roller or other suitable means to achieve a maximum dry density of 88 to 90% for the placed loam in accordance with compaction standards of ASTM D1557, Method D.

B. Areas to be hand seeded: Smooth surface to meet finished grades with raking and broadcast seed according to requirements specified. Compact with rolling after seeding.

C. Do not over compact or loosening and re-rolling of the soils will be required. Adjust the compaction of the soil by soil type within the required maximums, with less compaction preferred in finer soils.

3.6 REQUIRED FIELD VISIT

A. The following field visits are required by Landscape Architect:
1. Prior to placement of topsoil to confirm rough subgrade
2. Finished grades for approval prior to seeding.

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3.7 TOLERANCES

A. Section 01 40 00 - Quality Requirements: Tolerances.

B. Top of Topsoil: Plus or minus 1/2 inch.

C. Evenly grade slopes with smooth lines and grades.

3.8 PROTECTION OF INSTALLED WORK

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Prohibit construction traffic over topsoil.

C. Protect all areas where planting soils have been placed.

D. Do not drive over or compact soils.

E. Placed soils to be protected from erosion once placed. All topsoil erosion to be repaired prior to seeding.

F. If the opinion of Owner or Landscape Architect is that soils have become compacted after placement, contractor is required to dig up soils and replace them to eliminate compaction prior to seeding.

END OF SECTION

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SECTION 32 92 19 - SEEDING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes all work and amendments required to satisfactorily establish and maintain seeded areas as specified within this section. Work includes:
   1. Lime
   2. Fertilizing.
   3. Seeding.
   4. Hydroseeding.
   5. Mulching.
   6. Maintenance.

B. Related Sections:
   1. Section 31 20 00 – Earth Moving.
   2. Section 32 91 19 - Landscape Grading.
   3. Section 32 93 00 - Plants.

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1.2 REFERENCES

A. ASTM International:
   1. ASTM C602 - Standard Specification for Agricultural Liming Materials.

1.3 DEFINITIONS

A. Weeds: Vegetative species other than specified species to be established in given area.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Installer: Include lists of completed projects, with project names, addresses, phone numbers, and names and address of designers and clients.

C. Seed Mix: No seed may be sown until the Contractor has submitted the following:
   1. Materials Source: Submit name of seed source.
   2. Product Data: Submit data for the following:
      a. Seed mixes (from manufacturer)
      b. Fertilizer
      c. Mulch
      d. Lawn herbicides and pesticides (only if required)
      e. Other amendments

D. Manufacturer's Certificate: Certify seed mix meet or exceed specified requirements for the following:
   1. Seed mixes

a. Guaranteed percentage of purity, weed content and germination of the seed, and the net weight and date of shipment and pounds per acre sowing rate.
b. Fertilizer

E. Maintenance Schedule: Provide watering, fertilizing and mowing schedule to the Landscape Architect for approval.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: Include maintenance instructions, cutting method and maximum grass height; types, application frequency, and recommended coverage of fertilizer;.

1.6 QUALITY ASSURANCE

A. Provide seed mixture in containers showing percentage of seed mix, germination percentage, inert matter percentage, weed percentage, year of production, net weight, date of packaging, and location of packaging.

B. If required, only use herbicides, pre-emergents, fertilizers, fungicides, and pesticides reviewed and approved by the Landscape Architect. Do not use fertilizers in the Wetland. Application to be performed by a licensed professional according to manufacturer's recommendations.

C. Select compatible products where options are provided

D. Maintain one copy of each document on site.

1.7 QUALIFICATIONS

A. Seed Supplier: Company specializing in manufacturing Products specified in this section with minimum three years experience.

B. Installer: Company specializing in performing work of this section with a minimum 5 Year documented experience and with a record of successful grass establishment.
1. Installer to provide an experienced supervisor on the project site during all times that landscape construction is in progress. Provide written qualification data for firms and persons to be responsible for Work, to demonstrate their capabilities and experience.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

1.9 MAINTENANCE SERVICE

A. Section 01 70 00 - Execution and Closeout Requirements

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B. Maintenance includes the watering, weeding, fertilizing, mowing, repairing and/or reseeding of all seeded areas.

C. Initial maintenance period:
   1. Immediately after grass areas are seeded and continue for duration of construction.

D. Extend initial maintenance period for all seeded areas until satisfactory grass growth is established.

E. Post-Construction Maintenance Period.
   1. After final acceptance, maintain seed mixes:
      a. Seed mix 2 (Fescue Mix) – Maintain for a minimum of 90 days during the active growing season.
      b. Seed Mix 1 & 3 – Maintain for 16 months.

F. In the event that seeding operations are completed too late in the Fall for adequate germination, continue maintenance into the following Spring and Fall and reseed, as necessary, for satisfactory seeded grass establishment.

1.10 GUARANTEE

A. Satisfactory Seeded Grass: A healthy, uniform close stand of grass free of surface irregularities with coverage exceeding 90 percent over any 10 sq. ft. scattered bare spots, none of which are larger than 72 square inches, will be allowed up to a maximum of 2% of any lawn area.

B. Upon completion of the minimum maintenance period, request, in writing, an inspection by the Landscape Architect to determine whether satisfactory seed growth has been established. If the seeded areas and workmanship are determined to be satisfactory as defined in the specifications, written notice will be given by the Landscape Architect to the Contractor and Owner.

C. If the grass is determined to be unsatisfactory as defined in the specifications at the time of inspection, repair and/or reseed areas determined to be unacceptable.

D. Payment for seeding will be received when satisfactory seeded grass establishment is achieved.

1.11 ENVIRONMENTAL REQUIREMENTS

A. Planting Restrictions: Plant during one of the following periods:
   1. Mown lawns (Seed Mix 2: Fescue Mix)
      a. Spring: April 1 - June 1
      b. Fall: August 15 – October 15
   2. Seed Mix 1: New England Wetmix & Seed Mix 3: New England Native Warm Season Grass Mix
      a. Spring: April 1 - June 1

B. Seeding before or after the above referenced planting dates will increase the likelihood of grass seed establishment failure. Any deviation from the above referenced planting dates is undertaken at sole risk of the Contractor and it is the responsibility of the Contractor to provide any

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additional maintenance and watering which may be required to ensure satisfactory plant and seed establishment.

C. Seeding outside of season to occur only with permission of the Landscape Architect, and may result in reseeding the following season until satisfactory seed establishment is provided. Acceptance will not be given to areas seeded outside of season until satisfactory grass has been established. Out-of-season seeding during hot weather will require additional watering and shade mulching with netted hay-type erosion control fabric.

D. Seeding under frozen conditions in either the spring or fall will not be permitted.

PART 2 PRODUCTS

2.1 SEED MIXTURE

A. Grass Seed to be of the previous year's crop and the weed seed content is not to exceed 1% by mass.

B. Use only low maintenance seed mixes appropriate for cut and fill slopes, detention basins, and disturbed areas as listed below.

C. Seed Mixture:

1. Seed Mix 1
   a. New England Wetland Plants
      14 Pearl Ln.
      South Hadley, MA 01075
      (413) 548-8000
   b. Or approved equal
   c. "New England Wetmix" seed mix

BOTANICAL NAME	COMMON NAME
Asclepias incarnata	Swamp Milkweed
Bidens frondosa	Devil's Beggartick
Carex crinita	Fringed Sedge
Carex lupulina	Hop Sedge
Carex lurida	Lurid Sedge
Carex scoparia	Blunt Broom Sedge
Carex vulpinoidea	Fox Sedge
Eutrochium maculatum	Spotted Joe Pye Weed
Glyceria grandis	Reed Manna Grass
Iris versicolor	Blue Flag
Juncus effusus	Soft Rush
Mimulus ringens	Monkeyflower
Poa palustris	Fowl Bluegrass

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Scirpus atrovirens	Dark Green Bulrush
Symphyotrichum lateriflorum	Calico Aster
Vernonia noveboracensis	Common Ironweed

1) No more than 25% of any one species for the overall seed mix.
2) Application rate per suppliers requirement.

2. Seed Mix 2
   a. Lavoie Horticulture
      222 South Ln.
      Granville, MA 01034
      (413) 355-0200
   b. Or approved equal
   c. “Fescue Mix” seed mix

BOTANICAL NAME	COMMON NAME
Deschampsia flexuosa	Wavy Hair Grass
Festuca glauca	Blue Fescue
Festuca ovina	Sheep Fescue
Festuca ovina glauca	Blue Sheep Fescue
Festuca trachyphylla	Hard Fescue
Trifolium amoenum	Showy Indian Clover

1) No more than 25% of any one species for the overall seed mix.
2) Application rate per suppliers requirement.

3. Seed Mix 3
   a. New England Wetland Plants
      14 Pearl Ln
      South Hadley, MA 01075
      (413) 548-8000
   b. “New England Native Warm Season Grass Mix” seed mix
   c. Or approved equal

BOTANICAL NAME	COMMON NAME
Andropogon gerardii	Big Bluestem
Elymus virginicus	Virginia Wild Rye
Festuca rubra	Red Fescue
Panicum virgatum	Switch Grass
Schizachyrium scoparium	Little Bluestem
Sorghastrum nutans	Indian Grass

1) No more than 25% of any one species for the overall seed mix.
2) Application rate per suppliers requirement.

4. Seed Mix 4

   a. Modified New England Native Warm Season Grass Mix seed mix
   b. Or approved equal

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c. Seed mix to Vegetated Wall to be approved by wall manufacturer

BOTANICAL NAME	COMMON NAME	% BY WEIGHT
Schizachyrium scoparium	Little Bluestem	30%
Panicum virgatum	Switch Grass	12%
Elymus virginicus	Virginia Wild Rye	8%
Festuca rubra	Red Fescue	8%
Hard Fescue	Hard Fescue	18%
Sheep Fescue	Sheep Fescue	14%
Microclover	Microclover	10%

1) Application rate per wall manufacturer and seed suppliers requirement.

5. Seed Mix 5
   a. Lavoie Horticulture
      222 South Ln.
      Granville, MA 01034
      (413) 355-0200
   c. "Players Best" seed mix
   b. Or approved equal

	COMMON NAME
	Goldconida Tall Fescue
	Dorado Tall Fescue
	Montant Tall Fescue
	DeepBlue Kentucky
	SPF 30 Hybrid Bluegrass
	Prosperity Kentucky Bluegrass
	Singular Perennial Ryegrasss
	Frontier Perennial Ryegrass
	Micro-Clover White Clover

1) No more than 25% of any one species for the overall seed mix.
2) Application rate per suppliers requirement.

2.2 SOIL AMENDMENTS

A. Refer to Section 32 91 91 – Landscape Grading.

2.3 ACCESSORIES

A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.

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B. Hydromulch: Specially prepared green-dyed and air-dried wood-cellulose fibers, containing no growth or germination inhibiting substances, in packages not exceeding 100 pounds gross, with net weight shown on the package, and meeting the following requirements:
   1. Fiber processed from whole wood chips manufactured specifically for standard hydraulic mulching equipment. Not produced from recycled material such as sawdust, paper, or cardboard.
   2. Moisture content of hydromulch not to exceed 10%, plus or minus 3% as defined by the pulp and paper industry standards.
   3. Water holding capacity of not less than 900 grams water per 100 grams fiber.
   4. Nontoxic to plant life or animal life.
   5. Non petroleum based organic tackifier and a green dye to allow for easy visual metering during application and noninjurious to plant growth.
   6. Fiber to be dispersed into uniform slurry when mixed with water.

2.4 SOURCE QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements: Testing, inspection and analysis requirements.

B. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt content, organic matter content, and pH value.

C. Provide recommendation for fertilizer and lime application rates for specified seed mix as result of testing.

D. Testing is not required when recent tests and certificates are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.

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PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify prepared soil base is ready to receive the Work of this section.

C. Verify compliance with requirements and for conditions affecting performance of work of this Section prior to starting any work. Report any defect, such as incorrect grading, incorrect subgrade elevations, improper compaction or drainage problems, to the LANDSCAPE ARCHITECT prior to beginning Work. Do not proceed with installation until unsatisfactory conditions have been corrected. Commencement of Work indicates acceptance of the seed bed areas and responsibility for Work.
   1. When conditions detrimental to work are encountered including, but not limited to, incorrect grading, adverse drainage conditions, poor soil conditions, or invasive species problems, immediately notify the OWNER and/or LANDSCAPE ARCHITECT before beginning any Work.

3.2 PREPARATION

A. Refer to Section 32 91 91 – Landscape Grading.

B. Correct any grading and drainage problems. Restore areas if erosion has occurred or Project site has been disturbed.

C. Moisten prepared grass areas before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.3 FERTILIZING

A. Do not apply fertilizers in the wetland.

B. Apply lime at application rate recommended by soil analysis. Work lime into top 6 inches of soil.

C. Apply fertilizer at application rate recommended by soil analysis but not in excess of 20 pounds per 1000 square feet.

D. Apply after smooth raking of topsoil and prior to roller compaction.

E. When applying, avoid spreading the fertilizer onto hard surfaces where it will wash into local surface water through the storm sewer system. Sweep and remove fertilizer that lands on the sidewalk/driveway onto place onto the lawn area. Over-spreading fertilizers onto hard surface (sidewalks, driveways and streets) adds to surface water pollution.

F. Do not apply fertilizer at same time or with same machine used to apply seed.

G. Spread and thoroughly mix fertilizer thoroughly into upper 2 inches of topsoil by harrowing or as part of hydroseed slurry.

H. Do not apply fertilizers in water protection areas or in wetland buffer areas under any circumstances.

I. Lightly water soil to aid dissipation of fertilizer. Irrigate top level of soil uniformly.

J. Use no or minimal fertilizer in native grass, wildflower areas or meadow, conservation mix seeding areas and only per the soil analysis recommendations. If the soil testing determines the topsoil does not contain appropriate levels of nutrients for establishment of these native species, fertilize these areas at the rates recommended by the test results.

3.4 HYDROSEEDING

A. Protect adjacent and adjoining areas from hydroseeding overspray.

B. Mix specified seed, fertilizer, and premium wood fiber mulch in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.
   1. Mix slurry with tackifier.

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2. Apply the hydroseeding in the form of slurry consisting of organic soil amendments, commercial fertilizer, and any other recommended additives.
3. Apply slurry uniformly to all areas to be seeded in a one-step process. Spray the area with a visible uniform coat, using the dark color of the cellulose fiber as a visual guide. Apply the slurry in a downward drilling motion via a fan stream nozzle. Ensure that all of the slurry components enter the mix with the soil.
4. Ensure the uniformity of the hydroseed application at a minimum rate of 1,500-lb/acre dry weight but not less than the rate required to obtain specified seed-sowing rate.
5. Exercise special care to prevent any of the slurry from being sprayed onto any hardscape areas including paved surface, fences, walls, buildings, etc. Remove all slurry sprayed onto these surfaces at their own expense.
6. Save all seed and fertilizer tags and fiber mulch bags for the LANDSCAPE ARCHITECT to verify compliance with the Drawings and Specifications.

3.5 SEED PROTECTION

A. Identify seeded areas with stakes and string around area periphery. Set string height to 12 inches. Space stakes at 60 inches.

B. The following are applicable only for areas were terraseeding or hydroseeding is NOT applied.
1. Cover seeded slopes where grade is 3:1 or greater with erosion fabric. Roll fabric onto slopes without stretching or pulling.
2. Lay fabric smoothly on surface, bury top end of each section in 6 inch deep excavated topsoil trench. Overlap edges and ends of adjacent rolls minimum 12 inches. Backfill trench and rake smooth, level with adjacent soil.
3. Secure outside edges and overlaps at 36 inch intervals with stakes.
4. Lightly dress slopes with topsoil to ensure close contact between fabric and soil.
5. At sides of ditches, lay fabric laps in direction of water flow. Lap ends and edges minimum 6 inches.

3.6 MAINTENANCE

A. All dead or unsatisfactory grass areas are to be weeded, top-dressed, repaired, fertilized, and/or bed prepared and re-seeded until satisfactory growth with intended species has occurred, as a condition of completion of all Work at final inspection.

B. For Seed Mix 2: A few times a season to maintain at maximum height of 6” inches. Do not cut more than 1/3 of grass blade at each mowing. Perform first mowing when seedlings are 40 percent higher than desired height.

C. Do not Mow Seed Mixes 1 or 3 unless part of meadow maintenance plan, and adjacent plants are considered.

D. Neatly trim edges and hand clip where necessary.

E. Immediately remove clippings after mowing and trimming. Do not let clippings lay in clumps.

F. Water to prevent grass and soil from drying out.

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1. Provide all labor and water required to establish all grass areas. Water as required, during maintenance period to ensure the seed bed is thoroughly and evenly watered with a fine spray to penetrate the soil to a depth of at least 4 inches.
2. Keep seeded areas evenly moist until germination and satisfactory establishment.
3. Water in a manner to provide uniform coverage, prevent erosion due to application of excessive quantities over small areas, and prevent damage to the finished surface by the watering equipment.

G. Lightly compact surface to remove minor depressions or irregularities.

H. Control growth of weeds.
1. Apply herbicides only as necessary and as approved by the LANDSCAPE ARCHITECT. Remedy damage resulting from improper use of herbicides.

I. Immediately reseed areas showing bare spots.

J. Repair washouts or gullies.

K. Protect seeded areas with warning signs during maintenance period.

L. Take immediate action to identify potential problems and undertake corrective measures in areas where a decline in the condition of grass seed areas is observed.

3.7 CLEAN UP

A. Promptly remove soil and debris created by grass work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Remove erosion-control measures after satisfactory grass establishment and site stabilization is complete

END OF SECTION

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SECTION 32 92 20 - INVASIVE SPECIES REMOVAL

PART 1 GENERAL

1.1 SUMMARY

A. Section includes all materials, labor, equipment and other incidental items required to furnish and install the work of the Section, including:
   a. Furnish all labor, material, equipment, and services required to remove any invasive plants on site and within the project area limit of work as indicated on the drawings and provide invasive plant management in these areas **for 2 years** from date of Final Acceptance.

B. Related Sections:

1. 31 20 00 – Earth Moving
2. 31 25 00 – Erosion and Sediment Controls
3. 32 91 19 – Landscape Grading
4. 32 92 19 - Seeding
5. 32 93 00 – Planting

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1.2 MEASUREMENT AND PAYMENT

A. Invasive Species Removal
   1. Basis of Measurement by Hours
   2. Basis of Payment includes all time on site working to remove or treat invasive species. Payment does not include travel time to the site, development of the Contractor's Invasive Species Removal Plan (CISRP), or documentation of work.

1.2 DEFINITIONS

A. Weeds: Vegetative species other than specified species to be established in given area.

B. Invasive Plants: Per Massachusetts Invasive Plant Advisory Group (MIPAG), Invasive Plants are non-native species that are defined as invasive by the MIPAG group and have spread into native or minimally managed plant systems in Massachusetts. These plants cause economic or environmental harm by developing self-sustaining populations and becoming dominant and/or disruptive to those systems. As defined here, "species" includes all synonyms, subspecies, varieties, forms, and cultivars of that species unless proven otherwise by a process of scientific evaluation. For the purposes of this project, Poison Ivy shall also be considered an 'Invasive Plant' since it is a nuisance plant. All Poison Ivy within the property boundary shall be removed per these specifications.

1.3 SUBMITTALS

A. Section 01 33 00 – Submittal Procedures: Requirements for submittals

B. Documentation of Invasive Removal Contractor Qualifications including references and resume of lead person performing the work on site and Licensed Herbicide Applicator - See Section 1.5 'Qualifications'

C. Product Data: For each type of product indicated.

1. Pesticides and Herbicides: For invasive plant management. Include product label and manufacturer's application instructions specific to this Project for use to remove invasive species on the project. Ensure recommended products are acceptable by local Conservation Commission's Order of Condition.

D. Contractor's Invasive Species Removal Plan (CISRP): Submit written document outlining proposed plan to remove all invasive species within the property boundaries following construction activities. Invasive species shall be removed with mechanical and herbicide methods as recommended by the UMASS Invasive Plant Certification Program or approved alternate recommendation by the contractor that is approved by the Landscape Architect and Owner. Submit plan for invasive species removal, including name of licensed Pesticides Applicator for herbicide application, to Landscape Architect for approval prior to completion. The CIRP shall include the following at minimum:
   a. Schedule of Work
   b. Proposed plan of action for each species
   c. Approximate location and square footage area of invasive species to be targeted by each intervention (notated on a plan)
   d. Name and certificate of MDAR Licensed Pesticide Applicator

E. Year End Reports: Provide a report at the end of each contract year summarizing the work completed to date, sufficiently detailed photographs to document progress throughout the year, plans and notations to indicate specific invasive management progress made, updated approximate location and square footage area of invasive species, and recommended work going forward by species and location.

F. Licensed Pesticide Applicator(s): Submit information including name and resume of any MDAR Certified Pesticides applicators that will be completing any herbicide work. Only applicators who have been submitted and approved shall apply herbicide on site.

G. Photographic Documentation: Prior to any disturbance, clear and legible digital photographs with date and time stamps shall be taken of the existing site conditions. These shall be submitted to the Landscape Architect as well as photographic milestones two times per year showing management activities for entire Management Period.

1.4 CLOSEOUT SUBMITTALS

A. At end of the Management Period provide photos to Landscape Architect for treatment area. Include documentation of accepted conditions.

1.5 QUALIFICATIONS

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A. Invasive Plant Removal Contractor: Contractor shall have a record of at least three projects of successful invasive plant removal over a period of 3 years, similar in scale and complexity to those required for this Project. Work shall be performed by the same company installing the landscape plants and seeding. Work shall be performed by a staff member with a UMass Invasive Plant Removal Certificate (or equivalent) who also holds a Pesticides License in MA. Contractor and staff member shall be prequalified by Landscape Architect prior to bid acceptance. Contractor must provide 3 project locations with client references including client's contact information of similar completed work for Landscape Architect's review. Landscape Architect may choose to visit project sites that have been completed to inspect work and speak with project references to determine if the Contractor is prequalified for the work. Landscape Architect reserves the right to reject proposed Contractors until demonstrated ability to perform work and long-term evidence of successful invasive plant removals over a 3-year period is found.

1.6 SEQUENCING AND SCHEDULING

A. Start invasive plant management following final acceptance.
   a. Phase 1: If no other work is to occur in an area after Phase 1 is accepted, Invasive species management would begin for this area after approval from the Landscape Architect.
   b. Provide photos of conditions prior to beginning work.

1.7 WARRANTY

A. Time Period:
   1. Invasive Species Management Areas: Warrant that no invasive species are regrowing within the property boundaries three years from date of Final Acceptance.
   2. **If an area of 5% (as measured based on CISRP and subsequent year end reports) or greater invasive species plants are still present at the end of the 3rd year management period, the contractor will be required to add an additional year to bring the invasive species under control at no additional cost to the owner.**

PART 2 PRODUCTS

1.8 HERBICIDES

A. Herbicides for invasive species removal: Submitted and approved herbicide should be applied for control of each invasive species (based on invasive species found on site and UMass Invasive Plan Certification Program recommendations for removal)
B. All herbicide applications are to meet the requirements approved by the Conservation Commission order of conditions.

1.9 SIGNAGE

A. Provide signage in accordance with MDAR standards for all herbicide applications.

PART 3 EXECUTION

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3.1 INVASIVE PLANT REMOVALS

A. Remove and provide herbicide treatment of invasive species per accepted CISRP. Ensure all conditions in the local Conservation Commission Order or Conditions are met. Minimize disturbance of existing soils. Cut and stump treat to be used to greatest extent possible.

3.2 STOCKPILE:

A. Stockpile per approved CISRP submitted by contractor.

B. For plants that do not spread vegetatively and with no seeds present: temporarily stockpile invasives on site in an area outside of resource zone and cover securely with tarp until disposal. Stockpile location to be hardscaped or pile to be placed over thick tarp with no tears. All parts of all manually or mechanically removed plants are to be collected for stockpile and proper disposal to prevent further spread of invasive species.

C. For plants that do spread vegetatively or that have seeds present: temporarily stockpile invasive species on site in an area outside of resource zone to solarize prior to disposal. Stockpile location to be a thick tarp with no tears. All parts of all manually or mechanically removed plants to be collected for stockpile and proper disposal to prevent further spread of invasive species.

3.3 DISPOSAL:

A. Dispose per approved CISRP submitted by contractor.

B. Dispose of all invasive species off site, in a manner that will ensure plants will not spread to other areas. All plants that spread vegetatively are have seeds present at tie of removal are to be solarized on site prior to off-site disposal in manner that does not include compost or reuse in any capacity.

3.4 REVEGETATION:

A. Revegetate per approved CISRP submitted by contractor.

B. If open areas are left after invasive species have been removed, plant and overseed per drawings and Section 32 92 19 SEEDING AND 32 93 00 PLANTING.

C. Reseed any areas that become disturbed during the invasive plant removal process and continue to reseed until areas has become established.

END OF SECTION

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SECTION 32 93 00 - PLANTS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes all materials, labor, equipment and other incidental items required to furnish and install the work of the Section, includes:
   1. Trees, plants, and ground cover.
   2. Mulch.
   3. Fertilizer.
   4. Plant tagging.
   5. Staking.
   6. Pruning.
   7. Maintenance.

B. Related Sections:
   1. Section 31 20 00 – Earth Moving
   2. Section 32 91 19 - Landscape Grading
   3. Section 32 92 19 - Seeding

C. Allowances: Include under provisions of Section 01 20 00 - Price and Payment Procedures. Allowance includes furnishing of trees, plants and ground cover. Installation is included in this section and is part of Contract Sum/Price.

1.2 REFERENCES

A. AAN: "American Standard for Nursery Stock," ANSI Z60.1, latest edition.

B. TCIA: Pruning Standards: "Standards for Pruning Shade Trees" and "Standards for Pesticide Application Operations" latest editions.

C. USDA: Agricultural Research Service, "USDA Plant Hardiness Zone Map," Miscellaneous Publication No. 1475, latest edition.

D. ANSI A300 - Tree Care Operations - Tree, Shrub and Other Woody Plant Maintenance - Standard Practices.

E. Forest Stewardship Council:
   1. FSC Guidelines - Forest Stewardship Council Guidelines.

1.3 DEFINITIONS

A. Weeds: Vegetative species other than specified species to be established in given area.

B. Plants: Living trees, plants, and ground cover specified in this Section, and described in ANSI Z60.1.

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1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit list of plant material sources, data for fertilizer and other accessories.

C. Plant Materials:
   1. Labels and nursery certificates substantiating that plants, trees and shrubs materials comply with specified requirements set by AAN and others and were grown within USDA hardiness zones specified.
   2. Nursery certificates that substantiate that the plants have not been treated with neonicotinoids.
   3. Provide complete list of quantity, size, genus, species, variety of trees and shrubs. List to be provided by the supplier.

D. Tagging and planting schedule: Proposed dates for tagging plants at nurseries, and for planting each type of planting, with consideration for fall-hazard species, work coordination, etc.

E. Samples:
   1. Bark Mulch: Two-pound sample and source for review.
   2. Chemicals (tree herbicides, fungicides, and pesticides): Manufacturer's literature and analysis.
   3. Planting soil (if different from topsoil)

1.5 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Maintenance: Submit recommended procedures for routine year-round maintenance of plantings.
   1. Include pruning objectives, types and methods; types, application frequency, and recommended coverage of fertilizer.
   2. Provide watering schedule to the OWNER for approval.
   3. Submit instructions as a condition of Substantial Completion of the Project.

1.6 QUALITY ASSURANCE

A. Tree Pruning: ANSI A300 Pruning Standards for Woody Plants.

B. Maintain an experienced supervisor on the project site during all times that landscape construction is in progress.

C. All plants to comply with applicable requirements of ANSI Z60.1 "American Standard for Nursery Stock." latest edition, published by the American Nursery and Landscape Association Inc.

D. Locate plant material sources and ensure that plants are shipped in timely fashion for installation. Plant trees during the same planting season they are dug. Do not use balled and burlapped and potted plant materials from cold storage.

E. Plants to be grown under climatic conditions similar to those in the locality of the project for at least two (2) years. Use healthy nursery grown plants, free of disease, insects, and pest eggs or larvae and that have a well-developed root system.

F. To extent possible, supply each plant material species or variety from single source.

G. Measurements: Measure trees according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches above ground for trees up to 4-inch caliper size, and 12 inches above ground for larger sizes. Measure main body of tree for height and spread; do not measure branches or roots tip-to-tip.

H. If required, use only herbicides, pre-emergents, fertilizers, fungicides, and pesticides reviewed and approved by the Landscape Architect and permitted by state and local agencies. Neonicotinoids should never be applied to the plants. Applications to be applied by licensed personnel according to manufacturer's recommendations.

I. Do not use tree paint or tree wound dressing of any type on tree wounds. Allow wound to heal and weather naturally, after trace cutting ragged or loose damaged bark back to live cambium.

J. Notify the Landscape Architect at a minimum of 48 hours in advance prior to scheduling the following field visits.
   1. Plant tagging (if necessary)
   2. Plant Layout
   3. Completion of final planting and stabilization

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1.7 QUALIFICATIONS

A. Nursery: Company specializing in growing and cultivating plants with three years documented experience.

B. Installer: Company specializing in installing and planting plants with 5 years documented experience in Landscape Work similar in materials, design, and extent to that indicated for this project and with a record of successful landscape establishment. Provide written qualification data for firms and persons to be responsible for Work, to demonstrate their capabilities and experience. Include lists of completed projects, with project names, addresses, phone numbers, and names and address of designers and clients.

C. Tree Pruner: Company specializing in performing work of this section with documented experience.

D. Maintenance Services: Performed by installer.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Do not order or deliver materials until required samples, plant list, nursery/supplier and soil test results have been reviewed by the Landscape Architect. Delivered materials must closely match the samples, as determined by the Landscape Architect. If any deviations from specified plant materials are proposed, submit written request explaining differences and reasons for request.

C. Wrap tree trunks with protective fabric during transport and delivery to storage. Remove wrap after planting to avoid accumulation of moisture on bark, which increases susceptibility to hidden insect infestation, and mold.

D. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

E. Protect and maintain plant life until planted. Protect plants from desiccation, sunlight, and freezing during temporary storage and handling prior to and during planting.

F. Deliver plant life materials immediately prior to placement. Plant within one (1) week of delivery. If plants are to be stored at the site prior to planting, the CONTRACTOR is responsible to ensure they are properly maintained, watered and remain healthy. Set stored planting materials in shade, protect from weather and mechanical damage, and keep roots moist. Set balled stock on ground and cover ball with soil, sawdust, or other acceptable material.

G. Trees: Deliver freshly dug trees. Do not prune before delivery, except as directed by the Landscape Architect. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy natural shape. Provide protective covering during delivery. Do not drop trees during delivery.

H. Handle balled and burlapped stock by the root ball.

I. Plant material damaged as a result of delivery, storage or handling will be rejected.

1.9 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit. Submit to the Landscape Architect in writing the proposed planting schedule. Obtain approval of planting schedule from the Landscape Architect prior to performing any work.

C. Do not install plant life when ambient temperatures may drop below 35 degrees F or rise above 90 degrees F.

D. Do not install plant life when wind velocity exceeds 30 mph.

E. Planting Restrictions: Plant during one of the following periods unless otherwise approved by the LANDSCAPE ARCHITECT.

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1. Trees – Deciduous & Evergreen
   a. Spring: April 1 to June 15
   b. Fall: September 15 to November 15
2. Perennials and Groundcovers
   a. Spring: April 15 to June 1
   b. Fall: September 15 to November 15

F. Planting of all plants and live stakes under frozen conditions in either the spring or fall will not be permitted. Planting before or after the above referenced planting dates will increase the likelihood of plant failure. Any deviation from the above referenced planting dates is undertaken at sole risk of the Contractor and it is the responsibility of the Contractor to provide any additional maintenance and watering which may be required to ensure satisfactory plant and seed establishment.

G. Summer digging of trees is not permitted. Coordinate schedule for planting, so that summer digging and substitutions of species that are fall hazards (fall digging/planting) does not occur.

H. Spray evergreens planted in April or July-August, or out of season with anti-desiccant twice during the warranty period, once at planting and once in mid-winter.
   1. Spring Planting: April 15 to June 1
   2. Fall Planting: September 15 to November 15

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1.10 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.

B. Coordinate installation of planting materials to assure installation during normal planting seasons for each type of plant material required and as specified in planting schedule. Plant species designated as “Fall Hazard” by Nursery in the Spring, indeterminate of other site and project schedules. Show this information on the planting schedule required by Section 1:12 where applicable.

C. Coordinate planting Work with other Work of this contract being performed on site, or work being performed by others.

1.11 WARRANTY

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for warranties.

B. Furnish sixteen month warranty for trees, plants, and ground cover against defects including death and unsatisfactory growth, except for defects resulting from abnormal weather conditions unusual for warranty period. The date of final acceptance of all completed planting work establishes the end of installation and initial maintenance period and the commencement of the warranty period.

C. Remove and replace dead planting materials immediately unless required to plant in the succeeding planting season.

D. Replace planting materials that are more than 25 percent dead or in an unhealthy condition at end of warranty period.

1.12 MAINTENANCE SERVICE

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for maintenance service.

B. Maintain plant life immediately after placement until plants are well established and exhibit vigorous growing conditions. Continue maintenance for sixteen months from final acceptance.

C. At a minimum, bi-weekly site visits are required during the growing season.

D. Maintenance includes:
1. Cultivation and weeding plant beds, planted/seeded areas and tree pits.
2. Irrigating sufficient to saturate root system.
3. Pruning, including removal of dead or broken branches.
4. Disease control.
5. Maintaining wrapping, guys, and stakes. Repair or replace accessories when required.
6. Fall leaf clean up and removal.
7. Replacement of mulch.

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PART 2 PRODUCTS

2.1 PLANTING STOCK

A. All Plants: No. 1 Grade conforming to “American Standard for Nursery Stock” of American Association of Nurserymen (AAN); well-branched, vigorous and balanced root and top growth; free from disease, injurious insects, eggs, larvae, and defects such as injuries, abrasions, root bound or girdling and disfigurement and other defects.

B. Trees, shrubs and Ground Cover:
1. Species: In accordance with Standardized Plant Names, official code of American Joint Committee on Horticulture Nomenclature.
2. Identification: Label individual plants or each bundle of plants when tied in bundles.
3. Trees:
   a. Furnish with reasonably straight trunks, well balanced tops, and single leader.
   b. Shade Trees: Single-stem trees with straight trunk, well-balanced crown, and intact leader, of height and caliper indicated, conforming to ANSI Z60.1 for type of trees required.
   c. All trees within 5’-0” of walkways and sidewalks to have a 6’-8” standard branching height.
   d. Provide balled and burlapped trees, unless otherwise indicated on Drawings.
4. Deciduous plants: Furnish in dormant state, except those specified as container grown.

5. Species and size identifiable in plant schedule, grown in climatic conditions similar to those in locality of the Work.

C. Plugs
   1. 2" square open-bottomed containers with plug cells at least 3 inches deep with a healthy root system, not "root-bound" in the containers.

2.2 SOIL MATERIALS

A. Topsoil: As specified in Section 32 91 19.

B. Test and analyze imported and existing topsoil. See also Section 32 91 19 - Landscape Grading.

C. Analyze to ascertain percentage of nitrogen, phosphorus, potash, soluble salt and organic matter; pH value.

D. Provide recommendation for fertilizer and soil amendment application rates for specified planting as result of testing.

E. Testing is not required when recent tests are available for imported topsoil. Submit these test results to testing laboratory. Indicate, by test results, information necessary to determine suitability.

2.3 SOIL AMENDMENT MATERIALS

A. When soil tests indicate soil amendment, apply soil conditioners or slow release (6 month minimum) fertilizers to amend soil to specified conditions.
   1. Plant Fertilizer: Containing 50% of elements by weight derived from organic sources and of proportion necessary to eliminate deficiencies of topsoil as indicated in analysis.

B. Sand: Clean, washed, natural or manufactured sand free of toxic materials.

C. Bone Meal: Raw, finely ground, commercial grade, minimum of 3 percent nitrogen and 20 percent phosphorous.

D. Lime: Ground limestone, dolomite type, minimum 95 percent carbonates.

E. Water: Clean, fresh, and free of substances or matter capable of inhibiting vigorous growth of plants.

F. Do not use Peat.

G. Fertilizers are not allowed within resource areas.

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2.4 CHEMICALS AND INSECTICIDES

A. Provide chemicals and insecticides only as needed for fungus or pest control for plants and as the MASSDEP for the intended uses and application rates and applied only when and where permitted by the Landscape Architect, Owner and Conservation Commission.
   1. Written approval required.

2.5 MULCH MATERIALS

A. Organic Mulch: Organic mulch, free from deleterious materials and suitable as a top dressing of trees and shrubs meeting the following requirements.
   1. Shredded pine bark aged at least six (6) months and not longer than two (2) years.
   2. Dark brown in color, free of chunks and pieces of wood thicker than one quarter inch, stringy material over four (4) inches in length, and chunks over three (3) inches in width.
   3. Does not contain an excess of fine particles, overly composted or soggy compost material, as determined by the Landscape Architect.
   4. Does not have an unpleasant odor nor have any evidence of fungus growth.

B. Do not use Hemlock or dyed mulches.

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2.6 ACCESSORIES

A. Wrapping Materials: Burlap

B. Plant Protectors: Rubber sleeves over cable to protect plant stems, trunks, and branches

C. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, redwood, or pressure-preservative-treated softwood, free of knots, holes, cross grain, and other defects, 2 by 2 inches (50 by 50 mm) by length indicated, pointed at one end. Use hardwood stakes installed as indicated in the Drawings.

D. Guying and Anchoring Material: Brown or black, heavy duty woven poly-corded guying tape manufactured specifically for tree guying.
   1. Do not use cable encased in hose.

E. Flags: Standard surveyor's plastic flagging tape, white, 6 inches (150 mm) long.

2.7 PLANT SOIL MIX

A. Plant Soil Mix: Uniform mixture of 1 part peat and 3 parts topsoil by volume.

2.8 SOURCE QUALITY CONTROL

A. When possible, obtain plants and materials from the same nursery of source.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Utilities: Contact all relevant utility companies, public or private, prior to beginning work. Review the locations of utilities with the Landscape Architect before proceeding. Report any conflicts to the Landscape Architect and the Owner before excavating. Perform all work in a manner which will avoid damage to above and below grade utilities. Hand excavate as required.

C. Determine the full extent of Work required, including but not limited to the potential need for storing and maintaining plants temporarily and re-handling plants prior to final installation.

D. Inspect all areas to be planted before starting any landscape Work and report any defect, such as incorrect grading, incorrect subgrade elevations, or drainage problems, etc., to the Landscape Architect prior to beginning Work. Do not proceed with installation until all unsatisfactory conditions have been corrected. Commencement of Work indicates the Contractor's acceptance of site conditions and filled subgrade material in areas to be planted, and the Contractor assumes responsibility for Work.

E. Verify required underground utilities are available, in proper location, and ready for use.

3.2 PREPARATION OF SUBSOIL

A. Prepare subsoil to eliminate uneven areas. Maintain profiles and contours. Make changes in grade gradual. Blend slopes into level areas.

B. Remove foreign materials, weeds and undesirable plants and their roots. Remove contaminated subsoil.

C. Scarify subsoil to depth of 4 inches where plants are to be placed. Repeat cultivation in areas where equipment, used for hauling and spreading topsoil, has compacted subsoil.

D. Dig pits and beds three times wider than plant root system.

E. Maintain grade stakes until removal is approved by the Landscape Architect.

3.3 PLANTING SOIL PREPARATION

A. Before mixing, remove plants, sods, stones, clay lumps, and other extraneous materials harmful to plant growth from topsoil.

B. Mix soil amendments and fertilizers with topsoil as specified in the soil analysis. Delay mixing fertilizer if planting does not follow placing of planting soil within a few days.

C. The planting soil amendments Schedule is based upon the soil analysis.

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D. For tree pit or planting bed backfill, mix planting soil as specified in the soil analysis before backfilling and stockpile at site.

E. Place planting soil into pits and beds intended for plant root balls, to minimum depth as indicated on Drawings.

F. Obstructions: Notify Landscape Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

G. Grade to eliminate rough, low or soft areas, and to ensure positive drainage.

3.4 PLANTING PREPARARTION

A. All plant layout and actual planting locations are to be field verified by Landscape Architect prior to planting. Notify the Landscape Architect at a minimum of 48 hours in advance prior to scheduling any field inspections.

3.5 PLANTING-BALL AND BURLAP

A. Set balled and burlapped stock plumb and in center of pit or trench with top of ball to match the finish grade within one (1) inch.

B. Remove burlap and wire baskets from top two thirds rootballs as indicated on Drawings. Remove pallets, if any, before setting.

C. Do not use planting stock if ball is cracked or broken before or during planting operation.

3.6 PLANTING – POTTED PLANTS

A. Remove the plant from the pot and loosen or score the roots before planting to promote outward root growth into the soil.

3.7 PLANTING – PLUGS

A. Plant upright and not at an angle.

B. Dig planting holes large enough and deep enough to accommodate the entire root mass.

C. Plant plugs with no twisted or balled roots and with no roots exposed above the grade line.

D. Hand pack the soil around the entire plug root mass.

3.8 PLANTING - TREES, SHRUBS AND GROUNDCOVERS

A. Plant all trees, shrubs, and groundcovers as indicated on Drawings and as specified below.

B. Place plants for best appearance for review and final orientation by Landscape Architect.

C. Dig the planting hole to the same depth as the root ball and two to three times wider.

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D. Score all sides of the hole, place the plant in the hole so the top of root ball is even with soil surface.

E. Set plants vertical.

F. Place stock on setting layer of compacted planting soil.

G. Place backfill around plant roots in layers, gently tamping to settle backfill and eliminate voids and air pockets. If soil is extremely poor, replace back fill with good quality topsoil. Amend the soil, as necessary.

H. Place bare root plant materials so roots lay in natural position. Backfill soil mixture in 6 inch layers. Maintain plant life in vertical position.

I. Saturate soil with water when pit or bed is half full of soil and again when full. Repeat watering until no more is absorbed. Water again after placing and tamping final layer of backfill.

J. Create a 2" to 4" saucer around the edge of planting hole with the remaining soil.

K. Remove all plant tags and flags from the plants.

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3.9 PLANT RELOCATION AND RE-PLANTING

A. Relocate plants as indicated on Drawings or directed by Landscape Architect.

B. Ball or pot removed plants when temporary relocation is required.

C. Place backfill around ball in layers, gently tamping to settle backfill and eliminate voids and air pockets.

D. Place bare root plant materials so roots lay in natural position. Backfill soil mixture in 6 inch layers. Maintain plant life in vertical position.

E. Saturate soil with water when pit or bed is half full of soil and again when full. Repeat watering until no more is absorbed. Water again after placing and tamping final layer of backfill

F. Create a 2" to 4" saucer around the edge of planting hole with the remaining soil.

3.10 PLANT SUPPORT

A. Brace plants vertically with plant protector wrapped guy wires and stakes to the following:

Tree Caliper	Tree Support Method
1 inch	1 stake with one tie
1 - 2 inches	2 stakes with two ties
2 - 4 inches	3 guy wires
Over 4 inches	4 guy wires

B. Use caution when installing wood stake anchors for trees; ensure that stakes do not penetrate utility lines or structures. Installed stakes as indicated on Drawings, securely anchored in undisturbed or compacted subgrade.

C. Install woven tape tree guys according to manufacturer's instructions, with ties that allow for tree growth (specified, expandable knots) and to allow for some movement and to avoid girdling.

D. Securely fasten guys to wood stakes with appropriate knots, at an angle to keep guys tight. Install three guys per tree.

E. If guys are above ground, affix safety flags at four feet typical above finished grade.

F. Install the tree guying and anchoring systems securely so that tree ball does not rock and tree trunk and canopy remain plumb or nearly plumb in the wind, without holding tree so tight or at such an angle and height that there could be rubbing or structural damage to trunk in strong winds. Install to allow for tightening after installation and during the one-year maintenance period.

3.11 MULCHING

A. Mulch backfilled surfaces of pits, beds, planted areas, and other areas indicated on Drawings.

B. Apply the following average thickness of organic mulch and finish level with adjacent finish grades.
   1. Thickness: 2-3 inches (minimum).

C. Do not place mulch against trunks or stems.

3.12 CLEANUP AND PROTECTION

A. During landscape work, keep pavement clean and work area in an orderly condition.

B. Protect landscape work from damage due to landscape operations and site work by others. Maintain protection during installation and maintenance periods. Repair or replace damaged landscape work as directed by the Landscape Architect.

C. Repair damage to site or structures to restore them to their original condition.

3.13 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Remove surplus soil and waste material, including excess topsoil, subsoil, plant material, unsuitable soil, trash, and debris, and legally dispose of it off the Owner’s property.

3.14 FIELD QUALITY CONTROL

A. Plants will be rejected when ball of earth surrounding roots has been disturbed or damaged prior to or during planting.

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B. All plant layout and final plant locations are to be field verified by the Landscape Architect prior to planting.

C. During the landscape work periodic field visits are to be performed by the Landscape Architect at specific installation milestones as agreed upon during the pre-construction meeting or as indicated on the Drawings.

3.15 ACCEPTANCE OF LANDSCAPE WORK

A. Submit a written request for review of the completed work to the Landscape Architect at least 48 hours before the anticipated dates of requested field visits.

B. Request an acceptance of the landscape work only after all aspects of landscape operations are completed and maintained according to specifications, all test results are completed and acceptable, irrigation system is operating properly (if applicable), and all extraneous equipment, materials and debris are removed from the Project Site.

C. Do not request a field visit for partially completed work.

D. The Landscape Architect is to review the work with the Contractor present. If in the Landscape Architects opinion, a substantial amount of planting, materials or landscape work is deficient, the Contractor's maintenance period of all work is extended until plant replacements are made or other deficiencies are corrected.

E. A written report, or “punch list,” is issued by the Landscape Architect indicating remedial items to be corrected before Final Acceptance is authorized.

F. Acceptance: Acceptable plants are those that are to size and species as indicated on the Drawings or accepted by the Landscape Architect and meet the following requirements:
   1. At least 85% live growth with actively growing or possessing live buds.
   2. No indication of injury, disease, insect infestation, or decline due to environmental or other factors.
   3. Properly planted and installed plumb.
   4. Properly mulched.
   5. Properly staked and guyed (if just planted).
   6. Rootballs moist.

G. All unsatisfactory plants are to be removed promptly. Replacement plants must conform in all respects to specifications for the originals and must be planted and maintained in same manner until initial acceptance is made.

H. Repeat field visit request and procedures only when all remedial items included on the “punch list” are completed.

I. The end of the installation and initial maintenance period and commencement of warranty is established upon the date of final acceptance of completed remedial work.

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3.16 PLANT MAINTENANCE PERIOD, WARRANTY, AND FINAL INSPECTION

A. Upon commencement of the warranty period, it should be agreed upon by the Contractor, Owner and Landscape Architect who will be responsible for the oversight of the sixteen month maintenance period and one warranty period as outlined in the specifications.

B. Complete all items on the "punch list" to the satisfaction of the Landscape Architect and the Owner before the initiation of the warranty period can commence. Warranty specified herein does not deprive the Owner of other rights it may have under other provisions of Contract Documents and is in addition to, and runs concurrent with, other warranties made by Contractor under requirements of Contract Documents.

C. During the warranty period, make monthly inspections of plant material during April through November to document condition of plants and to provide remedial measures. Continue maintenance as specified. Submit inspection reports to the Owner. Dead plants and plants with less than 85% live wood noted in inspections are to be replaced with new plants of same size and species within one month or in first month of next growing season, whichever comes first. Install replacement plants according to the Drawings and Specifications.

D. Notify the Owner at least ten days in advance of requested date of inspection at end of one-year warranty period. Submit to the Owner, before inspection, a list of plants replaced during warranty period with species, location, and replacement dates.

E. All plants will be inspected by the Owner with the Contractor present sixteen months after final acceptance. All plants must be alive and with satisfactory growth at the end of that time. Reset or replace trees which have settled out of plumb.

F. The following must be completed at the end of the warranty period:
   1. Remove all guying material from plants.
   2. Flatten all saucers.
   3. Re-mulched and weed as necessary.
   4. Prune and remove plant dead wood.
   5. Install plant replacements.

G. All dead or unsatisfactory grass areas are to be weeded, top-dressed, repaired, fertilized, and/or bed prepared and re-seeded until satisfactory growth with intended species has occurred, as a condition of completion of all Work at final inspection.

END OF SECTION

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SECTION 33 05 14 - MANHOLES AND STRUCTURES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes all materials, labor, equipment and other incidental items required to furnish and install the work of the Section, including:
   1. Modular precast concrete manholes and structures with tongue-and-groove joints with transition to cover frame, covers, anchorage, and accessories.
   2. Hydrodynamic Separator.
   3. Outlet Control Structure.
   4. Bedding and cover materials.

B. Related Sections:
   1. Section 03 20 00 – Concrete Reinforcing
   2. Section 03 30 00 – Cast-In-Place Concrete
   3. Section 31 20 00 – Earth Moving
   4. Section 31 23 19 – Dewatering
   5. Section 33 05 15 – Drain Basins
   6. Section 33 41 13 – Storm Drainage Piping

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1.2 REFERENCES

A. American Association of State Highway Transportation Officials:
   1. AASHTO M288 - Geotextiles.
   2. AASHTO M306 - Drainage Structure Castings.
   3. AASHTO M91 - Sewer and Manhole Brick (Made from Clay or Shale).

B. American Concrete Institute:
   1. ACI 530/530.1 - Building Code Requirements for Masonry Structures and Specifications for Masonry Structures.

C. ASTM International:
   1. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
   2. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
   3. ASTM C32 - Standard Specification for Sewer and Manhole Brick (Made from Clay or Shale).
   4. ASTM C55 - Standard Specification for Concrete Brick.
   5. ASTM C478/C478M - Standard Specification for Precast Reinforced Concrete Manhole Sections.
   6. ASTM C497/C497M - Standard Test Methods for Concrete Pipe, Manhole Sections, or Tile.
   7. ASTM C913 - Standard Specification for Precast Concrete Water and Wastewater Structures.
   8. ASTM C923/C923M - Standard Specification for Resilient Connectors Between Reinforced Concrete Manhole Structures, Pipes and Laterals.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Shop Drawings: Indicate structure locations, clock diagram, elevations, piping, and sizes and elevations of penetrations.

C. Product Data: Submit manhole, catch basin, cutoff wall, flared pipe end, covers, and all other component construction, features, configuration, and dimensions.

D. Water Quality Unit calculations and drawings to be provided to Engineer and approved prior to ordering.

E. For hydrodynamic separator, the manufacturer shall submit to the Engineer the manufacturer's performance certification, certifying that the hydrodynamic separator is capable of achieving the specified removal efficiencies listed in these specifications. The certification shall be supported by independent third-party research.

1.4 QUALITY ASSURANCE

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A. Perform Work in accordance with Massachusetts Department of Transportation Standard Specifications.

B. Perform Work in accordance with manufacturer requirements.

C. All components of the hydrodynamic separator will be subject to inspection by the Engineer at the site. All components are subject to being rejected or identified for repair if the quality of materials and manufacturing do not comply with the requirements of this specification. Components which have been identified as defective will be subject to repair.

D. Manufacturer of the hydrodynamic separator to guarantee the components for a period of twelve months from the date the components are delivered to the owner for installation. If the Owner has identified defects during this period, the manufacturer will repair, correct or replace any manufacturer originated defects advised in writing to the manufacturer within the referenced warranty period.

1.5 QUALIFICATIONS

A. Manufacturer: Company specializing in manufacturing products specified in this Section with minimum three years documented experience, with the exception of the hydrodynamic separator. Manufacturer of the hydrodynamic separator to be engaged in the engineering design and production of systems deployed for the treatment of stormwater runoff for at least five years and which have a successful production, acceptable to the Engineer.

B. Installer: Company specializing in performing work of this section with minimum three years documented experience.

1.6 DELIVERY, STORAGE AND HANDLING

A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.

B. Comply with precast concrete manufacturer's instructions and ASTM C913 for unloading, storing and moving precast manholes and drainage structures.

C. Store precast concrete manholes and drainage structures to prevent damage to Owner's property or other public or private property. Repair property damaged from materials storage.

D. Mark each precast structure by indentation or waterproof paint showing date of manufacture, manufacturer, and identifying symbols and numbers shown on Drawings to indicate its intended use.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Cold Weather Requirements: ACI 530/530.1.

PART 2 PRODUCTS

2.1 MANHOLES AND STRUCTURES

A. Furnish materials in accordance with Massachusetts Department of Transportation standards.

B. Manhole and Structure Sections: Reinforced precast concrete in accordance with ASTM C478 (ASTM C478M) with gaskets in accordance with ASTM C923 (ASTM C923M).
   1. Joints for Precast Manholes and Structures: In accordance with ASTM C913; maximum leakage of 0.025 gallons per hour per foot of joint at 3 feet of head.

C. Precast Reinforced Round Concrete Manholes, Catch basins, and Recharge Basins:
   1. Riser Sections:
      a. ASTM C890.
      b. Rubber composite, Infra-Riser or equal.
   2. Joints between riser sections as specified on Drawings or one of the following:
      a. Rubber Gaskets: ASTM C 443.
      b. Butyl Joint Sealant: ConSeal CS-202 by Concrete Sealants, Inc., 8917 S. Palmer Rd., P. O. Box 176, New Carlisle, OH 45344, (513) 845-8776 or ENGINEER approved equal.
   3. Concrete for Precast Units: Air content 6 percent by volume with an allowable tolerance of plus or minus 1.5 percent. Minimum compressive strength of 5,000 psi after 28 days.
      a. Wall thickness for circular structures 12 feet deep or less: 5 inches.
      b. Wall thickness for circular structures greater than 12 feet deep: 6 inches
   4. Load Rating: AASHTO HS-20 with 30% impact and 130 lb/cf equivalent soil pressure unless noted otherwise in the Drawings.

D. Masonry Units:
   1. Brick shall conform to Sewer Brick (Made from Clay or Shale), ASTM designation C32, Grade MS or Building Brick (Solid Masonry Units Made from Clay or Shale), ASTM C62,

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Grade SW. Brick for construction of inverts and adjusting manholes to grade shall be Grade SM conforming to ASTM C32.

2. Concrete block shall be solid block and conforming to the Specifications for Concrete Masonry Units for Construction of Catch Basins and Manholes, ASTM designation C139.
3. Mortar shall be in conformance with ASTM C270, Type M. The mortar shall be composed of Portland cement hydrated lime, and sand, in the proportions of 1 part cement to 1/4 part hydrated limit to 3-1/2 parts sand, by volume.
4. Cement shall be Type I or II Portland cement conforming to ASTM C150, Standard Specification for Portland Cement. Where masonry is exposed to salt water, Type II shall be used.
5. Hydrated lime shall be Type S conforming to ASTM D207.
6. Sand for masonry mortar shall conform to the gradation requirements of ASTM C144.

E. Hydrodynamic Separator (Water Quality Unit):
   1. Housing unit of the stormwater treatment device shall be constructed of pre-cast or cast-in-place concrete, no exceptions. Precast concrete components shall conform to the applicable sections of ASTM C 478, ASTM C 857, and ASTM C 858 and the following:
      a. Concrete to achieve a minimum 28-day compressive strength of 4,000 pounds per square-inch;
      b. Unless otherwise noted, the precast concrete sections to be designed to withstand lateral earth and AASHTO H-20 traffic loads;
      c. Cement to be Type III Portland Cement conforming to ASTM C 150;
      d. Aggregates to conform to C 33;
      e. Reinforcing steel to be deformed billet-steel bars, welded steel wire, or deformed welded steel wire conforming to ASTM A 615, A 185, or A 497;
      f. Joints to be sealed with preformed joint sealing compound conforming to ASTM C 990;
      g. Shipping of components shall not be initiated until a minimum compressive strength of 4,000 psi is attained or five calendar days after fabrication has expired, whichever occurs first.
   2. Internal components and appurtenances to conform to the following:
      a. Hardware to be manufactured of Type 316 stainless steel conforming to ASTM A 320;
      b. Support bracket to be manufactured of 5052 aluminum;
      c. Fiberglass components to conform to applicable sections of ASTM D-4097;
      d. Polypropylene copolymer components to conform to a tensile strength of 3,600 psi (ASTM D-638), and Izod impact value of “no break” (ASTM D-256);
      e. Manhole castings to be designed to withstand AASHTO H-20 loadings and manufactured of cast-iron conforming to ASTM A 48 Class 30.
   3. The performance of the stormwater treatment device must meet these requirements:
      a. Size to achieve an 80 percent average annual reduction in the total suspended solid load.
      b. Design with a sump chamber for the storage of captured sediments and other negatively buoyant pollutants in between maintenance cycles. The boundaries of the sump chamber to be limited to that which do not degrade the treatment efficiency as captured pollutants accumulate. The minimum dimensions providing access to the ground surface to the sump chamber to be 16 inches in diameter.
      c. Design to capture Total Petroleum Hydrocarbons generated by wet-weather flow and dry-weather gross spills.
      d. Convey peak storm event flows from the drainage network as defined by the Engineer. Any substitutions or alternatives proposed must demonstrate equal or better upstream

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hydraulic conditions. Documentation of the calculations to be signed and sealed by a Professional Engineer registered in Massachusetts. All costs associated with preparing and certifying this document shall be born solely by the Contractor.

F. Outlet Control Structure:
   1. Structure to be single monolithic precast concrete structure meeting ASTM C890.
      a. Dimensions as indicated on Drawings.
   2. Concrete for Precast Units: Air content 6 percent by volume with an allowable tolerance of plus or minus 1.5 percent. Minimum compressive strength of 5,000 psi after 28 days.
   3. Load Rating: AASHTO HS-20 with 30% impact and 130 lb/cf equivalent soil pressure unless noted otherwise in the Drawings.

2.2 FRAMES AND COVERS

A. Product Description:
   1. Made in America.
   2. Meet AASHTO HS20 wheel loading requirements.
   3. Conform to AASHTO M306-89-Standard Specification for Drainage Structure Castings.
   4. Material:
      a. Cast iron: ASTM A48, Class 30B or 35B.
      b. Delivered to Project site free of any coatings, unless otherwise specified.
   5. Frames:
      a. Round for manholes, rectangular for catch basins with a min. 24 inch clear opening unless otherwise specified.
   6. Drainage and Other Covers:
      a. Round.
      b. Solid lid, top surface checkered and provided with suitable concealed lifting notches, and lettering cast into cover to indicate type of utility structure.
      c. Local municipal Standard when required.
   7. Drainage Grates:
      a. Rectangular – 24 inch by 24 inch.
      b. Minimum open area: 232 sq inches.
      c. Bicycle safe.
   8. Manufacturers:
      a. Neenah Foundry Company
      b. East Jordan Iron Works, Inc.
      c. Syracuse Castings Sales Corp
      d. Or approved equal. Obtain approval from Engineer.

2.3 COMPONENTS

A. Manhole and Structure Steps: Formed Steel reinforced copolymer polypropylene steps and rungs conforming to ASTM C478; 3/4 inch diameter. Formed integral with manhole sections.

2.4 CONFIGURATION

A. Shaft Construction: Reinforced precast Concrete pipe sections, lipped male/female dry joints, sleeved to receive pipe sections.

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B. Shape: Cylindrical.

C. Clear Inside Dimensions: As indicated on Drawings.

D. Design Depth: As indicated on Drawings.

E. Clear Cover Opening: As indicated on Drawings.

F. Pipe Entry: Furnish openings as indicated on Drawings.

G. Structure Joint Gaskets: ASTM C361; rubber.

H. Steps: As required by code.

2.5 ACCESSORIES

A. Grout: Specified in Section 03 30 00.

B. Mortar: ASTM C 270, Type M.

C. Brick: ASTM C-32, Grade SS.

D. Oil and Debris Hood
1. The oil and debris hood is to be the Eliminator by Ground Water Rescue, Inc. or an approved equivalent. Install with a watertight at the opening in the precast concrete structure.
2. Suppliers include, but are not limited to:
   a. Billerica WinWater (Billerica, MA)
   b. Scituate Concrete Pipe (Scituate, MA)
   c. Water Supply LLC (North Andover, MA)

2.6 BEDDING AND COVER MATERIALS

A. Bedding and backfilling to conform to the details shown on the Drawings.

2.7 FINISHING - STEEL

A. Galvanizing: ASTM A123/A123M; hot dip galvanize after fabrication.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify items provided by other sections of Work are properly sized and located.

C. Verify built-in items are in proper location, and ready for roughing into Work.

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D. Verify correct size of manhole and structure excavation.

3.2 PREPARATION

A. Coordinate placement of inlet and outlet pipe required by other sections.

B. Do not install manholes and structures where site conditions induce loads exceeding structural capacity of manholes or structures.

C. Inspect precast concrete manholes and structures immediately prior to placement in excavation to verify manholes and structures are internally clean and free from damage. Remove and replace damaged units.

D. Openings in Precast and Cast-in-Place Concrete Risers: Provide openings and install pipe connectors in strict accordance with the recommendation of the connector manufacturer.

3.3 INSTALLATION - GENERAL

A. Structures to be installed as indicated on Drawings.

B. Excavation and Backfill:
1. Excavate for manholes and structures in accordance with Section 31 20 00 in location and to depth shown. Provide clearance around sidewalls of manhole or structure for construction operations, granular backfill and placement of geotextile filter fabric.
2. When groundwater is encountered, prevent accumulation of water in excavations. Place manholes or structures in dry trench.
3. Where possibility exists of watertight manhole or structure becoming buoyant in flooded excavation, anchor manhole or structure to avoid flotation.

C. Place foundation slab, trowel top surface level.

D. Place manhole sections plumb and level, trim to correct elevations, anchor to foundation slab.

E. Install manholes and structures supported at proper grade and alignment on crushed stone bedding as shown on Drawings.

F. Backfill excavations for manholes and structures in accordance with Section 31 20 00.

G. Form and place manhole or structure cylinder plumb and level, to correct dimensions and elevations.

H. Cut and fit for pipe.

I. Set cover frames and covers level without tipping, to correct elevations.

3.4 PRECAST CONCRETE MANHOLE AND STRUCTURE INSTALLATION

A. Construct concrete structures with precast reinforced riser sections to the dimensions shown in the Drawings.

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B. Lift precast manholes and structures at lifting points designated by manufacturer.

C. When lowering manholes and structures into excavations and joining pipe to units, take precautions to ensure interior of pipeline and manhole or structure remains clean.

D. Set precast manholes and structures bearing firmly and fully on crushed stone bedding, compacted in accordance with provisions of Section 31 20 00 or on other support system shown on Drawings.

E. Assemble multi-section manholes and structures by lowering each section into excavation. Install rubber gasket joints between precast sections in accordance with manufacturer's recommendations. Lower, set level, and firmly position base section before placing additional sections.

F. Remove foreign materials from joint surfaces and verify sealing materials are placed properly. Maintain alignment between sections by using guide devices affixed to lower section.

G. Joint sealing materials may be installed on site or at manufacturer's plant. Seal joints between precast riser sections with material specified

H. Verify manholes and structures installed satisfy required alignment and grade.

I. Remove knockouts or cut structure to receive piping without creating openings larger than required to receive pipe. Fill annular space with mortar.

J. Cut pipe to finish flush with interior of manhole or structure.

K. Grout base of shaft sections to achieve slope to exit piping. Trowel smooth. Contour to form continuous drainage channel.

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3.5 HYDRODYNAMIC SEPARATOR (WATER QUALITY UNIT) INSTALLATION

A. Exercise care in the storage and handling of the components prior to and during installation. Any repair or replacement costs associated with events occurring after delivery is accepted and unloading has commenced to be borne by the Contractor.

B. Install the stormwater treatment device per the manufacturer's recommendations and related sections of the contract documents. The manufacturer to provide the Contractor with installation instructions and offer on-site guidance during installation as identified by the manufacturer at no additional expense.

C. Fill all voids associated with lifting provisions provided by the manufacturer. The voids shall be filled with non-shrinking grout providing a finished surface consistent with adjacent surfaces. Contractor to trim all protruding lifting provisions flush with the adjacent concrete surface in a manner which leaves no sharp points or edges.

D. Remove all loose material and pooling water from the stormwater treatment device prior to transfer of the operational responsibility to the Owner.

3.6 CASTINGS INSTALLATION

A. Set frame and cover flush with finished grade.

B. Set frames using mortar and masonry as indicated on Drawings. Install radially laid concrete brick with 1/4 inch thick vertical joints at inside perimeter. Lay concrete brick in full bed of mortar and completely fill joints. Where more than one course of concrete brick is required, stagger vertical joints.

3.7 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements and 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Test concrete manhole and structure sections in accordance with ASTM C497.

C. Vertical Adjustment of Existing Manholes and Structures:
   1. Where required, adjust top elevation of existing manholes and structures to finished grades shown on Drawings.
   2. Reset existing frames, grates and covers, carefully removed, cleaned of mortar fragments, to required elevation in accordance with requirements specified for installation of castings.
   3. Remove concrete without damaging existing vertical reinforcing bars when removal of existing concrete wall is required. Clean vertical bars of concrete and bend into new concrete top slab or splice to required vertical reinforcement, as indicated on Drawings.
   4. Clean and apply sand-cement bonding compound on existing concrete surfaces to receive cast-in-place concrete in accordance with Section 03 30 00.

3.8 SCHEDULES

A. Manholes: Precast concrete sections, galvanized steel steps, not less than 48 inches inside dimension, to depth indicated, with bolted lid.

END OF SECTION

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SECTION 33 05 15 - DRAIN BASINS

1.1 SUMMARY

A. Section includes all materials, labor, equipment and other incidental items required to furnish and install the work of the Section, including:
   1. Drain basin.
   2. Bedding and cover materials
   3. Ductile iron domed grate

B. Related Sections:
   1. Section 31 20 00 – Earth Moving.
   2. Section 32 11 23 – Aggregates.
   3. Section 33 05 14 – Manholes and Structures.
   4. Section 33 41 13 – Storm Utility Drainage Piping.
   5. Section 33 42 00 – Bioretention

1.2 REFERENCES

A. ASTM International:
   1. ASTM A48/A48M - Standard Specification for Gray Iron Castings.
   2. ASTM A536 - Standard Specification for Ductile Iron Castings.
   3. ASTM D1248 - Standard Specification for Polyethylene Plastics Extrusion Materials for Wire and Cable.
   4. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.

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1.3 DEFINITIONS

A. Bedding: Fill placed under drain basin prior to subsequent backfill operations.

1.4 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data indicating polyethylene drain basins and accessories.

C. Manufacturer's Installation Instructions: Submit instructions for installation of drain basins.

1.5 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents: Record location of drain basins, connections, and invert elevations.

1.6 QUALITY ASSURANCE

A. Perform Work in accordance with manufacturer’s requirements and as indicated in the Drawings.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Accept drain basins on site. Inspect for damage.

C. Store drain basins in areas protected from weather, moisture, or damage. Do not store directly on ground. Take precautions to prevent damage to interior or exterior surfaces when handling.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.

B. Conduct operations not to interfere with, interrupt, damage, destroy, or endanger integrity of surface structures or utilities, in immediate or adjacent areas.

1.9 FIELD MEASUREMENTS

A. Verify field measurements and elevations prior to fabrication.

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1.10 SCHEDULING

A. Section 01 30 00 - Administrative Requirements and 01 32 16 - Construction Progress Schedule: Requirements for scheduling.

B. Schedule work after excavation and aggregate bedding work and prior to connecting piping work.

1.11 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.

B. Coordinate the Work with connection to bioretention area.

PART 2 PRODUCTS

2.1 DRAIN BASIN

A. Manufacturers:
   1. Nyloplast a division of Advanced Drainage Systems, Inc.
   2. Engineer approved equivalent.

B. Material
   1. PVC pipe stock, utilizing a thermoforming process to reform the pipe stock to the specified configuration.
   2. The raw material used to manufacturer the pipe stock for the main body and pipe stubs shall conform to ASTM D1784 cell class 12454

3. Drainage pipe connection stubs: The drainage pipe connection stubs shall be manufactured from PVC pipe stock and formed to provide a watertight connection with the specified pipe system.
   a. Joint tightness: ASTM D3212
   b. Sealing: Flexible elastomeric conforming to ASTM F477
   c. The pipe bell spigot shall be joined to the main body of the drain basin or catch basin.

C. Size: as indicated on the Drawings

2.2 BEDDING AND BACKFILL MATERIALS

A. Bedding: As indicated on Drawings.

2.3 FRAMES AND GRATE/COVERS:

1. Ductile iron and made specifically for each basin so as to provide a round bottom flange that closely matches the diameter of the surface drainage inlet.
2. Ductile Iron Castings: ASTM A536 grade 70-50-05.
3. Size: 24”
4. Grate: Domed

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PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify excavation base is ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings.

3.2 PREPARATION

A. Correct over excavation with coarse aggregate.

B. Remove large stones or other hard matter impeding consistent backfilling or compaction.

3.3 BEDDING

A. Place bedding material at trench bottom, level materials in continuous layer not exceeding 6 inches.

B. Maintain optimum moisture content of bedding material to attain required compaction density.

3.4 INSTALLATION

A. Excavate for drain basins in accordance with Section 31 20 00.

B. Form bottom of excavation to correct elevation.

C. Establish elevations and pipe inverts for inlets and outlets as indicated on Drawings.

D. Use conventional flexible pipe backfill materials and procedures.

E. Place and compact bedding and backfill uniformly in accordance with ASTM D2321.

F. If necessary, the drain basin body will be cut at the time of the final grade so as to maintain a one piece, leak proof structure.

G. No brick. Stone or concrete block is required to set the grate to the final grade height.

H. Mount frame and cover level at the elevation as indicated on Drawings.

I. For other installation considerations such as migration of fines, groundwater, and soft foundations refer to ASTM D2321.

3.5 PROTECTION OF FINISHED WORK

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Protect drain basin from damage or displacement until backfilling operation is in progress.

END OF SECTION

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SECTION 33 41 13 - STORM DRAINAGE PIPING

PART 1 GENERAL

1.1 SUMMARY

A. Section includes all materials, labor, equipment and other incidental items required to furnish and install the work of the Section, including:
   1. Storm drainage piping.
   2. Accessories.
   3. Underground pipe markers.
   4. Bedding and cover materials.

B. Related Sections:
   1. Section 31 20 00 – Earth Moving
   2. Section 31 23 19 – Dewatering
   3. Section 33 05 14 – Manholes and Structures
   4. Section 33 05 15 – Drain Basins

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1.2 REFERENCES

A. American Association of State Highway and Transportation Officials:
   1. AASHTO M252 - Corrugated Polyethylene Drainage Tubing.
   2. AASHTO M264 - Acrylonitrile-Butadiene-Styrene (ABS) and Poly Vinyl Chloride (PVC) Composite Sewer Piping.
   3. AASHTO M278 - Class PS 50 Polyvinyl Chloride (PVC) Pipe.
   4. AASHTO M288 - Geotextiles.
   5. AASHTO M294 - Corrugated Polyethylene Pipe, 12- to 36-in Diameter.

B. ASTM International:
   1. ASTM D2235 - Standard Specification for Solvent Cement for Acrylonitrile-Butadiene-Styrene (ABS) Plastic Pipe and Fittings.
   2. ASTM D2321 - Standard Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
   3. ASTM D2564 - Standard Specification for Solvent Cements for Poly (Vinyl Chloride) (PVC) Plastic Piping Systems.
   4. ASTM D2729 - Standard Specification for Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
   5. ASTM D2855 - Standard Practice for Making Solvent-Cemented Joints with Poly (Vinyl Chloride) (PVC) Pipe and Fittings.
   6. ASTM D3034 - Standard Specification for Type PSM Poly (Vinyl Chloride) (PVC) Sewer Pipe and Fittings.
   7. ASTM D3350 - Standard Specification for Polyethylene Plastics Pipe and Fittings Materials.
   8. ASTM F405 - Standard Specification for Corrugated Polyethylene (PE) Pipe and Fittings.
   9. ASTM F477 - Standard Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
   10. ASTM F667 - Standard Specification for Large Diameter Corrugated Polyethylene Pipe and Fittings.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit data indicating pipe material, dimensions, joints, fittings, valves, and pipe accessories.

C. Manufacturer's Installation Instructions: Submit special procedures required to install Products specified.

1.4 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents:
1. Accurately record actual locations of pipe runs, connections, manholes, inlets, catch basins, and invert elevations.
2. Identify and describe unexpected variations to subsoil conditions or discovery of uncharted utilities.

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1.5 QUALITY ASSURANCE

A. Perform Work in accordance with Massachusetts Department of Transportation Standard Specifications.

B. The manufacturer/supplier is responsible for the provision of all test requirements specified for each pipe and/or fitting. In addition, any pipe may be inspected at the plant for compliance with these specifications by an independent testing laboratory selected and paid by the Owner.

C. Inspection of the pipe may also be made after delivery. The pipe is subject to rejection at any time due to failure to meet any of the specification requirements, even though pipe samples may have been accepted as satisfactory at the place of manufacture. Mark rejected pipe after delivery for identification and remove from the site at once.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Block individual and stockpiled pipe lengths to prevent moving.

C. Do not place pipe or pipe materials on private property or in areas obstructing pedestrian or vehicle traffic.

D. Do not place pipe flat on ground. Cradle to prevent point stress.

E. Store UV sensitive materials out of direct sunlight.

F. Inspect all materials before placement and replace any defective material found from any cause, including damage caused by handling. Replace any materials determined by the Engineer to be unacceptable.

1.7 COORDINATION

A. Section 01 30 00 - Administrative Requirements: Requirements for coordination.

B. Coordinate the Work with termination of storm sewer, trenching, and connection to public storm sewer.

C. Coordinate unrecorded or variations in site conditions, and corresponding adjustments to construction requirements.

PART 2 PRODUCTS

2.1 STORM DRAINAGE PIPING

A. Plastic Pipe: ASTM D2729, AASHTO M264, polyvinyl chloride (PVC) material; inside nominal diameter as indicated on Drawings, bell and spigot solvent sealed ends.
   1. Fittings: PVC.
   2. Joints: ASTM D2855, solvent weld with ASTM D2564 solvent cement.

B. High Density Corrugated Polyethylene Pipe and Fittings: ASTM D3350 smooth interior, inside nominal diameter as indicated on the Drawings.
   1. High density polyethylene conforming to the following minimum requirements of cell classification:
      a. 424420C for 4 to 10 inches.
      b. 435400C for 12 to 60 inches diameters, as defined and described in the latest version of ASTM D3350, except that carbon black content should not exceed 4%.
         1) Comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306, respectively.
   2. 4 to 10 inches: AASHTO M252, Type S.
   3. 12 to 60 inches: AASHTO M294, Type S or ASTM F2306.
      a. Comply with the notched constant ligament-stress (NCLS) test as specified in Sections 9.5 and 5.1 of AASHTO M294 and ASTM F2306, respectively.
   4. Pipe and fittings to be manufactured by the same company.
   5. Pipe to be joined with a gasketed integral bell & spigot joint meeting ASTM F2736 for respective diameters.
      a. 12 to 60 inches:
         1) Watertight according to the requirements of ASTM D3212.
         2) Reinforced bell with a polymer composite band installed by the manufacturer
      b. Spigots gaskets meet the requirements of ASTM F477 by the pipe manufacturer and covered with a removable, protective wrap to ensure the gasket is free from debris. Use a joint lubricant available from the manufacturer on the gasket and bell during assembly.
   6. Fittings to conform to ASTM F2736, ASTM F2881 and AASHTO MP-21-11, for the respective diameters.

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7. All materials for storm drainage system to be new and unused.
8. Manufacturers:
    a. Advanced Drainage Systems (ADS).
    b. Contech Construction Products, Inc.
    c. Hancor, Inc.
    d. Engineer approved equivalent.

2.2 UNDERGROUND PIPE MARKERS

A. Furnish materials in accordance with Massachusetts Department of Transportation Standard Specifications.

B. Trace Wire: Magnetic detectable conductor, brightly colored plastic covering, imprinted with "Storm Sewer Service" in large letters.

2.3 BEDDING AND COVER MATERIALS

A. Backfill and Bedding in accordance with all manufacturers recommended guidelines.

B. As indicated on Drawings.

2.4 CONCRETE ENCASEMENT

A. Concrete as specified in Section 03 30 00.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify trench cut is ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings. Notify Engineer of discrepancies.

3.2 PREPARATION

A. Hand trim excavations to required elevations. Correct over excavation with coarse aggregate.

B. Remove large stones and other hard or organic matter capable of damaging piping or impeding consistent backfilling or compacting.

3.3 EXCAVATION AND BEDDING

A. Excavate pipe trench in accordance with Section 31 20 00. Hand trim excavation for accurate placement of pipe to elevations indicated.

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B. Dewater excavations in accordance with Section 31 23 19 to maintain dry conditions to preserve final grades at bottom of excavation.

C. Place bedding material at trench bottom, level materials in continuous layers not exceeding 8 inches compacted depth.

D. Install pipe on compacted subgrade meeting bedding requirements. Cradle bottom 20 percent of diameter to avoid point load.

E. Compact according to requirements.

F. Place geotextile fabric over backfill.

3.4 INSTALLATION - PIPE

A. Lay all pipes accurately to the lines and grades as indicated on Drawings.

B. Install pipe, fittings, and accessories in accordance with ASTM D2321. Seal joints watertight.

C. Maximum fill heights depend on embedment material and compaction level; refer to manufacturer's recommendations and installation guidelines.

D. Excavation, backfilling and compaction as specified in manufacturers most current published installation guidelines

E. Maintain optimum moisture content of bedding material to attain required compaction density.

F. Refer to Section 31 20 00 for backfilling and compacting requirements. Do not displace or damage pipe when compacting.

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3.5 INSTALLATION - DRAINAGE STRUCTURES

A. Install catch basins, hydrodynamic separators, outlet control structures, and manholes in accordance with Section 33 05 14.

B. Install drain basins in accordance with section 33 05 15.

3.6 FIELD QUALITY CONTROL

A. Section 01 40 00 - Quality Requirements and 01 70 00 - Execution and Closeout Requirements: Field inspecting, testing, adjusting, and balancing.

B. Clean the entire drainage system of all debris and obstructions after site stabilization. This includes the removal of all formwork from structures, concrete and mortar droppings, construction debris and dirt. Furnish all necessary hose, pumps, pipe and other equipment that may be required for this purpose. Do not flush debris into existing drains, underground stormwater chambers, storm drains and/or streams.

C. When tests indicate work does not meet specified requirements, remove work, replace and retest.

3.7 PROTECTION OF FINISHED WORK

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for protecting finished Work.

B. Protect pipe and aggregate cover from damage or displacement until backfilling operation is complete.
   1. Take care not to damage or displace installed pipe and joints during construction of pipe supports, backfilling, testing, and other operations.
   2. Repair or replace pipe that is damaged or displaced from construction operations.

END OF SECTION

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SECTION 33 42 20 - BIORETENTION

PART 1 GENERAL

1.1 SUMMARY

A. Section includes: all materials, labor, equipment and other incidental items required to furnish, install, and stabilize the bioretention area. Complete work in conjunction with the forebay, spillway and overflow as required in other sections of the specifications
   1. Excavation
   2. Grading
   3. Underdrain.
   4. Backfill.
   5. Slope stabilization.

B. Related Sections:
   1. Section 31 10 00 – Site Clearing.
   2. Section 31 20 00 – Earth moving.
   3. Section 31 25 00 – Erosion and Sedimentation Controls
   4. Section 32 91 19 – Landscape Grading
   5. Section 32 92 19 – Seeding
   6. Section 32 93 00 – Plants

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1.2 DEFINITIONS

A. Finish Grade: Elevation of finished surface of bioretention soil.

B. Bioretention Soil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments.

C. Subgrade: Surface or elevation of subsoil remaining after excavation is complete or top surface of a fill or backfill before bioretention soil is placed.

1.3 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

B. Product Data: Submit complete information concerning all materials of construction and fabrication including:
   1. Soil
   2. Rounded native stone
   3. Filter Fabric
   4. Outlet Structure
   5. Erosion Control Blanket

C. Materials Source: Submit name of materials sources.

D. Manufacturer's Certificate/Documentation: Certify the following products meet or exceed specified design requirements.

E. Samples: Submit, 2 lbs. sample to the Engineer for approval:
   1. Bioretention soil
   2. Rounded native stone

F. Bioretention Soil Analysis: Provide a minimum of one test per each soil source from a qualified testing agency. If more than one soil delivery is required a soil analysis for each delivery must be provided.
   1. Submit soil analysis by a qualified soil testing laboratory indicating and interpreting test results for compliance the following with parameters (See Section 2.1 for parameter requirements):
      a. USDA Unified Soil Classification
      b. Gradation and percentages of sand, silt, and clay content.
      c. Percent organic matter.
      d. pH
      e. Magnesium (ppm)
      f. Phosphorous (ppm)
      g. Potassium (ppm).
      h. Soluble salts (ppm)

   2. Recommended Soil Testing Laboratories
      a. UMASS
         Soil and Plant Tissue Testing Lab
         West Experiment Station
         682 North Pleasant Street
         University of Massachusetts
         Amherst, MA 01003
         Phone: (413) 545-2311 or
                (413) 545-5304 lab
         Fax: (413) 545-1931
         email: soiltest@psis.umass.edu
         website: http://www.umass.edu/soiltest/

      b. Briggs Engineering and Testing
         100 Weymouth Street
         P.O. Box 369
         Rockland, MA 02370
         Phone: (781) 871-6040
         Fax: (781) 871-7982
         website: http://www.briggsengineering.com/services.shtml

      c. UCONN
         Soil Nutrient Analysis Laboratory
         6 Sherman Place, U-5102
         University of Connecticut, Storrs, CT 06269-5102
         Phone: 860-486-4274

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Fax: 860-486-4562
email: soiltest@uconn.edu
website: http://www.soiltest.uconn.edu

1.4 CLOSEOUT SUBMITTALS

A. Section 01 70 00 - Execution and Closeout Requirements: Requirements for submittals.

B. Project Record Documents:
   1. As-built survey required: Record actual size, location and elevations of bioretention area, and outlet structure.

1.5 QUALITY ASSURANCE

A. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

B. Mandatory construction field visits and Engineer approval of construction prior to continuing construction as indicated on Drawings.

C. Provide an experienced full-time supervisor on the Project site when planting is in progress.

1.6 PRE-INSTALLATION MEETINGS

A. Convene at the Project site a minimum one week prior to commencing work of this section.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Section 01 60 00 - Product Requirements: Requirements for transporting, handling, storing, and protecting products.

B. Soil and Gravel:
   1. Deliver soil, gravel, and other bioretention materials to a pre-approved location in separate piles. Surround stockpiles left for extended period (over a week) by containment strawbales or approved other. Completely cover with an approved blanket material to prevent erosion and invasive seed contamination.

1.8 ENVIRONMENTAL REQUIREMENTS

A. Section 01 60 00 - Product Requirements: Environmental conditions affecting products on site.

B. Conduct operations not to interfere with, interrupt, damage, destroy, or endanger integrity of surface structures or utilities, in immediate or adjacent areas.

C. Weather limitations: Proceed with bioretention installation only when existing and forecasted weather conditions permit. Do not plant during inclement weather including but not limited to heavy rain, high winds, frost and similar conditions.

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D. Coordinate bioretention installation periods with planting periods in Section 32 93 00.

1.9 SCHEDULING

A. Schedule work after demo, site clearing and excavation and prior to connecting stormwater piping work and paving.

1.10 COORDINATION

A. Coordinate the Work with connection to drainage system and pavement installation.

PART 2 PRODUCTS

2.1 BIORETENTION SOIL

A. A uniform soil mix, free of noxious weeds stones, stumps, roots or other similar objects larger than 1 inch.

B. Provide a textural analysis including the following:
   1. USDA Unified Soil Classification: loamy sand, loamy coarse sand, sand.
   2. Gravel Content: <15%
   3. Gradation and percentages of sand, silt, and clay content.
      a. 85-88% sand. (mix of very fine to very coarse % will vary)
      b. 8-12% silt and clay (<4 % clay).

C. Organic Content: 3%
   1. Well aged (6-12 months), well aerated, leaf compost or approved equivalent.

D. Provide a soil test of the bioretention soil for conformance to the following criteria:
   1. pH range: 5.2-7.0.
   2. Magnesium: minimum 32 ppm.
   3. Phosphorous (P2O5): not to exceed 69 ppm.
   4. Potassium (K2O): minimum 78 ppm.
   5. Soluble salts: not to exceed 500 ppm or 0.75 dS/m (electric conductivity)

   If the soil pH is not within the acceptable range, amend with lime to raise the pH or with iron sulfate to lower the pH, as necessary. All testing should be performed by the same testing facility to maintain consistent results. Submit the soil sample results to the Engineer review and approval prior to delivery to the Project site.

E. Volume of filter media based on 110% of plan volume to account for settling or compaction.

F. Do not mix, dump or store any other materials or substances that may be harmful to plant growth or prove a hindrance to the planting maintenance or operations within the bioretention area.

2.2 FILTER FABRIC

A. See Geotextile Fabric under Section 31 20 00 – Earth Moving.

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2.3 CONNECTIONS TO STORM DRAIN SYSTEM.

A. Non-perforated pipe in accordance with Section 33 41 00 and as indicated on Drawings.

PART 3 EXECUTION

3.1 EXAMINATION

A. Section 01 30 00 - Administrative Requirements: Verification of existing conditions before starting work.

B. Verify layout and orientation of bioretention area and connections.

C. Verify excavation base is ready to receive work and excavations, dimensions, and elevations are as indicated on Drawings.

3.2 PREPARATION

A. Call Digsafe at 811 or 888-344-7233 not less than three working days before performing Work.
   1. Request underground utilities to be located and marked within and surrounding construction areas.

B. Identify required lines, levels, contours, and datum.

C. Clear and grub the proposed bioretention area.

3.3 EXCAVATION

A. Excavate bioretention area in accordance with Section 31 20 00 .

B. Work from the sides of the bioretention area excavation. Excavate to appropriate design depth and dimensions.

C. Excavate sediment forebays at the size and locations indicated on Drawings to trap sediments prior to bioretention construction.

D. Rough grade the bioretention area during general construction. Excavate the bioretention facilities to within 1 foot of underdrain bottom.

E. If the bioretention area is to be used as a temporary drainage storage basin during the early stages of project construction, the side slopes should be temporarily stabilized and silt fence installed along the toe of the rough graded bioretention slopes to minimize excessive sedimentation of the bioretention floor.

3.4 COMPACTION

A. Minimize compaction of both the base of the bioretention area and the required backfill. Compaction will significantly contribute to design failure.

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B. Use excavator or backhoes to excavate the bioretention area as indicated in Section 3.3.

C. If the bioretention area is excavated using a loader, the contractor should use wide track or marsh track equipment, or light equipment with turf type tires to minimize compaction.

D. Use of equipment with narrow tracks or narrow tires, rubber tires with large lugs, or high pressure tires will cause excessive compaction resulting in reduced infiltration rates and storage volumes and is not acceptable.

E. Compaction can be alleviated at the base of the bioretention facility by using a primary tilling operation such as a chisel plow, ripper, or subsoiler. These tilling operations are performed to refracture the soil profile through the 12-in compaction zone. Substitute methods must be approved by the Engineer. Rototillers typically do not till deep enough to reduce the effects of compaction from heavy equipment.

F. Do not compact bioretention soil with mechanical equipment.

3.5 INSTALLATION

A. Do not construct the bioretention area until all disturbed areas within the contributing drainage areas have been graded and stabilized.

B. Remove sediment accumulated along the excavation floor during site construction prior to continuing with the bioretention facility construction.

C. Confirm the bottom of excavation is the correct area and elevation.

D. Rough grade side slopes as indicated on Drawings. 3:1 slope max. Incorrect side slopes will be required to be re-graded.

E. Install temporary erosion and sediment controls to divert stormwater away from the bioretention area during final construction and until it is completed. Special protection measures such as erosion control fabrics may be needed to protect vulnerable side slopes from erosion during the construction process.

F. If the bioretention area is designed to infiltrate (no liner), scarify the bottom soils to a depth of six inches to promote greater infiltration.

G. Geotextile Filter Fabric
   1. Install the filter fabric along the excavation side walls as specified in the Drawings. Place the filter fabric on the sides of the bioretention area with a minimum six inch overlap at all joints.

H. Install the overflow outlet structure as indicated on Drawings.
   1. Establish elevations and pipe inverts for inlets and outlets as indicated on Drawings

3.6 SOIL BACKFILL

A. Backfill with approved bioretention soil to the design grade as specified in the Drawings.

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B. Place soil in 12 inch lifts until desired top elevation of bioretention is achieved. Do not use heavy equipment within the bioretention basin. Heavy equipment can be used around the perimeter of the basin to supply soils and sand. Wait 3 days to check for settlement, and add additional media as needed

C. Do not compact bioretention soil with mechanical equipment. Place bioretention soil with light equipment such as a compact loader, excavator or a dozer/loader with marsh tracks. Hand grade bioretention soil.

D. Stabilize remaining disturbed areas and side slopes with seeding, hydroseeding, and/or erosion control blankets as indicated on Drawings.

3.7 FINAL GRADING

A. Adjust sand filter and side slope grading as necessary prior to placement of topsoil.

B. Place topsoil carefully along side slopes and sand filter.

C. Do not use heavy equipment in the bottom of the sand filter during topsoil placement.

D. Hand-roll topsoil.

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3.8 PLANTING

A. Plant bioretention area in accordance with Section 32 93 00 and as indicated on Drawings.

B. The primary function of the bioretention area is to improve water quality. Do not add fertilizers or other soil amendments to the bioretention soils unless instructed by the Engineer. The planting soil specifications provide enough organic material to adequately supply nutrients from natural cycling.

C. Remove any sediment accumulated in the bioretention area during the planting phase.

D. Do not plant before the remaining disturbed areas surrounding the facility are stabilized.

E. If satisfactory vegetative cover has not been established along the bioretention side slopes prior to planting, install a silt fence perimeter at the toe of the bioretention slopes to remain in place until an approved vegetative cover has been established.

F. Remove remaining erosion and sediment controls only after surrounding disturbed areas have been properly stabilized.

G. Conduct final construction inspection with Engineer.

3.9 TOLERANCES

A. Top of Sand Filter Elevation: +/- ¼ inch

B. Outlet Structure Rim Elevation: +/- ¼ inch

C. Bottom Area: +/- 3 square feet

D. Maximum Side Slopes: .08% or .5’ per run

3.10 PROTECTION

A. Install silt fence or silt sock along the perimeter of the toe of the sand filter slope to protect the sand filter from sedimentation and clogging until the site and side slopes are stabilized and satisfactory grass growth established.

B. Install erosion controls (silt sack, straw wattles, etc) at the sand filter inlets and overflow outlets until site is stabilized.

C. Maintain and remove erosion controls until acceptance of stabilization and grass establishment.

D. Do not mow until satisfactory grass growth has been established.

3.11 FIELD QUALITY CONTROL

A. Mandatory Engineer Field Visits:
   1. Mandatory field visit notification to and approval by the Engineer is required at the following stages prior to proceeding with next phase of construction.
      a. Bottom of Bed: Excavate the bioretention area to the bottom invert of the subdrain system and install the filter fabric along the excavation side walls.
      b. Cover: Install underdrain, perforated pipe, gravel and filter fabric on top of the underdrain gravel as specified in the drawings
      c. Final inspection: Stabilize, maintain and cleanup all bioretention areas Engineer to inspect the following:
         1) 90% mulch and vegetative cover has been achieved in the bottom of bed, and depth of remaining mulch.
         2) Winter or salt-killed vegetation. Presence of accumulated sand, sediment and trash in pretreatment cell or filter beds.
         3) Evidence of any rill or gully erosion along slopes or upgradient grass filter strip.
         4) Evidence of mulch flotation, excessive ponding, dead plants or concentrated flows
         5) Sediment accumulation and clogging at inflow points.
         6) Bare soil or sediment sources in the contributing drainage area.
   2. Take appropriate remedial action to repair any deficiencies identified during the above Engineer field visits.

3.12 CLEANING

A. After completion of the work, remove and properly dispose all debris, construction materials, rubbish, excess soil, etc., from the Project site. Promptly repair any identified deficiencies and leave the Project site in a clean and satisfactory condition.

3.13 MAINTENANCE

A. Provide service and maintenance of the sand filter for 3 months from date of Substantial Completion.

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B. Maintenance as indicated in the Operation and Maintenance Plan. At a minimum it includes:
   1. First mowing
   2. Erosion repairs
   3. Sediment removal
   4. Cleaning or inlet and outlet structures

END OF SECTION

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APPENDIX A – Prevailing Wage Rates - Massachusetts

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS
Prevailing Wage Rates

MAURA HEALEY
Governor
KIM DRISCOLL
Lt. Governor

As determined by the Director under the provisions of the Massachusetts General Laws, Chapter 149, Sections 26 to 27H

LAUREN JONES
Secretary
MICHAEL FLANAGAN
Director

Awarding Authority:	Nantucket Islands Land Bank Commission	**City/Town:**	NANTUCKET
Contract Number:	2026-LB-05		
Description of Work:	Earthwork, off island soil disposal, wetland restoration/construction, water quality/drainage & park improvements (parking, walkways, boardwalks), planting, invasive species management & all associated work.		
Job Location:	17-19 North Liberty St., Nantucket, MASS.		

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, the awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. The updated wage schedule must be provided to all contractors, including general and sub-contractors, working on the construction project.
- This annual update requirement is generally not applicable to 27F “rental of equipment” contracts. For such contracts, the prevailing wage rates issued by DLS shall remain in effect for the duration of the contract term. However, if the prevailing wage rate sheet issued does not contain wage rates for each year covered by the contract term, the Awarding Authority must request updated rate sheets from DLS and provide them to the contractor to ensure the correct rates are being paid throughout the duration of the contract. Additionally, if an Awarding Authority exercises an option to renew or extend the contract term, they must request updated rate sheets form DLS and provide them to the contractor.
- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the “Wage Request Number” on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or a sub-contractor.
- Apprentices working on the project are required to be registered with the Massachusetts Division of Apprentice Standards (DAS). Apprentices must keep their apprentice identification card on their persons during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DAS regardless of whether they are registered with another federal, state, local, or private agency must be paid the journeyworker's rate.**
- Every contractor or subcontractor working on the construction project must submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee’s name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. For a sample payroll reporting form go to http://www.mass.gov/dols/pw.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Contractors must obtain the wage schedules from awarding authorities. Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and criminal penalties.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may file a complaint with the Fair Labor Division of the office of the Attorney General at (617) 727-3465.

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
(2 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	$41.95	$16.17	$21.78	$0.00	$0.00	$79.90
	12/1/2026	$41.95	$16.17	$23.52	$0.00	$0.00	$81.64
	1/1/2027	$41.95	$16.77	$23.52	$0.00	$0.00	$82.24
(3 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	$42.02	$16.17	$21.78	$0.00	$0.00	$79.97
	12/1/2026	$42.02	$16.17	$23.52	$0.00	$0.00	$81.71
	1/1/2027	$42.02	$16.77	$23.52	$0.00	$0.00	$82.31
(4 & 5 AXLE) DRIVER - EQUIPMENT TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	$42.14	$16.17	$21.78	$0.00	$0.00	$80.09
	12/1/2026	$42.14	$16.17	$23.52	$0.00	$0.00	$81.83
	1/1/2027	$42.14	$16.77	$23.52	$0.00	$0.00	$82.43
ADS/SUBMERSIBLE PILOT PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1) For apprentice rates see "Apprentice- PILE DRIVER"	1/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
AIR TRACK OPERATOR LABORERS LABORERS - ZONE 2 For apprentice rates see "Apprentice- LABORER"	6/1/2026	$42.41	$10.90	$9.75	$9.11	$0.00	$72.17
	12/1/2026	$43.85	$10.90	$9.75	$9.11	$0.00	$73.61
	6/1/2027	$45.30	$10.90	$9.75	$9.11	$0.00	$75.06
	12/1/2027	$46.75	$10.90	$9.75	$9.11	$0.00	$76.51
	6/1/2028	$48.25	$10.90	$9.75	$9.11	$0.00	$78.01
	12/1/2028	$49.75	$10.90	$9.75	$9.11	$0.00	$79.51
AIR TRACK OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY) For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"	6/1/2026	$42.41	$10.90	$9.75	$9.21	$0.00	$72.27
	12/1/2026	$43.85	$10.90	$9.75	$9.21	$0.00	$73.71
ASBESTOS WORKER (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (SOUTHERN MASS)	12/1/2025	$44.80	$14.50	$4.30	$6.75	$0.00	$70.35
ASPHALT RAKER LABORERS LABORERS - ZONE 2 For apprentice rates see "Apprentice- LABORER"	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
ASPHALT RAKER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY) For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"	6/1/2026	$41.91	$10.90	$9.75	$9.21	$0.00	$71.77
	12/1/2026	$43.35	$10.90	$9.75	$9.21	$0.00	$73.21
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4 For apprentice rates see "Apprentice- OPERATING ENGINEERS"	6/1/2026	$59.38	$17.05	$13.35	$3.25	$0.00	$93.03
	12/1/2026	$60.83	$17.05	$13.35	$3.25	$0.00	$94.48

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
BACKHOE/FRONT-END LOADER	6/1/2026	$59.38	$17.05	$13.35	$3.25	$0.00	$93.03
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.83	$17.05	$13.35	$3.25	$0.00	$94.48
OPERATING ENGINEERS LOCAL 4							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
BARCO-TYPE JUMPING TAMPER	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
LABORERS	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
LABORERS - ZONE 2	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER	6/1/2026	$42.41	$10.90	$9.75	$9.11	$0.00	$72.17
LABORERS	12/1/2026	$43.85	$10.90	$9.75	$9.11	$0.00	$73.61
LABORERS - ZONE 2	6/1/2027	$45.30	$10.90	$9.75	$9.11	$0.00	$75.06
	12/1/2027	$46.75	$10.90	$9.75	$9.11	$0.00	$76.51
	6/1/2028	$48.25	$10.90	$9.75	$9.11	$0.00	$78.01
	12/1/2028	$49.75	$10.90	$9.75	$9.11	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"							
BLOCK PAVER, RAMMER / CURB SETTER (HEAVY & HIGHWAY)	6/1/2026	$42.41	$10.90	$9.75	$9.21	$0.00	$72.27
LABORERS	12/1/2026	$43.85	$10.90	$9.75	$9.21	$0.00	$73.71
LABORERS - ZONE 2 (HEAVY & HIGHWAY)							
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
BOILER MAKER	1/1/2024	$48.12	$7.07	$14.60	$6.00	$0.00	$75.79
BOILERMAKERS LOCAL 29							
BOILERMAKERS LOCAL 29							

Apprentice: BOILER MAKER

Effective Date: 1/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	65.00	$31.28	$7.07	$9.32	$3.90	$0.00	$51.57
2	65.00	$31.28	$7.07	$9.32	$3.90	$0.00	$51.57
3	70.00	$33.68	$7.07	$10.03	$4.20	$0.00	$54.98
4	75.00	$36.09	$7.07	$10.74	$4.50	$0.00	$58.40
5	80.00	$38.50	$7.07	$11.45	$4.80	$0.00	$61.82
6	85.00	$40.90	$7.07	$12.18	$5.10	$0.00	$65.25
7	90.00	$43.31	$7.07	$12.88	$5.40	$0.00	$68.66
8	95.00	$45.71	$7.07	$13.62	$5.70	$0.00	$72.10

Apprentice to Journeyworker Ratio: 1:4

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	2/1/2026	$67.95	$12.84	$15.57	$8.02	$0.00	$104.38
BRICKLAYERS LOCAL 3	8/1/2026	$70.15	$12.84	$15.57	$8.02	$0.00	$106.58
BRICKLAYERS LOCAL 3 (NEW BEDFORD)	2/1/2027	$71.55	$12.84	$15.57	$8.02	$0.00	$107.98

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$33.98	$12.84	$15.57	$8.02	$0.00	$70.41
2	60.00	$40.77	$12.84	$15.57	$8.02	$0.00	$77.20
3	70.00	$47.57	$12.84	$15.57	$8.02	$0.00	$84.00
4	80.00	$54.36	$12.84	$15.57	$8.02	$0.00	$90.79
5	90.00	$61.16	$12.84	$15.57	$8.02	$0.00	$97.59

Apprentice: BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$35.08	$12.84	$15.57	$8.02	$0.00	$71.51
2	60.00	$42.09	$12.84	$15.57	$8.02	$0.00	$78.52
3	70.00	$49.11	$12.84	$15.57	$8.02	$0.00	$85.54
4	80.00	$56.12	$12.84	$15.57	$8.02	$0.00	$92.55
5	90.00	$63.14	$12.84	$15.57	$8.02	$0.00	$99.57

Apprentice to Journeyworker Ratio: 1:5

BULLDOZER/GRADER/SCRAPER	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
OPERATING ENGINEERS LOCAL 4							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
CAISSON & UNDERPINNING BOTTOM MAN	6/1/2026	$50.40	$10.90	$9.75	$9.80	$0.00	$80.85
LABORERS	12/1/2026	$51.90	$10.90	$9.75	$9.80	$0.00	$82.35
LABORERS - FOUNDATION AND MARINE							
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING LABORER	6/1/2026	$49.25	$10.90	$9.75	$9.80	$0.00	$79.70
LABORERS	12/1/2026	$50.75	$10.90	$9.75	$9.80	$0.00	$81.20
LABORERS - FOUNDATION AND MARINE							
For apprentice rates see "Apprentice- LABORER"							
CAISSON & UNDERPINNING TOP MAN	6/1/2026	$49.58	$10.90	$9.75	$9.80	$0.00	$80.03
LABORERS	12/1/2026	$51.08	$10.90	$9.75	$9.80	$0.00	$81.53
LABORERS - FOUNDATION AND MARINE							
For apprentice rates see "Apprentice- LABORER"							
CARBIDE CORE DRILL OPERATOR	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
LABORERS	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
LABORERS - ZONE 2	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CARPENTER	3/1/2026	$62.19	$10.58	$11.47	$8.50	$0.00	$92.74
CARPENTERS	9/1/2026	$63.69	$10.58	$11.47	$8.50	$0.00	$94.24
CARPENTERS -ZONE 1 (Metro Boston)	3/1/2027	$65.19	$10.58	$11.47	$8.50	$0.00	$95.74

Apprentice: CARPENTER

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$27.99	$11.08	$0.00	$1.73	$0.00	$40.80
2	45.00	$27.99	$11.08	$0.00	$1.73	$0.00	$40.80
3	55.00	$34.20	$11.08	$0.00	$3.40	$0.00	$48.68
4	55.00	$34.20	$11.08	$0.00	$3.40	$0.00	$48.68
5	70.00	$43.53	$11.08	$11.41	$5.10	$0.00	$71.12
6	70.00	$43.53	$11.08	$11.41	$5.10	$0.00	$71.12
7	80.00	$49.75	$11.08	$11.44	$6.80	$0.00	$79.07
8	80.00	$49.75	$11.08	$11.44	$6.80	$0.00	$79.07

Apprentice: CARPENTER

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$28.66	$11.08	$0.00	$1.73	$0.00	$41.47
2	45.00	$28.66	$11.08	$0.00	$1.73	$0.00	$41.47
3	55.00	$35.03	$11.08	$0.00	$3.40	$0.00	$49.51
4	55.00	$35.03	$11.08	$0.00	$3.40	$0.00	$49.51
5	70.00	$44.58	$11.08	$11.41	$5.10	$0.00	$72.17
6	70.00	$44.58	$11.08	$11.41	$5.10	$0.00	$72.17
7	80.00	$50.95	$11.08	$11.44	$6.80	$0.00	$80.27
8	80.00	$50.95	$11.08	$11.44	$6.80	$0.00	$80.27

Apprentice to Journeyworker Ratio: 1:5

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
CARPENTER WOOD FRAME	10/1/2025	$27.37	$7.38	$4.47	$1.00	$0.00	$40.22
CARPENTERS	10/1/2026	$28.47	$7.38	$4.47	$1.00	$0.00	$41.32
CARPENTERS-ZONE 3 (Wood Frame)							

All Aspects of New Wood Frame Work

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$16.42	$7.38	$0.00	$0.00	$0.00	$23.80
2	60.00	$16.42	$7.38	$0.00	$0.00	$0.00	$23.80
3	65.00	$17.79	$7.38	$0.00	$1.00	$0.00	$26.17
4	70.00	$19.16	$7.38	$0.00	$1.00	$0.00	$27.54
5	75.00	$20.53	$7.38	$3.80	$1.00	$0.00	$32.71
6	80.00	$21.90	$7.38	$3.80	$1.00	$0.00	$34.08

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Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
7	85.00	$23.26	$7.38	$3.80	$1.00	$0.00	$35.44
8	90.00	$24.63	$7.38	$3.80	$1.00	$0.00	$36.81

Apprentice: CARPENTER WOOD FRAME

Effective Date: 10/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$17.08	$7.38	$0.00	$0.00	$0.00	$24.46
2	60.00	$17.08	$7.38	$0.00	$0.00	$0.00	$24.46
3	65.00	$18.51	$7.38	$0.00	$1.00	$0.00	$26.89
4	70.00	$19.93	$7.38	$0.00	$1.00	$0.00	$28.31
5	75.00	$21.35	$7.38	$3.80	$1.00	$0.00	$33.53
6	80.00	$22.78	$7.38	$3.80	$1.00	$0.00	$34.96
7	85.00	$24.20	$7.38	$3.80	$1.00	$0.00	$36.38
8	90.00	$25.62	$7.38	$3.80	$1.00	$0.00	$37.80

Apprentice to Journeyworker Ratio: 1:5

CEMENT MASONRY/PLASTERING PLASTERERS AND CEMENT MASONS LOCAL 534 Plasterers and Cement Masons - Zone 1	1/1/2026	$53.24	$13.35	$16.43	$7.78	$1.80	$92.60
	7/1/2026	$54.49	$13.35	$16.43	$7.78	$1.80	$93.85
	1/1/2027	$55.94	$13.35	$16.43	$7.78	$1.80	$95.30
	7/1/2027	$57.29	$13.35	$16.43	$7.78	$1.80	$96.65
	1/1/2028	$58.64	$13.35	$16.43	$7.78	$1.80	$98.00

Apprentice: CEMENT MASONRY/PLASTERING

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.62	$13.35	$16.43	$0.00	$0.00	$56.40
2	60.00	$31.94	$13.35	$16.43	$7.78	$1.80	$71.30
3	65.00	$34.61	$13.35	$16.43	$7.78	$1.80	$73.97
4	70.00	$37.27	$13.35	$16.43	$7.78	$1.80	$76.63
5	75.00	$39.93	$13.35	$16.43	$7.78	$1.80	$79.29
6	80.00	$42.59	$13.35	$16.43	$7.78	$1.80	$81.95
7	90.00	$47.92	$13.35	$16.43	$0.00	$0.00	$77.70

Apprentice: CEMENT MASONRY/PLASTERING

Effective Date: 7/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$27.25	$13.35	$16.43	$0.00	$0.00	$57.03

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: CEMENT MASONRY/PLASTERING							
Effective Date: 7/1/2026							
Step / Percent		**Apprentice Base Wage**					
2 / 60.00		$32.69	$13.35	$16.43	$7.78	$1.80	$72.05
3 / 65.00		$35.42	$13.35	$16.43	$7.78	$1.80	$74.78
4 / 70.00		$38.14	$13.35	$16.43	$7.78	$1.80	$77.50
5 / 75.00		$40.87	$13.35	$16.43	$7.78	$1.80	$80.23
6 / 80.00		$43.59	$13.35	$16.43	$7.78	$1.80	$82.95
7 / 90.00		$49.04	$13.35	$0.00	$7.78	$0.00	$70.17
Apprentice to Journeyworker Ratio: 1:5							
CHAIN SAW OPERATOR LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$60.61	$17.05	$13.35	$3.25	$0.00	$94.26
	12/1/2026	$62.09	$17.05	$13.35	$3.25	$0.00	$95.74
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
COMPRESSOR OPERATOR OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$37.63	$17.05	$13.35	$3.25	$0.00	$71.28
	12/1/2026	$38.58	$17.05	$13.35	$3.25	$0.00	$72.23
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
DELEADER (BRIDGE) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2026	$59.56	$10.35	$12.00	$12.60	$0.00	$94.51
Apprentice: DELEADER (BRIDGE)							
Effective Date: 1/1/2026							
Step / Percent		**Apprentice Base Wage**					
1 / 50.00		$29.78	$10.35	$0.00	$0.00	$0.00	$40.13
2 / 55.00		$32.76	$10.35	$0.00	$6.93	$0.00	$50.04
3 / 60.00		$35.74	$10.35	$0.00	$7.56	$0.00	$53.65
4 / 65.00		$38.71	$10.35	$0.00	$8.19	$0.00	$57.25
5 / 70.00		$41.69	$10.35	$12.00	$8.82	$0.00	$72.86
6 / 75.00		$44.67	$10.35	$12.00	$9.45	$0.00	$76.47
7 / 80.00		$47.65	$10.35	$12.00	$10.08	$0.00	$80.08
8 / 90.00		$53.60	$10.35	$12.00	$11.34	$0.00	$87.29
Apprentice to Journeyworker Ratio: 1:1							

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
DEMO: ADZEMAN	6/1/2026	$49.30	$10.90	$9.75	$9.65	$0.00	$79.60
LABORERS	12/7/2026	$50.80	$10.90	$9.75	$9.65	$0.00	$81.10
LABORERS - ZONE 2	6/7/2027	$52.40	$10.90	$9.75	$9.65	$0.00	$82.70
	12/6/2027	$54.00	$10.90	$9.75	$9.65	$0.00	$84.30
	6/5/2028	$55.68	$10.90	$9.75	$9.65	$0.00	$85.98
	12/4/2028	$57.35	$10.90	$9.75	$9.65	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: BACKHOE/LOADER/HAMMER OPERATOR	6/1/2026	$50.30	$10.90	$9.75	$9.65	$0.00	$80.60
LABORERS	12/7/2026	$51.80	$10.90	$9.75	$9.65	$0.00	$82.10
LABORERS - ZONE 2	6/7/2027	$53.40	$10.90	$9.75	$9.65	$0.00	$83.70
	12/6/2027	$55.00	$10.90	$9.75	$9.65	$0.00	$85.30
	6/5/2028	$56.68	$10.90	$9.75	$9.65	$0.00	$86.98
	12/4/2028	$58.35	$10.90	$9.75	$9.65	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: BURNERS	6/1/2026	$50.05	$10.90	$9.75	$9.65	$0.00	$80.35
LABORERS	12/7/2026	$51.55	$10.90	$9.75	$9.65	$0.00	$81.85
LABORERS - ZONE 2	6/7/2027	$53.15	$10.90	$9.75	$9.65	$0.00	$83.45
	12/6/2027	$54.75	$10.90	$9.75	$9.65	$0.00	$85.05
	6/5/2028	$56.43	$10.90	$9.75	$9.65	$0.00	$86.73
	12/4/2028	$58.10	$10.90	$9.75	$9.65	$0.00	$88.40
For apprentice rates see "Apprentice- LABORER"							
DEMO: CONCRETE CUTTER/SAWYER	6/1/2026	$50.30	$10.90	$9.75	$9.65	$0.00	$80.60
LABORERS	12/7/2026	$51.80	$10.90	$9.75	$9.65	$0.00	$82.10
LABORERS - ZONE 2	6/7/2027	$53.40	$10.90	$9.75	$9.65	$0.00	$83.70
	12/6/2027	$55.00	$10.90	$9.75	$9.65	$0.00	$85.30
	6/5/2028	$56.68	$10.90	$9.75	$9.65	$0.00	$86.98
	12/4/2028	$58.35	$10.90	$9.75	$9.65	$0.00	$88.65
For apprentice rates see "Apprentice- LABORER"							
DEMO: JACKHAMMER OPERATOR	6/1/2026	$50.05	$10.90	$9.75	$9.65	$0.00	$80.35
LABORERS	12/7/2026	$51.55	$10.90	$9.75	$9.65	$0.00	$81.85
LABORERS - ZONE 2	6/7/2027	$53.15	$10.90	$9.75	$9.65	$0.00	$83.45
	12/6/2027	$54.75	$10.90	$9.75	$9.65	$0.00	$85.05
	6/5/2028	$56.43	$10.90	$9.75	$9.65	$0.00	$86.73
	12/4/2028	$58.10	$10.90	$9.75	$9.65	$0.00	$88.40
For apprentice rates see "Apprentice- LABORER"							
DEMO: WRECKING LABORER	6/1/2026	$49.30	$10.90	$9.75	$9.65	$0.00	$79.60
LABORERS	12/7/2026	$50.80	$10.90	$9.75	$9.65	$0.00	$81.10
LABORERS - ZONE 2	6/7/2027	$52.40	$10.90	$9.75	$9.65	$0.00	$82.70
	12/6/2027	$54.00	$10.90	$9.75	$9.65	$0.00	$84.30
	6/5/2028	$55.68	$10.90	$9.75	$9.65	$0.00	$85.98
	12/4/2028	$57.35	$10.90	$9.75	$9.65	$0.00	$87.65
For apprentice rates see "Apprentice- LABORER"							
DIRECTIONAL DRILL MACHINE OPERATOR	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
OPERATING ENGINEERS LOCAL 4							

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Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
DIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	$78.11	$10.08	$11.62	$10.04	$0.00	$109.85
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Diver wage 70/80/90 2A $69.83, 3A $91.79,4A $102.14 Total Rate							
DIVER TENDER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	$55.79	$10.08	$11.62	$12.67	$0.00	$90.16
as of 8-1-24, Apprentices with diving licenses begin at second year. % of Piledriver wage 70/80/90 2A $54.20, 3A $73.93,4A $82.05 Total Rate							
DIVER TENDER (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	$83.69	$10.08	$11.62	$12.67	$0.00	$118.06
For apprentice rates see "Apprentice- PILE DRIVER"							
DIVER/SLURRY (EFFLUENT) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	$117.16	$10.08	$11.62	$12.67	$0.00	$151.53
For apprentice rates see "Apprentice- PILE DRIVER"							
DRAWBRIDGE OPERATOR (Construction) DRAWBRIDGE - SEIU LOCAL 888 DRAWBRIDGE - SEIU LOCAL 888	7/1/2020	$26.77	$6.67	$3.93	$0.00	$0.16	$37.53
ELECTRICIAN ELECTRICIANS LOCAL 223 ELECTRICIANS LOCAL 223	9/1/2025	$52.25	$12.25	$14.86	$3.75	$0.00	$83.11
	9/1/2026	$54.72	$12.50	$15.56	$4.00	$0.00	$86.78

Apprentice: ELECTRICIAN

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$20.90	$12.25	$0.63	$0.00	$0.00	$33.78
2	45.00	$23.51	$12.25	$0.71	$0.00	$0.00	$36.47
3	50.00	$26.13	$12.25	$0.78	$0.00	$0.00	$39.16
4	55.00	$28.74	$12.25	$6.61	$2.50	$0.00	$50.10
5	60.00	$31.35	$12.25	$7.21	$2.50	$0.00	$53.31
6	65.00	$33.96	$12.25	$7.82	$2.50	$0.00	$56.53
7	70.00	$36.58	$12.25	$8.41	$2.50	$0.00	$59.74
8	75.00	$39.19	$12.25	$9.02	$2.50	$0.00	$62.96

Apprentice: ELECTRICIAN

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$21.89	$12.50	$0.66	$0.00	$0.00	$35.05
2	45.00	$24.62	$12.50	$0.74	$0.00	$0.00	$37.86
3	50.00	$27.36	$12.50	$0.82	$0.00	$0.00	$40.68

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Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: ELECTRICIAN

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
4	55.00	$30.10	$12.50	$6.92	$2.75	$0.00	$52.27
5	60.00	$32.83	$12.50	$7.54	$2.75	$0.00	$55.62
6	65.00	$35.57	$12.50	$8.18	$2.75	$0.00	$59.00
7	70.00	$38.30	$12.50	$8.81	$2.75	$0.00	$62.36
8	75.00	$41.04	$12.50	$9.43	$2.75	$0.00	$65.72

Apprentice to Journeyworker Ratio: 2:3

ELEVATOR CONSTRUCTOR	1/1/2026	$77.26	$16.38	$11.06	$10.70	$0.00	$115.40
ELEVATOR CONSTRUCTORS LOCAL 4 ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2027	$80.55	$16.48	$11.16	$11.00	$0.00	$119.19

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$38.63	$0.00	$0.00	$0.00	$0.00	$38.63
2	55.00	$42.49	$16.38	$11.06	$10.70	$0.00	$80.63
3	65.00	$50.22	$16.38	$11.06	$10.70	$0.00	$88.36
4	70.00	$54.08	$16.38	$11.06	$10.70	$0.00	$92.22
5	80.00	$61.81	$16.38	$11.06	$10.70	$0.00	$99.95

Apprentice: ELEVATOR CONSTRUCTOR

Effective Date: 1/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$40.28	$0.00	$0.00	$0.00	$0.00	$40.28
2	55.00	$44.30	$16.48	$11.16	$11.00	$0.00	$82.94
3	65.00	$52.36	$16.48	$11.16	$11.00	$0.00	$91.00
4	70.00	$56.39	$16.48	$11.16	$11.00	$0.00	$95.03
5	80.00	$64.44	$16.48	$11.16	$11.00	$0.00	$103.08

Apprentice to Journeyworker Ratio: 1:1

ELEVATOR CONSTRUCTOR HELPER	1/1/2026	$54.08	$16.38	$11.06	$10.07	$0.00	$91.59
ELEVATOR CONSTRUCTORS LOCAL 4 ELEVATOR CONSTRUCTORS LOCAL 4	1/1/2027	$56.39	$16.48	$11.16	$11.00	$0.00	$95.03

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

FENCE & GUARD RAIL ERECTOR (HEAVY & HIGHWAY)	6/1/2026	$41.91	$10.90	$9.75	$9.21	$0.00	$71.77
LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	$43.35	$10.90	$9.75	$9.21	$0.00	$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)

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Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY	5/1/2026	$54.40	$16.55	$13.35	$3.25	$0.00	$87.55
OPERATING ENGINEERS LOCAL 4	11/1/2026	$55.69	$16.55	$13.35	$3.25	$0.00	$88.84
OPERATING ENGINEERS LOCAL 4	5/1/2027	$57.12	$16.55	$13.35	$3.25	$0.00	$90.27
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY	5/1/2026	$56.02	$16.55	$13.35	$3.25	$0.00	$89.17
OPERATING ENGINEERS LOCAL 4	11/1/2026	$57.32	$16.55	$13.35	$3.25	$0.00	$90.47
OPERATING ENGINEERS LOCAL 4	5/1/2027	$58.77	$16.55	$13.35	$3.25	$0.00	$91.92
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY	5/1/2026	$26.28	$16.55	$13.35	$3.25	$0.00	$59.43
OPERATING ENGINEERS LOCAL 4	11/1/2026	$27.04	$16.55	$13.35	$3.25	$0.00	$60.19
OPERATING ENGINEERS LOCAL 4	5/1/2027	$27.89	$16.55	$13.35	$3.25	$0.00	$61.04
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FIRE ALARM INSTALLER	9/1/2025	$52.25	$12.25	$14.86	$3.75	$0.00	$83.11
ELECTRICIANS LOCAL 223	9/1/2026	$54.72	$12.50	$15.56	$4.00	$0.00	$86.78
ELECTRICIANS LOCAL 223							
For apprentice rates see "Apprentice- ELECTRICIAN"							
FIRE ALARM REPAIR / MAINTENANCE	9/1/2025	$52.25	$12.25	$14.86	$3.75	$0.00	$83.11
/ COMMISSIONING	9/1/2026	$54.72	$12.50	$15.56	$4.00	$0.00	$86.78
ELECTRICIANS LOCAL 223							
ELECTRICIANS LOCAL 223							
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"							
FIREMAN (ASST. ENGINEER)	6/1/2026	$47.55	$17.05	$13.35	$3.25	$0.00	$81.20
OPERATING ENGINEERS LOCAL 4	12/1/2026	$48.73	$17.05	$13.35	$3.25	$0.00	$82.38
OPERATING ENGINEERS LOCAL 4							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
FLAGGER & SIGNALER (HEAVY & HIGHWAY)	6/1/2026	$29.21	$10.90	$9.75	$9.21	$0.00	$59.07
LABORERS	12/1/2026	$29.21	$10.90	$9.75	$9.21	$0.00	$59.07
LABORERS - ZONE 2 (HEAVY & HIGHWAY)							
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
FLOORCOVERER	3/1/2026	$59.24	$10.33	$11.47	$8.80	$0.00	$89.84
FLOORCOVERERS LOCAL 2168	9/1/2026	$60.74	$10.33	$11.47	$8.80	$0.00	$91.34
FLOORCOVERERS LOCAL 2168 ZONE I	3/1/2027	$62.24	$10.33	$11.47	$8.80	$0.00	$92.84

Apprentice: FLOORCOVERER

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$26.66	$10.33	$0.00	$1.76	$0.00	$38.75
2	45.00	$26.66	$10.33	$0.00	$1.76	$0.00	$38.75
3	55.00	$32.58	$10.33	$0.00	$3.52	$0.00	$46.43
4	55.00	$32.58	$10.33	$0.00	$3.52	$0.00	$46.43
5	70.00	$41.47	$10.33	$11.47	$5.28	$0.00	$68.55
6	70.00	$41.47	$10.33	$11.47	$5.28	$0.00	$68.55

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Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: FLOORCOVERER

Effective Date: 3/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
7	80.00	$47.39	$10.33	$11.47	$7.04	$0.00	$76.23
8	80.00	$47.39	$10.33	$11.47	$7.04	$0.00	$76.23

Apprentice: FLOORCOVERER

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$27.33	$10.33	$0.00	$1.76	$0.00	$39.42
2	45.00	$27.33	$10.33	$0.00	$1.76	$0.00	$39.42
3	55.00	$33.41	$10.33	$0.00	$3.52	$0.00	$47.26
4	55.00	$33.41	$10.33	$0.00	$3.52	$0.00	$47.26
5	70.00	$42.52	$10.33	$11.47	$5.28	$0.00	$69.60
6	70.00	$42.52	$10.33	$11.47	$5.28	$0.00	$69.60
7	80.00	$48.59	$10.33	$11.47	$7.04	$0.00	$77.43
8	80.00	$48.59	$10.33	$11.47	$7.04	$0.00	$77.43

Apprentice Notes

Steps are 750 hrs.

Apprentice to Journeyworker Ratio: 1:1

FORK LIFT/CHERRY PICKER	6/1/2026	$59.38	$17.05	$13.35	$3.25	$0.00	$93.03
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.83	$17.05	$13.35	$3.25	$0.00	$94.48
OPERATING ENGINEERS LOCAL 4							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
GENERATOR/LIGHTING PLANT/HEATERS	6/1/2026	$37.63	$17.05	$13.35	$3.25	$0.00	$71.28
OPERATING ENGINEERS LOCAL 4	12/1/2026	$38.58	$17.05	$13.35	$3.25	$0.00	$72.23
OPERATING ENGINEERS LOCAL 4							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)	6/1/2026	$44.73	$11.20	$8.40	$6.05	$0.00	$70.38
GLAZIERS LOCAL 1333	6/1/2027	$46.73	$11.60	$8.55	$6.60	$0.00	$73.48
GLAZIERS LOCAL 1333	6/1/2028	$48.73	$12.00	$8.70	$7.20	$0.00	$76.63

Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$22.37	$11.20	$8.40	$6.05	$0.00	$48.02
2	56.25	$25.16	$11.20	$8.40	$6.05	$0.00	$50.81
3	62.50	$27.96	$11.20	$8.40	$6.05	$0.00	$53.61
4	68.75	$30.75	$11.20	$8.40	$6.05	$0.00	$56.40

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
HOISTING ENGINEER/CRANES/GRADALLS OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.38	$17.05	$13.35	$3.25	$0.00	$93.03
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.83	$17.05	$13.35	$3.25	$0.00	$94.48

Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
5	75.00	$33.55	$11.20	$8.40	$6.05	$0.00	$59.20
6	81.25	$36.34	$11.20	$8.40	$6.05	$0.00	$61.99
7	87.50	$39.14	$11.20	$8.40	$6.05	$0.00	$64.79
8	93.75	$41.93	$11.20	$8.40	$6.05	$0.00	$67.58

Apprentice: GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)

Effective Date: 6/1/2027

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.37	$11.60	$8.55	$6.60	$0.00	$50.12
2	56.25	$26.29	$11.60	$8.55	$6.60	$0.00	$53.04
3	62.50	$29.21	$11.60	$8.55	$6.60	$0.00	$55.96
4	68.75	$32.13	$11.60	$8.55	$6.60	$0.00	$58.88
5	75.00	$35.05	$11.60	$8.55	$6.60	$0.00	$61.80
6	81.25	$37.97	$11.60	$8.55	$6.60	$0.00	$64.72
7	87.50	$40.89	$11.60	$8.55	$6.60	$0.00	$67.64
8	93.75	$43.81	$11.60	$8.55	$6.60	$0.00	$70.56

Apprentice to Journeyworker Ratio: 3:1

Apprentice: HOISTING ENGINEER/CRANES/GRADALLS

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$32.66	$0.00	$0.00	$0.00	$0.00	$32.66
2	60.00	$35.63	$17.05	$13.35	$3.25	$0.00	$69.28
3	65.00	$38.60	$17.05	$13.35	$3.25	$0.00	$72.25
4	70.00	$41.57	$17.05	$13.35	$3.25	$0.00	$75.22
5	75.00	$44.54	$17.05	$13.35	$3.25	$0.00	$78.19
6	80.00	$47.50	$17.05	$13.35	$3.25	$0.00	$81.15
7	85.00	$50.47	$17.05	$13.35	$3.25	$0.00	$84.12
8	90.00	$53.44	$17.05	$13.35	$3.25	$0.00	$87.09

Apprentice: HOISTING ENGINEER/CRANES/GRADALLS

Effective Date: 12/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: HOISTING ENGINEER/CRANES/GRADALLS

Effective Date: 12/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	55.00	$33.46	$0.00	$0.00	$0.00	$0.00	$33.46
2	60.00	$36.50	$17.05	$13.35	$3.25	$0.00	$70.15
3	65.00	$39.54	$17.05	$13.35	$3.25	$0.00	$73.19
4	70.00	$42.58	$17.05	$13.35	$3.25	$0.00	$76.23
5	75.00	$45.62	$17.05	$13.35	$3.25	$0.00	$79.27
6	80.00	$48.66	$17.05	$13.35	$3.25	$0.00	$82.31
7	85.00	$51.71	$17.05	$13.35	$3.25	$0.00	$85.36
8	90.00	$54.75	$17.05	$13.35	$3.25	$0.00	$88.40

Apprentice to Journeyworker Ratio: 1:6

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 SHEETMETAL WORKERS LOCAL 17 - B	4/1/2026	$44.93	$15.25	$13.63	$6.15	$2.24	$82.20
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 223 ELECTRICIANS LOCAL 223	9/1/2025	$52.25	$12.25	$14.86	$3.75	$0.00	$83.11
	9/1/2026	$54.72	$12.50	$15.56	$4.00	$0.00	$86.78
For apprentice rates see "Apprentice- ELECTRICIAN"							
HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 SHEETMETAL WORKERS LOCAL 17 - B	4/1/2026	$44.93	$15.25	$13.63	$6.15	$2.24	$82.20
For apprentice rates see "Apprentice- SHEET METAL WORKER"							
HVAC (TESTING AND BALANCING -WATER) PLUMBERS & PIPEFITTERS LOCAL 51 PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HVAC MECHANIC PLUMBERS & PIPEFITTERS LOCAL 51 PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
HYDRAULIC DRILLS LABORERS LABORERS - ZONE 2	6/1/2026	$42.41	$10.90	$9.75	$9.11	$0.00	$72.17
	12/1/2026	$43.85	$10.90	$9.75	$9.11	$0.00	$73.61
	6/1/2027	$45.30	$10.90	$9.75	$9.11	$0.00	$75.06
	12/1/2027	$46.75	$10.90	$9.75	$9.11	$0.00	$76.51
	6/1/2028	$48.25	$10.90	$9.75	$9.11	$0.00	$78.01
	12/1/2028	$49.75	$10.90	$9.75	$9.11	$0.00	$79.51
For apprentice rates see "Apprentice- LABORER"							
HYDRAULIC DRILLS (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$42.41	$10.90	$9.75	$9.21	$0.00	$72.27
	12/1/2026	$43.85	$10.90	$9.75	$9.21	$0.00	$73.71
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 HEAT & FROST INSULATORS LOCAL 6 (SOUTHERN MASS)	9/1/2025	$54.31	$14.75	$9.52	$10.09	$0.00	$88.67
	9/1/2026	$57.38	$14.75	$9.52	$10.09	$0.00	$91.74

Apprentice: INSULATOR (PIPES & TANKS)

Effective Date: 9/1/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$27.16	$14.75	$9.27	$5.05	$0.00	$56.23
2	60.00	$32.59	$14.75	$9.32	$6.05	$0.00	$62.71
3	70.00	$38.02	$14.75	$9.37	$7.06	$0.00	$69.20
4	80.00	$43.45	$14.75	$9.42	$8.07	$0.00	$75.69

Apprentice: INSULATOR (PIPES & TANKS)

Effective Date: 9/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$28.69	$14.75	$9.27	$5.05	$0.00	$57.76
2	60.00	$34.43	$14.75	$9.32	$6.05	$0.00	$64.55
3	70.00	$40.17	$14.75	$9.37	$7.06	$0.00	$71.35
4	80.00	$45.90	$14.75	$9.42	$8.07	$0.00	$78.14

Apprentice to Journeyworker Ratio: 1:4

IRONWORKER/WELDER IRONWORKERS LOCAL 37 IRONWORKERS LOCAL 37	3/16/2021	$42.46	$7.70	$12.10	$5.00	$0.00	$67.26

Apprentice: IRONWORKER/WELDER

Effective Date: 3/16/2021

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	70.00	$29.72	$7.70	$12.10	$5.00	$0.00	$54.52
2	75.00	$31.85	$7.70	$12.10	$5.00	$0.00	$56.65
3	80.00	$33.97	$7.70	$12.10	$5.00	$0.00	$58.77
4	85.00	$36.09	$7.70	$12.10	$5.00	$0.00	$60.89
5	90.00	$38.21	$7.70	$12.10	$5.00	$0.00	$63.01
6	95.00	$40.34	$7.70	$12.10	$5.00	$0.00	$65.14

Apprentice to Journeyworker Ratio: 1:4

JACKHAMMER & PAVING BREAKER OPERATOR LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01

For apprentice rates see "Apprentice- LABORER"

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORER LABORERS LABORERS - ZONE 2	6/1/2026	$41.66	$10.90	$9.75	$9.11	$0.00	$71.42
	12/1/2026	$43.10	$10.90	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.55	$10.90	$9.75	$9.11	$0.00	$74.31
	12/1/2027	$46.00	$10.90	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.50	$10.90	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.00	$10.90	$9.75	$9.11	$0.00	$78.76

Apprentice: LABORER

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$25.00	$10.90	$9.75	$9.11	$0.00	$54.76
2	70.00	$29.16	$10.90	$9.75	$9.11	$0.00	$58.92
3	80.00	$33.33	$10.90	$9.75	$9.11	$0.00	$63.09
4	90.00	$37.49	$10.90	$9.75	$9.11	$0.00	$67.25

Apprentice: LABORER

Effective Date: 12/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$25.86	$10.90	$9.75	$9.11	$0.00	$55.62
2	70.00	$30.17	$10.90	$9.75	$9.11	$0.00	$59.93
3	80.00	$34.48	$10.90	$9.75	$9.11	$0.00	$64.24
4	90.00	$38.79	$10.90	$9.75	$9.11	$0.00	$68.55

Apprentice to Journeyworker Ratio: 1:5

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$41.66	$10.90	$9.75	$9.21	$0.00	$71.52
	12/1/2026	$43.10	$10.90	$9.75	$9.21	$0.00	$72.96

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 6/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$25.00	$10.90	$9.75	$9.21	$0.00	$54.86
2	70.00	$29.16	$10.90	$9.75	$9.21	$0.00	$59.02
3	80.00	$33.33	$10.90	$9.75	$9.21	$0.00	$63.19
4	90.00	$37.49	$10.90	$9.75	$9.10	$0.00	$67.24

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 12/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	60.00	$25.86	$10.90	$9.75	$9.21	$0.00	$55.72

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Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: LABORER (HEAVY & HIGHWAY)

Effective Date: 12/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
2	70.00	$30.17	$10.90	$9.75	$9.21	$0.00	$60.03
3	80.00	$34.48	$10.90	$9.75	$9.21	$0.00	$64.34
4	90.00	$38.79	$10.90	$9.75	$9.21	$0.00	$68.65

Apprentice to Journeyworker Ratio: 1:5

LABORER: CARPENTER TENDER LABORERS LABORERS - ZONE 2	6/1/2026	$41.66	$10.90	$9.75	$9.11	$0.00	$71.42
	12/1/2026	$43.10	$10.90	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.55	$10.90	$9.75	$9.11	$0.00	$74.31
	12/1/2027	$46.00	$10.90	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.50	$10.90	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.00	$10.90	$9.75	$9.11	$0.00	$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: CEMENT FINISHER TENDER LABORERS LABORERS - ZONE 2	6/1/2026	$41.66	$10.90	$9.75	$9.11	$0.00	$71.42
	12/1/2026	$43.10	$10.90	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.55	$10.90	$9.75	$9.11	$0.00	$74.31
	12/1/2027	$46.00	$10.90	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.50	$10.90	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.00	$10.90	$9.75	$9.11	$0.00	$78.76
For apprentice rates see "Apprentice- LABORER"							
LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS LABORERS - ZONE 2	6/1/2026	$41.75	$10.90	$9.75	$9.65	$0.00	$72.05
	12/7/2026	$43.19	$10.90	$9.75	$9.65	$0.00	$73.49
	6/7/2027	$44.64	$10.90	$9.75	$9.65	$0.00	$74.94
	12/6/2027	$46.09	$10.90	$9.75	$9.65	$0.00	$76.39
	6/5/2028	$47.59	$10.90	$9.75	$9.65	$0.00	$77.89
	12/4/2028	$49.09	$10.90	$9.75	$9.65	$0.00	$79.39
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
LABORER: MASON TENDER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$41.91	$10.90	$9.75	$9.21	$0.00	$71.77
	12/1/2026	$43.35	$10.90	$9.75	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
LABORER: MULTI-TRADE TENDER LABORERS LABORERS - ZONE 2	6/1/2026	$41.66	$10.90	$9.75	$9.11	$0.00	$71.42
	12/1/2026	$43.10	$10.90	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.55	$10.90	$9.75	$9.11	$0.00	$74.31

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
	12/1/2027	$46.00	$10.90	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.50	$10.90	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.00	$10.90	$9.75	$9.11	$0.00	$78.76

For apprentice rates see "Apprentice- LABORER"

LABORER: TREE REMOVER LABORERS LABORERS - ZONE 2	6/1/2026	$41.66	$10.90	$9.75	$9.11	$0.00	$71.42
	12/1/2026	$43.10	$10.90	$9.75	$9.11	$0.00	$72.86
	6/1/2027	$44.55	$10.90	$9.75	$9.11	$0.00	$74.31
	12/1/2027	$46.00	$10.90	$9.75	$9.11	$0.00	$75.76
	6/1/2028	$47.50	$10.90	$9.75	$9.11	$0.00	$77.26
	12/1/2028	$49.00	$10.90	$9.75	$9.11	$0.00	$78.76

This classification applies to the removal of standing trees, and the trimming and removal of branches and limbs when related to public works construction or site clearance incidental to construction . For apprentice rates see "Apprentice- LABORER"

LASER BEAM OPERATOR LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01

For apprentice rates see "Apprentice- LABORER"

LASER BEAM OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$41.91	$10.90	$9.75	$9.21	$0.00	$71.77
	12/1/2026	$43.35	$10.90	$9.75	$9.21	$0.00	$73.21

For apprentice rates see "Apprentice- LABORER (Heavy and Highway)

MARBLE & TILE FINISHERS BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 - MARBLE & TILE	2/1/2026	$52.08	$12.84	$15.57	$5.78	$0.00	$86.27
	8/1/2026	$53.84	$12.84	$15.57	$5.78	$0.00	$88.03
	2/1/2027	$54.96	$12.84	$15.57	$5.78	$0.00	$89.15

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.04	$12.84	$15.57	$5.78	$0.00	$60.23
2	60.00	$31.25	$12.84	$15.57	$5.78	$0.00	$65.44
3	70.00	$36.46	$12.84	$15.57	$5.78	$0.00	$70.65
4	80.00	$41.66	$12.84	$15.57	$5.78	$0.00	$75.85
5	90.00	$46.87	$12.84	$15.57	$5.78	$0.00	$81.06

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.92	$12.84	$15.57	$5.78	$0.00	$61.11
2	60.00	$32.30	$12.84	$15.57	$5.78	$0.00	$66.49
3	70.00	$37.69	$12.84	$15.57	$5.78	$0.00	$71.88

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
MARBLE MASONS,TILELAYERS & TERRAZZO MECH BRICKLAYERS LOCAL 3 BRICKLAYERS LOCAL 3 - MARBLE & TILE	2/1/2026	$67.97	$12.84	$15.57	$7.99	$0.00	$104.37
	8/1/2026	$70.17	$12.84	$15.57	$7.99	$0.00	$106.57
	2/1/2027	$71.57	$12.84	$15.57	$7.99	$0.00	$107.97

Apprentice: MARBLE & TILE FINISHERS

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
4	80.00	$43.07	$12.84	$15.57	$5.78	$0.00	$77.26
5	90.00	$48.46	$12.84	$15.57	$5.78	$0.00	$82.65

Apprentice to Journeyworker Ratio: 1:5

Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$33.99	$12.84	$15.57	$7.99	$0.00	$70.39
2	60.00	$40.78	$12.84	$15.57	$7.99	$0.00	$77.18
3	70.00	$47.58	$12.84	$15.57	$7.99	$0.00	$83.98
4	80.00	$54.38	$12.84	$15.57	$7.99	$0.00	$90.78
5	90.00	$61.17	$12.84	$15.57	$7.99	$0.00	$97.57

Apprentice: MARBLE MASONS,TILELAYERS & TERRAZZO MECH

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$35.09	$12.84	$15.57	$7.99	$0.00	$71.49
2	60.00	$42.10	$12.84	$15.57	$7.99	$0.00	$78.50
3	70.00	$49.12	$12.84	$15.57	$7.99	$0.00	$85.52
4	80.00	$56.14	$12.84	$15.57	$7.99	$0.00	$92.54
5	90.00	$63.15	$12.84	$15.57	$7.99	$0.00	$99.55

Apprentice to Journeyworker Ratio: 1:5

MECH. SWEEPER OPERATOR (ON CONST. SITES) OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MECHANICS MAINTENANCE OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

MILLWRIGHT (Zone 2) MILLWRIGHTS LOCAL 1121 MILLWRIGHTS LOCAL 1121 - Zone 2	1/5/2026	$46.86	$10.58	$11.47	$10.00	$0.00	$78.91

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice: MILLWRIGHT (Zone 2)							
Effective Date: 1/5/2026							
Step / Percent		**Apprentice Base Wage**					
1 / 55.00		$25.77	$10.58	$0.00	$5.50	$0.00	$41.85
2 / 65.00		$30.46	$10.58	$0.00	$6.50	$0.00	$47.54
3 / 75.00		$35.15	$10.58	$11.47	$7.50	$0.00	$64.70
4 / 85.00		$39.83	$10.58	$11.47	$8.50	$0.00	$70.38
Apprentice Notes							
Step 1&2 Appr. indentured after 1/6/2020 receive no pension,							
Apprentice to Journeyworker Ratio: 1:4							
MORTAR MIXER LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
OILER (OTHER THAN TRUCK CRANES,GRADALLS) OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$25.07	$17.05	$13.35	$3.25	$0.00	$58.72
	12/1/2026	$25.74	$17.05	$13.35	$3.25	$0.00	$59.39
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
OILER (TRUCK CRANES, GRADALLS) OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$31.17	$17.05	$13.35	$3.25	$0.00	$64.82
	12/1/2026	$31.97	$17.05	$13.35	$3.25	$0.00	$65.62
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
OTHER POWER DRIVEN EQUIPMENT - CLASS II OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PAINTER (BRIDGES/TANKS) PAINTERS LOCAL 35 PAINTERS LOCAL 35 - ZONE 2	1/1/2026	$59.56	$10.35	$12.00	$12.50	$0.00	$94.41
Apprentice: PAINTER (BRIDGES/TANKS)							
Effective Date: 1/1/2026							
Step / Percent		**Apprentice Base Wage**					
1 / 50.00		$29.78	$10.35	$0.00	$0.00	$0.00	$40.13
2 / 55.00		$32.76	$10.35	$0.00	$6.93	$0.00	$50.04
3 / 60.00		$35.74	$10.35	$0.00	$7.56	$0.00	$53.65

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: PAINTER (BRIDGES/TANKS)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
4	65.00	$38.71	$10.35	$0.00	$8.19	$0.00	$57.25
5	70.00	$41.69	$10.35	$12.00	$8.82	$0.00	$72.86
6	75.00	$44.67	$10.35	$12.00	$9.45	$0.00	$76.47
7	80.00	$47.65	$10.35	$12.00	$10.08	$0.00	$80.08
8	90.00	$53.60	$10.35	$12.00	$11.34	$0.00	$87.29

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, NEW) *	1/1/2026	$50.46	$10.35	$12.00	$12.60	$0.00	$85.41

* If 30% or more of surfaces to be painted are new construction,
NEW paint rate shall be used.
PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 2

Apprentice: PAINTER (SPRAY OR SANDBLAST, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$25.23	$10.35	$0.00	$0.00	$0.00	$35.58
2	55.00	$27.75	$10.35	$0.00	$6.93	$0.00	$45.03
3	60.00	$30.28	$10.35	$0.00	$7.56	$0.00	$48.19
4	65.00	$32.80	$10.35	$0.00	$8.19	$0.00	$51.34
5	70.00	$35.32	$10.35	$12.00	$8.82	$0.00	$66.49
6	75.00	$37.85	$10.35	$12.00	$9.45	$0.00	$69.65
7	80.00	$40.37	$10.35	$12.00	$10.08	$0.00	$72.80
8	90.00	$45.41	$10.35	$12.00	$11.34	$0.00	$79.10

Apprentice to Journeyworker Ratio: 1:1

PAINTER (SPRAY OR SANDBLAST, REPAINT)	1/1/2026	$48.52	$10.35	$12.00	$12.60	$0.00	$83.47

PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 2

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.26	$10.35	$0.00	$0.00	$0.00	$34.61
2	55.00	$26.69	$10.35	$0.00	$6.93	$0.00	$43.97
3	60.00	$29.11	$10.35	$0.00	$7.56	$0.00	$47.02
4	65.00	$31.54	$10.35	$0.00	$8.19	$0.00	$50.08
5	70.00	$33.96	$10.35	$12.00	$8.82	$0.00	$65.13
6	75.00	$36.39	$10.35	$12.00	$9.45	$0.00	$68.19
7	80.00	$38.82	$10.35	$12.00	$10.08	$0.00	$71.25

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Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: PAINTER (SPRAY OR SANDBLAST, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
8	90.00	$43.67	$10.35	$12.00	$11.34	$0.00	$77.36

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, NEW) *	1/1/2026	$49.06	$10.35	$12.00	$12.60	$0.00	$84.01

* If 30% or more of surfaces to be painted are new construction,
NEW paint rate shall be used.
PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 2

Apprentice: PAINTER / TAPER (BRUSH, NEW) *

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$24.53	$10.35	$0.00	$0.00	$0.00	$34.88
2	55.00	$26.98	$10.35	$0.00	$6.93	$0.00	$44.26
3	60.00	$29.44	$10.35	$0.00	$7.56	$0.00	$47.35
4	65.00	$31.89	$10.35	$0.00	$8.19	$0.00	$50.43
5	70.00	$34.34	$10.35	$12.00	$8.82	$0.00	$65.51
6	75.00	$36.80	$10.35	$12.00	$9.45	$0.00	$68.60
7	80.00	$39.25	$10.35	$12.00	$10.08	$0.00	$71.68
8	90.00	$44.15	$10.35	$12.00	$11.34	$0.00	$77.84

Apprentice to Journeyworker Ratio: 1:1

PAINTER / TAPER (BRUSH, REPAINT)	1/1/2026	$47.12	$10.35	$12.00	$12.60	$0.00	$82.07

PAINTERS LOCAL 35
PAINTERS LOCAL 35 - ZONE 2

Apprentice: PAINTER / TAPER (BRUSH, REPAINT)

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$23.56	$10.35	$0.00	$0.00	$0.00	$33.91
2	55.00	$25.92	$10.35	$0.00	$6.93	$0.00	$43.20
3	60.00	$28.27	$10.35	$0.00	$7.56	$0.00	$46.18
4	65.00	$30.63	$10.35	$0.00	$8.19	$0.00	$49.17
5	70.00	$32.98	$10.35	$12.00	$8.82	$0.00	$64.15
6	75.00	$35.34	$10.35	$12.00	$9.45	$0.00	$67.14
7	80.00	$37.70	$10.35	$12.00	$10.08	$0.00	$70.13
8	90.00	$42.41	$10.35	$12.00	$11.34	$0.00	$76.10

Apprentice to Journeyworker Ratio: 1:1

PAINTER TRAFFIC MARKINGS (HEAVY/HIGHWAY)	6/1/2026	$41.66	$10.90	$9.75	$9.21	$0.00	$71.52

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY) For apprentice rates see "Apprentice- LABORER (Heavy and Highway)	12/1/2026	$43.10	$10.90	$9.75	$9.21	$0.00	$72.96
PANEL & PICKUP TRUCKS DRIVER TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	$41.78	$16.17	$21.78	$0.00	$0.00	$79.73
	12/1/2026	$41.78	$16.17	$23.52	$0.00	$0.00	$81.47
	1/1/2027	$41.78	$16.77	$23.52	$0.00	$0.00	$82.07
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1) For apprentice rates see "Apprentice- PILE DRIVER"	8/1/2024	$55.79	$10.08	$11.62	$12.67	$0.00	$90.16
PILE DRIVER PILE DRIVER LOCAL 56 PILE DRIVER LOCAL 56 (ZONE 1)	8/1/2024	$55.79	$10.08	$11.62	$12.67	$0.00	$90.16

Apprentice: PILE DRIVER

Effective Date: 8/1/2024

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	45.00	$25.11	$10.08	$0.00	$2.53	$0.00	$37.72
2	55.00	$30.68	$10.08	$0.00	$5.07	$0.00	$45.83
3	70.00	$39.05	$10.08	$11.62	$7.60	$0.00	$68.35
4	80.00	$44.63	$10.08	$11.62	$10.14	$0.00	$76.47

Apprentice to Journeyworker Ratio: 1:5

PIPELAYER LABORERS LABORERS - ZONE 2 For apprentice rates see "Apprentice- LABORER"	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
PIPELAYER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY) For apprentice rates see "Apprentice- LABORER (Heavy and Highway)	6/1/2026	$41.91	$10.90	$9.75	$9.21	$0.00	$71.77
	12/1/2026	$43.35	$10.90	$9.75	$9.21	$0.00	$73.21
PLUMBER & PIPEFITTER PLUMBERS & PIPEFITTERS LOCAL 51 PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44

Apprentice: PLUMBER & PIPEFITTER

Effective Date: 8/25/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate

Apprentice: PLUMBER & PIPEFITTER

Effective Date: 8/25/2025

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$22.10	$10.15	$2.50	$0.00	$0.00	$34.75
2	50.00	$27.62	$10.15	$2.50	$0.00	$0.00	$40.27
3	60.00	$33.14	$10.15	$8.40	$0.50	$0.00	$52.19
4	70.00	$38.67	$10.15	$13.44	$0.80	$0.00	$63.06
5	80.00	$44.19	$10.15	$16.80	$1.00	$0.00	$72.14

Apprentice to Journeyworker Ratio: 1:3

PNEUMATIC CONTROLS (TEMP.) PLUMBERS & PIPEFITTERS LOCAL 51 PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"							
PNEUMATIC DRILL/TOOL OPERATOR LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
PNEUMATIC DRILL/TOOL OPERATOR (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$41.91	$10.90	$9.75	$9.21	$0.00	$71.77
	12/1/2026	$43.35	$10.90	$9.75	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
POWDERMAN & BLASTER LABORERS LABORERS - ZONE 2	6/1/2026	$42.66	$10.90	$9.75	$9.11	$0.00	$72.42
	12/1/2026	$44.10	$10.90	$9.75	$9.11	$0.00	$73.86
	6/1/2027	$45.55	$10.90	$9.75	$9.11	$0.00	$75.31
	12/1/2027	$47.00	$10.90	$9.75	$9.11	$0.00	$76.76
	6/1/2028	$48.50	$10.90	$9.75	$9.11	$0.00	$78.26
	12/1/2028	$50.00	$10.90	$9.75	$9.11	$0.00	$79.76
For apprentice rates see "Apprentice- LABORER"							
POWDERMAN & BLASTER (HEAVY & HIGHWAY) LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	6/1/2026	$42.66	$10.90	$9.75	$9.21	$0.00	$72.52
	12/1/2026	$44.10	$10.90	$9.75	$9.21	$0.00	$73.96
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)"							
POWER SHOVEL/DERRICK/TRENCHING MACHINE OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$59.38	$17.05	$13.35	$3.25	$0.00	$93.03
	12/1/2026	$60.83	$17.05	$13.35	$3.25	$0.00	$94.48
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
PUMP OPERATOR (CONCRETE) OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
PUMP OPERATOR (DEWATERING, OTHER) OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$37.63	$17.05	$13.35	$3.25	$0.00	$71.28
	12/1/2026	$38.58	$17.05	$13.35	$3.25	$0.00	$72.23
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
READY-MIX CONCRETE DRIVER TEAMSTERS 653 TEAMSTERS 653 - Southeastern Concrete (Weymouth)	8/1/2023	$25.00	$13.91	$6.90	$0.00	$0.00	$45.81
RECLAIMERS OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
RIDE-ON MOTORIZED BUGGY OPERATOR LABORERS LABORERS - ZONE 2	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							
ROLLER/SPREADER/MULCHING MACHINE OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg) ROOFERS LOCAL 33 ROOFERS LOCAL 33	2/1/2026	$53.53	$14.53	$12.67	$9.03	$0.00	$89.76

Apprentice: ROOFER (Inc.Roofer Waterproofng &Roofer Damproofg)

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$26.77	$14.53	$6.52	$9.03	$0.00	$56.85
2	60.00	$32.12	$14.53	$12.67	$9.03	$0.00	$68.35
3	65.00	$34.79	$14.53	$12.67	$9.03	$0.00	$71.02
4	75.00	$40.15	$14.53	$12.67	$9.03	$0.00	$76.38
5	85.00	$45.50	$14.53	$12.67	$9.03	$0.00	$81.73

Apprentice Notes

** 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1

Apprentice to Journeyworker Ratio: 1:5

ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33 ROOFERS LOCAL 33	2/1/2026	$53.78	$14.53	$12.67	$9.03	$0.00	$90.01
For apprentice rates see "Apprentice- ROOFER"							

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 SHEETMETAL WORKERS LOCAL 17 - B	4/1/2026	$44.93	$15.25	$13.63	$6.15	$2.24	$82.20

Apprentice: SHEETMETAL WORKER

Effective Date: 4/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	40.00	$17.97	$15.25	$4.27	$0.00	$1.09	$38.58
2	45.00	$20.22	$15.25	$4.80	$0.00	$1.17	$41.44
3	50.00	$22.47	$15.25	$12.56	$0.00	$1.45	$51.73
4	55.00	$24.71	$15.25	$12.56	$0.00	$1.52	$54.04
5	60.00	$26.96	$15.25	$12.56	$3.69	$1.64	$60.10
6	65.00	$29.20	$15.25	$12.56	$4.00	$1.71	$62.72
7	70.00	$31.45	$15.25	$12.56	$4.31	$1.78	$65.35
8	75.00	$33.70	$15.25	$12.56	$4.61	$1.86	$67.98
9	80.00	$35.94	$15.25	$12.56	$4.92	$1.93	$70.60
10	85.00	$38.19	$15.25	$12.56	$5.23	$2.00	$73.23

Apprentice to Journeyworker Ratio: 1:4

SPECIALIZED EARTH MOVING EQUIP < 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	$42.24	$16.17	$21.78	$0.00	$0.00	$80.19
	12/1/2026	$42.24	$16.17	$23.52	$0.00	$0.00	$81.93
	1/1/2027	$42.24	$16.77	$23.52	$0.00	$0.00	$82.53
SPECIALIZED EARTH MOVING EQUIP > 35 TONS TEAMSTERS JOINT COUNCIL NO. 10 TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	6/1/2026	$42.53	$16.17	$21.78	$0.00	$0.00	$80.48
	12/1/2026	$42.53	$16.17	$23.52	$0.00	$0.00	$82.22
	1/1/2027	$42.53	$16.77	$23.52	$0.00	$0.00	$82.82
SPRINKLER FITTER SPRINKLER FITTERS LOCAL 550 SPRINKLER FITTERS LOCAL 550 - (Section B) Zone 2	1/1/2026	$64.85	$13.45	$7.45	$18.25	$0.00	$104.00

Apprentice: SPRINKLER FITTER

Effective Date: 1/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	0.00	$22.70	$13.45	$13.84	$0.00	$0.00	$49.99
2	0.00	$25.94	$13.45	$14.75	$0.00	$0.00	$54.14
3	0.00	$29.18	$13.45	$15.67	$0.00	$0.00	$58.30
4	0.00	$32.43	$13.45	$16.57	$0.00	$0.00	$62.45
5	0.00	$35.67	$13.45	$17.49	$0.00	$0.00	$66.61
6	0.00	$38.91	$13.45	$18.40	$0.00	$0.00	$70.76
7	0.00	$42.15	$13.45	$19.32	$0.00	$0.00	$74.92
8	0.00	$45.40	$13.45	$20.22	$0.00	$0.00	$79.07
9	0.00	$48.64	$13.45	$21.15	$0.00	$0.00	$83.24
10	0.00	$51.88	$13.45	$22.05	$0.00	$0.00	$87.38

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
Apprentice Notes							
Apprentice entered prior 9/30/10:							
Apprentice to Journeyworker Ratio: 1:3							
STEAM BOILER OPERATOR	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
OPERATING ENGINEERS LOCAL 4							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
OPERATING ENGINEERS LOCAL 4							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TELECOMMUNICATION TECHNICIAN	9/1/2025	$42.52	$12.00	$12.05	$3.25	$0.00	$69.82
TELECOMMUNICATION TECHNICIAN	9/1/2026	$44.41	$12.25	$12.59	$3.50	$0.00	$72.75
ELECTRICIANS LOCAL 223	9/1/2027	$46.51	$12.50	$13.18	$3.75	$0.00	$75.94
ELECTRICIANS LOCAL 223							
For apprentice rates and ratios see "Apprentice- ELECTRICIAN"							
TERRAZZO FINISHERS	2/1/2026	$66.89	$12.84	$15.57	$8.02	$0.00	$103.32
BRICKLAYERS LOCAL 3	8/1/2026	$69.09	$12.84	$15.57	$8.02	$0.00	$105.52
BRICKLAYERS LOCAL 3 - MARBLE & TILE	2/1/2027	$70.49	$12.84	$15.57	$8.02	$0.00	$106.92

Apprentice: TERRAZZO FINISHERS

Effective Date: 2/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$33.45	$12.84	$15.57	$8.02	$0.00	$69.88
2	60.00	$40.13	$12.84	$15.57	$8.02	$0.00	$76.56
3	70.00	$46.82	$12.84	$15.57	$8.02	$0.00	$83.25
4	80.00	$53.51	$12.84	$15.57	$8.02	$0.00	$89.94
5	90.00	$60.20	$12.84	$15.57	$8.02	$0.00	$96.63

Apprentice: TERRAZZO FINISHERS

Effective Date: 8/1/2026

Step	Percent	Apprentice Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
1	50.00	$34.55	$12.84	$15.57	$8.02	$0.00	$70.98
2	60.00	$41.45	$12.84	$15.57	$8.02	$0.00	$77.88
3	70.00	$48.36	$12.84	$15.57	$8.02	$0.00	$84.79
4	80.00	$55.27	$12.84	$15.57	$8.02	$0.00	$91.70
5	90.00	$62.18	$12.84	$15.57	$8.02	$0.00	$98.61

Apprentice to Journeyworker Ratio: 1:5							
TEST BORING DRILLER	6/1/2026	$53.25	$10.90	$9.75	$9.80	$0.00	$83.70
LABORERS	12/1/2026	$54.75	$10.90	$9.75	$9.80	$0.00	$85.20

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Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
LABORERS - FOUNDATION AND MARINE							
For apprentice rates see "Apprentice- LABORER"							
TEST BORING DRILLER HELPER	6/1/2026	$49.37	$10.90	$9.75	$9.80	$0.00	$79.82
LABORERS	12/1/2026	$50.87	$10.90	$9.75	$9.80	$0.00	$81.32
LABORERS - FOUNDATION AND MARINE							
For apprentice rates see "Apprentice- LABORER"							
TEST BORING LABORER	6/1/2026	$49.25	$10.90	$9.75	$9.80	$0.00	$79.70
LABORERS	12/1/2026	$50.75	$10.90	$9.75	$9.80	$0.00	$81.20
LABORERS - FOUNDATION AND MARINE							
For apprentice rates see "Apprentice- LABORER"							
TRACTORS/PORTABLE STEAM GENERATORS	6/1/2026	$58.70	$17.05	$13.35	$3.25	$0.00	$92.35
OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.14	$17.05	$13.35	$3.25	$0.00	$93.79
OPERATING ENGINEERS LOCAL 4							
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
TRAILERS FOR EARTH MOVING EQUIPMENT	6/1/2026	$42.82	$16.17	$21.78	$0.00	$0.00	$80.77
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2026	$42.82	$16.17	$23.52	$0.00	$0.00	$82.51
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2027	$42.82	$16.77	$23.52	$0.00	$0.00	$83.11
TUNNEL WORK - COMPRESSED AIR	6/1/2026	$61.48	$10.90	$9.75	$10.25	$0.00	$92.38
LABORERS	12/1/2026	$62.98	$10.90	$9.75	$10.25	$0.00	$93.88
LABORERS (COMPRESSED AIR)							
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE)	6/1/2026	$63.48	$10.90	$9.75	$10.25	$0.00	$94.38
LABORERS	12/1/2026	$64.98	$10.90	$9.75	$10.25	$0.00	$95.88
LABORERS (COMPRESSED AIR)							
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR	6/1/2026	$53.55	$10.90	$9.75	$10.25	$0.00	$84.45
LABORERS	12/1/2026	$55.05	$10.90	$9.75	$10.25	$0.00	$85.95
LABORERS (FREE AIR TUNNEL)							
For apprentice rates see "Apprentice- LABORER"							
TUNNEL WORK - FREE AIR (HAZ. WASTE)	6/1/2026	$55.55	$10.90	$9.75	$10.25	$0.00	$86.45
LABORERS	12/1/2026	$57.05	$10.90	$9.75	$10.25	$0.00	$87.95
LABORERS (FREE AIR TUNNEL)							
For apprentice rates see "Apprentice- LABORER"							
VAC-HAUL	6/1/2026	$42.24	$16.17	$21.78	$0.00	$0.00	$80.19
TEAMSTERS JOINT COUNCIL NO. 10	12/1/2026	$42.24	$16.17	$23.52	$0.00	$0.00	$81.93
TEAMSTERS JOINT COUNCIL NO. 10 ZONE B	1/1/2027	$42.24	$16.77	$23.52	$0.00	$0.00	$82.53
WAGON DRILL OPERATOR	6/1/2026	$41.91	$10.90	$9.75	$9.11	$0.00	$71.67
LABORERS	12/1/2026	$43.35	$10.90	$9.75	$9.11	$0.00	$73.11
LABORERS - ZONE 2	6/1/2027	$44.80	$10.90	$9.75	$9.11	$0.00	$74.56
	12/1/2027	$46.25	$10.90	$9.75	$9.11	$0.00	$76.01
	6/1/2028	$47.75	$10.90	$9.75	$9.11	$0.00	$77.51
	12/1/2028	$49.25	$10.90	$9.75	$9.11	$0.00	$79.01
For apprentice rates see "Apprentice- LABORER"							

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Construction

Classification	Effective Date	Base Wage	Health	Pension	Annuity	Supplemental Unemployment	Total Rate
WAGON DRILL OPERATOR (HEAVY & HIGHWAY)	6/1/2026	$41.91	$10.90	$9.75	$9.21	$0.00	$71.77
LABORERS LABORERS - ZONE 2 (HEAVY & HIGHWAY)	12/1/2026	$43.35	$10.90	$9.75	$9.21	$0.00	$73.21
For apprentice rates see "Apprentice- LABORER (Heavy and Highway)							
WASTE WATER PUMP OPERATOR	6/1/2026	$59.38	$17.05	$13.35	$3.25	$0.00	$93.03
OPERATING ENGINEERS LOCAL 4 OPERATING ENGINEERS LOCAL 4	12/1/2026	$60.83	$17.05	$13.35	$3.25	$0.00	$94.48
For apprentice rates see "Apprentice- OPERATING ENGINEERS"							
WATER METER INSTALLER PLUMBERS & PIPEFITTERS LOCAL 51 PLUMBERS & PIPEFITTERS LOCAL 51	8/25/2025	$55.24	$10.80	$16.80	$4.60	$0.00	$87.44
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"							

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Additional Apprentice Information

All apprentices must be registered with the Division of Apprenticeship Training(DAS) in accordance with M.G.L.c. 23, §§ 11E-11L. Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the hourly prevailing wage rate established by the Commissioner under the provisions of M.G.L.c. 149, §§ 26-27D.

Apprentice ratios are established by DAS pursuant to M.G.L.c. 23, §§ 11E-11L. Ratios are expressed as the allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified. The ratios listed herein have been taken from relevant private collective bargaining agreements(CBAs) and are provided for illustrative purposes only. They have not been independently verified as being accurate or continuing to be accurate.

Parties having questions regarding what ratio to use should contact DAS.

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WEEKLY PAYROLL RECORDS REPORT
& STATEMENT OF COMPLIANCE

In accordance with Massachusetts General Law c. 149, §27B, a true and accurate record must be kept of all persons employed on the public works project for which the enclosed rates have been provided. A Payroll Form has been printed on the reverse of this page and includes all the information required to be kept by law. Every contractor or subcontractor is required to keep these records and preserve them for a period of three years from the date of completion of the contract.

In addition, every contractor and subcontractor is required to submit a copy of their weekly payroll records to the awarding authority. For every week in which an apprentice is employed, a photocopy of the apprentice's identification card must be attached to the payroll report. Once collected, the awarding authority is also required to preserve those records for three years.

In addition, each such contractor, subcontractor, or public body shall furnish to the awarding authority directly, within fifteen days after completion of its portion of the work a statement, executed by the contractor, subcontractor or public body who supervises the payment of wages, in the following form:

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STATEMENT OF COMPLIANCE

_____, 20_____

I,_____,_____
(Name of signatory party) (Title)

do hereby state:

That I pay or supervise the payment of the persons employed by _____ on the _____
(Contractor, subcontractor or public body) (Building or project)

and that all mechanics and apprentices, teamsters, chauffeurs and laborers employed on said project have been paid in accordance with wages determined under the provisions of sections twenty-six and twenty-seven of chapter one hundred and forty nine of the General Laws.

Signature _____

Title _____

MASSACHUSETTS WEEKLY CERTIFIED PAYROLL REPORT FORM

Company's Name:	Address:	Phone No.:	Payroll No.:

Employer's Signature:	Title:	Contract No:	Tax Payer ID No.	Work Week Ending:

Awarding Authority's Name:	Public Works Project Name:	Public Works Project Location:	Min. Wage Rate Sheet No.

General / Prime Contractor's Name:	Subcontractor's Name:		"Employer" Hourly Fringe Benefit Contributions				
						(B+C+D+E)	(A x F)

Employee Name & Complete Address	Employee is OSHA 10 Certified (?)	Work Classification:	Appr. Rate (%)	Hours Worked Su.	Mo.	Tu.	We.	Th.	Fr.	Sa.	Project Hours (A) All Other Hours	Hourly Base Wage (B)	Health & Welfare Insurance (C')	ERISA Pension Plan (D)	Supp. Unemp. (E)	Total Hourly Prev. Wage (F)	Project Gross Wages (G) Total Gross Wages	Check No. (H)
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NOTE: Pursuant to MGL Ch. 149 s.27B, every contractor and subcontractor is required to submit a "true and accurate" copy of their weekly payroll records directly to the awarding authority. Failure to comply may result in the commencement of a criminal action or the issuance of a civil citation.

Date recieved by awarding authority
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APPENDIX B – Order of Conditions – Nantucket Conservation Commission

Last Modified: 06/24/2026 at 9:48AM EDT

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
And the Town of Nantucket Wetlands Bylaw Chapter 136

Provided by MassDEP: SE48-3826
MassDEP File #

eDEP Transaction #

Nantucket
City/Town

A. General Information

1. From: Nantucket
Conservation Commission

2. This issuance is for (check one): a. ☒ Order of Conditions b. ☐ Amended Order of Conditions

3. To: Applicant:

Rachael (a. First Name) | Freeman (b. Last Name)

Nantucket Islands Land Bank
c. Organization

22 Broad Street
d. Mailing Address

Nantucket (e. City/Town) | MA (f. State) | 02554 (g. Zip Code)

4. Property Owner (if different from applicant):

a. First Name | b. Last Name

c. Organization

d. Mailing Address

e. City/Town | f. State | g. Zip Code

5. Project Location:

8 Wesco Place (a. Street Address) | Nantucket (b. City/Town)

42.3.4 & 42.4.3 (c. Assessors Map/Plat Number) | 1 & 2.1; 47, 48, & 93 (d. Parcel/Lot Number)

Latitude and Longitude, if known: 41.28570N (d. Latitude) | 70.10493W (e. Longitude)

A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):

a. County	b. Certificate Number (if registered land)
Nantucket	
c. Book	**d. Page**
242, 320, 712, 1802	43, 204, 1, 74

7. Dates:

a. Date Notice of Intent Filed	b. Date Public Hearing Closed	c. Date of Issuance
October 24, 2024	November 21, 2024	November 22, 2024

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):

Lily Pond Park Improvement Plans
a. Plan Title

b. Prepared By	c. Signed and Stamped by
Horsley Witten Group, Inc	Richard A. Claytor, P.E
d. Final Revision Date	**e. Scale**
August 2024	various

f. Additional Plan or Document Title	g. Date

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act). Check all that apply:

a. ☒ Public Water Supply
b. ☒ Land Containing Shellfish
c. ☒ Prevention of Pollution
d. ☒ Private Water Supply
e. ☒ Fisheries
f. ☒ Protection of Wildlife Habitat
g. ☒ Groundwater Supply
h. ☒ Storm Damage Prevention
i. ☒ Flood Control
j. ☒ Wetland Scenic Views (bylaw)
k. ☒ Recreation (Bylaw)

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

Approved subject to:

a. ☒ the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

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B. Findings (cont.)

Denied because:

b. ☐ the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**

c. ☐ the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3. ☒ Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) — 0' (a. linear feet)

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☐ Bank	a. linear feet	b. linear feet	c. linear feet	d. linear feet
5. ☒ Bordering Vegetated Wetland	119610 a. square feet	119610 b. square feet	119640 c. square feet	119610 d. square feet
6. ☐ Land Under Waterbodies and Waterways	a. square feet	b. square feet	c. square feet	d. square feet
	e. c/y dredged	f. c/y dredged		
7. ☐ Bordering Land Subject to Flooding	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. ☐ Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. ☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

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B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. ☐ Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12. ☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. ☐ Coastal Beaches	a. square feet	b. square feet	c. nourishment	cu yd d. nourishment
14. ☐ Coastal Dunes	a. square feet	b. square feet	cu yd c. nourishment	cu yd d. nourishment
15. ☐ Coastal Banks	a. linear feet	b. linear feet		
16. ☐ Rocky Intertidal Shores	a. square feet	b. square feet		
17. ☐ Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18. ☐ Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19. ☐ Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20. ☐ Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	a. c/y dredged	b. c/y dredged		
21. ☐ Land Subject to Coastal Storm Flowage	a. square feet	b. square feet		

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B. Findings (cont.)

22. ☒ Restoration/Enhancement *:

a. square feet of BVW | b. square feet of salt marsh

23. ☐ Stream Crossing(s):

a. number of new stream crossings | b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   a. the work is a maintenance dredging project as provided for in the Act; or
   b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on **11/22/2027** unless extended in writing by the Department.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.

10. A sign shall be displayed at the site not less then two square feet or more than three square feet in size bearing the words,

"Massachusetts Department of Environmental Protection" [or, "MassDEP"]

"File Number SE48-3826 "

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.

12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.

13. The work shall conform to the plans and special conditions referenced in this order.

14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.

15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.

16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.

17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

19. **The work associated with this Order (the "Project") is** (1) ☐ **is not** (2) ☒ **subject to the Massachusetts Stormwater Standards. If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:**

a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
i. all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
ii. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
iii. any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;
iv. all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;
v. any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement) for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: *i.*) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and *ii.*) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.

i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.

j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.

k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):

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D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☒ Yes ☐ No

2. The Nantucket Conservation Commission hereby finds (check one that applies):

   a. ☐ that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

   1. Municipal Ordinance or Bylaw | 2. Citation

   Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.

   b. ☐ that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

   1. Municipal Ordinance or Bylaw | 2. Citation

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.
   The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):
   Please view additional findings and conditions page(s)

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B1. Additional Conditions

The Town of Nantucket Conservation Commission has found it necessary to include these additional conditions as a standard part of every Order. If the condition applies, then the corresponding box will be checked:

☒ 1. Pursuant to General Condition Number 8, this Order of Conditions must be registered with the Registry of Deeds for Nantucket, and proof of recording shall be submitted to the Commission prior to the commencement of any work approved in this Order.

☒ 2. No work approved under this Order shall take place until all administrative appeal periods from the Order have elapsed, or, if an appeal has been filed, until all proceedings have been completed.

☒ 3. The landowner, applicant, and/or the contractor will notify the Commission in writing five days prior to the start of work. The letter shall state the name, address, and telephone number of the project supervisor who will be responsible for insuring onsite compliance with this Order. (All erosion/sedimentation control devices shall be installed BEFORE the start of work.)

☒ 4. Prior to any activity at the site, a snow fence, siltation fence or a line of straw bales shall be staked as shown on the plan of record. After the fence or straw bales are installed, notice shall be given to the Nantucket Conservation Commission. **No work shall begin on the site for 72 hours after said notice is given; so as to allow Commission members time to inspect all siltation devices.** The snow fence, siltation fence, or straw bale line erected to prevent siltation, erosion, filling of the wetland, and trap windblown debris during construction, will also serve as a limit of the activity for work crews. It shall remain in good repair during all phases of construction, and it shall not be removed until all soils are stabilized and revegetated or until permission to remove it is given by the Commission.

☒ 5. An as-built plan, signed and stamped by a registered professional engineer or land surveyor in the Commonwealth of Massachusetts and having the same scale as the final approved plans, shall be submitted to the Commission at the same time as a written request for a Certificate of Compliance, and shall specify how, if at all, the completed plan differs from the final approved plan. The as-built plan shall include, but not be limited to, the following: any/culvert inverts for inflow and outfalls; pipe slope, size, and composition; location of any other drainage structures and their composition; limits of fill or alteration; location of all structures and pavement within 100 feet of the wetland; the edge of the wetland; the grade contours within 100 feet of the wetland.

☒ 6. Members, employees, and agents of the Commission shall have the right to enter and inspect the premises to evaluate compliance with the conditions and performance standards stated in this Order, the Massachusetts Wetlands Protection Act, and pertinent Massachusetts regulations (310CMR10:00 through 10:99). The Commission may require the submittal of any data deemed necessary by the Commission for that evaluation.

☒ 7. The applicant, owners, successors, or assignees shall be responsible for maintaining any on-site drainage structures and outfalls, assuring the lasting integrity of vegetative cover on the site, and monitoring of site activities so as to prevent erosion, siltation, sedimentation, chemical contamination, or other detrimental impact to any on-site or off-site resource area. It shall be the responsibility of the property owner of record to ensure compliance with the maintenance conditions required by this Order.

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B1. Additional Conditions (cont.)

☒ 8. This document shall be included in all construction contracts and subcontracts dealing with the work proposed and shall supersede other contract requirements.

☒ 9. A complete copy of this permit, including its drawings, Special Conditions, and any Amendments shall be available at the work site whenever work is being performed. The permittee shall provide a copy of this permit to all contractors, subcontractors, and other personnel performing work relating to this project in order to assure full knowledge and compliance with the permit's terms and conditions.

☒ 10. Natural vegetation between the wetland edge and upland edge of the Undisturbed Buffer shall be left intact. Within 48 hours of project completion, weather permitting, all disturbed areas shall be replanted as previously approved by the Commission. There shall be at least a 25-foot undisturbed buffer on the upland side of the wetland boundary, unless otherwise specified by this Order. This shall be an ongoing Condition that shall survive the expiration of this permit and shall be so noted on the Certificate of Compliance.

☒ 11. To minimize adverse effects on wildlife and water resources, the use of any pesticide or fertilizer requires explicit permission to be granted by the Commission. This shall be an ongoing Condition that shall survive the expiration of this permit and shall be so noted on the Certificate of Compliance.

☒ 12. In all cases, no part of any structure, including decks, stairs, cantilevers, etc., may be closer than 50 feet from the approved wetland boundary unless otherwise specified in this Order. This shall be an ongoing Condition that shall survive the expiration of this permit and shall be so noted on the Certificate of Compliance.

☒ 13. Any refuse material found on the site shall be disposed of at an approved landfill and in no case may these materials be buried or disposed of in or near a wetland.

☒ 14. This Order of Conditions shall apply to any successor in interest or successor in control of the property.

☒ 15. No underground petroleum product storage tanks are allowed within 100 feet of any wetland or within any velocity (V) flood zone as indicated on the most recent FEMA floodplain maps.

☒ 16. No work under this Order of Conditions may proceed until the applicant has filed all necessary permits and applications with:
Board of Health, ZBA, HDC, Building Inspector, Army Corps of Engineers, DEP, Waterways, MNH, etc.

☒ 17. All construction and alterations must comply with the above referenced plans and the Conditions of this Order. Any changes intended to be made in the plans or in the work shall require the applicant to file a new Notice of Intent, or to inquire of the Commission in writing whether the change is substantial enough to require a new filing. No change in plan or work under this filing is permissible without a new Notice of Intent, or permission from the Commission.

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FINDINGS and ADDITIONAL CONDITIONS
Massachusetts Wetlands Protection Act (MGL Chapter 131, Section 40)
Town of Nantucket Wetlands Bylaw (Chapter 136)

Address:	Lily Pond Park
Assessor's Map and Parcel:	42.3.4; 42.4.3 – 1 ; 2.1; 47,48, ; 93
Property Owner:	Nantucket Islands Land Bank
Applicant:	Nantucket Islands Land Bank
DEP File Number:	SE48-3826
Filing Date:	October 24, 2024
Date Hearing Closed:	November 21, 2024
Date Orders Issued:	November 22, 2024
Plan of Record Information:	Lily Pond Park Improvement Plans prepared by Horsley Witten Group, Inc. signed and stamped by Richard A. Claytor, P.E, dated August 2024

Permit Overview:
This order permits the proposed restoration, invasive species management, planting of native species, grading and excavation at Lily Pond Park within Bordering Vegetated Wetland and associated Buffer Zones. A waiver is required for this project as proposed.

Additional Findings:

1. The area does not fall within mapped NHESP habitat and does not require NHESP review.

In addition to the General Conditions contained elsewhere in this document, the Commission includes the following Special Conditions pursuant to MGLCh131s40 and the Town of Nantucket Wetlands Protection Bylaw, Chapter 136:

18. All work shall be performed in accordance with the Site and Work Description contained within the Notice of Intent and plan notes set out on the plan of record, provided project narratives, and protocols.
19. Any fill needed for the site needs to come from the site itself or any fill brought to the site shall provide a soil test for staff to review, this shall include nutrient content, heavy metals and VOC's at a minimum. Any invasive species found in these areas with fill shall be removed and appropriately disposed of off property.
20. The applicant shall present a yearly report including photographs demonstrating the condition and survivorship of the replanted area and the existing vegetated areas. Should the Commission determine that additional plantings are necessary they will be authorized based on this discussion.
21. All restoration plantings are to be native species with no cultivars.
22. This Order permits the use of glyphosate or equal for use as shown on the label of the specific herbicide.
23. The quantity and specific type of herbicide used will be reported in writing to the Commission on an annual basis. Any herbicide shall be applied by a licensed applicator.
24. Should the project area show less than 50% regrowth of native species within the first two years and six months of the permit the applicant shall file a new notice or amendment for supplementing the area with native plantings and or seedings.

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25. All reports are required by anniversary of this orders date of issuance, until a Certificate of Compliance is issued.

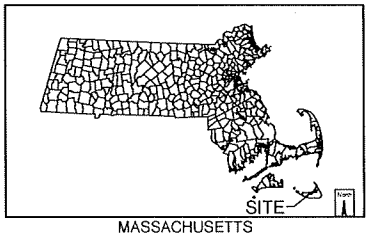
WAIVERS UNDER THE NANTUCKET WETLANDS BYLAW/REGULATIONS

Waivers are required for this project under § 390-18B(1) that all projects must maintain a 25' natural undisturbed area adjacent to a Vegetated Wetland. The proposed wetland restoration will require temporary disturbance to Resource area and Buffer zone but will result in net benefits to the resource areas, therefore, the Commission grants a waiver under § 390-3F(3)(c).

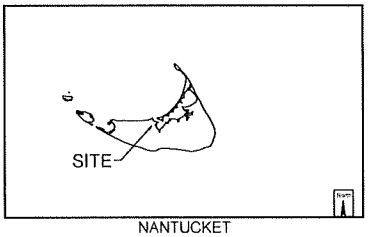
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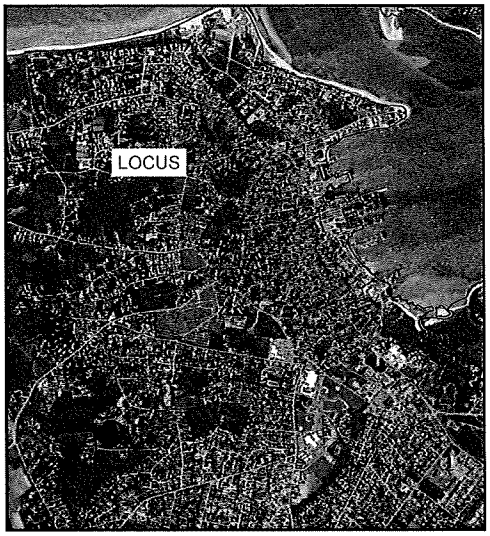
LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS
AUGUST 2024



MASSACHUSETTS
Graphic Scale



NANTUCKET
Graphic Scale



VICINITY MAP
Graphic Scale
1-inch = 1000-feet

Sheet List Table	
Sheet Number	Sheet Title
1	COVER SHEET
2	CONSTRUCTION NOTES AND DETAILS
3	DEMOLITION & EROSION CONTROL PLAN
4	OVERALL LAYOUT PLAN
5	RESTORATION AREA 1A - LAYOUT & GRADING
6	RESTORATION AREA 1B - LAYOUT & GRADING
7	RESTORATION AREA 2 - SITE LAYOUT
8	RESTORATION AREA 2 - GRADING
9	RESTORATION AREA 3 - LAYOUT & GRADING
10	NEW GATEWAY - LAYOUT & GRADING
11	BOARDWALK PROFILES AND DETAILS
12	BOARDWALK PROFILES
13	WETLAND RESTORATION SECTIONS
14	CONSTRUCTION DETAILS (1)
15	CONSTRUCTION DETAILS (2)
16	RESTORATION AREA 1A - PLANTING
17	RESTORATION AREA 1B - PLANTING
18	RESTORATION AREA 2 - PLANTING
19	RESTORATION AREA 3 - PLANTING
20	NEW GATEWAY - PLANTING
21	PLANTING DETAILS

GENERAL NOTES:
1. THIS PLAN SET IS NOT FOR CONSTRUCTION.
2. SITE INFORMATION:
   PLAT & LOT: 242-43, 1920-74, 329-204, 710-001
   ADDRESS: 9 MESCO PLACE, 36 LILY STREET, 15-19 N LIBERTY STREET
   ZONING DISTRICT: RA3
3. THE PROPERTY IS LOCATED WITHIN F.E.M.A. ZONE X AS SHOWN ON COMMUNITY PANEL NO.25019 0036D DATED JUNE 9, 2014.
4. WETLANDS ARE PRESENT ON THE SITE.

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
(508) 228-7240

Prepared By:
Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com

Revisions

20008

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EXISTING CONDITION NOTES

1. THE EXISTING CONDITIONS DEPICTED HEREIN IS FROM THE SURVEY PLAN ENTITLED "EXISTING CONDITIONS PLOT PLAN, LILY POND PARK" DATED IN AUGUST 6, 2019 BY DPW, LLC (NANTUCKET) AND WERE REVISED AT SITE DESIGN.
2. TOPOGRAPHY: THE 2019 NANTUCKET TOWN GIS 40 CM CONTOUR DATA.
3. THE WATER ELEVATIONS WERE TAKEN ON 3/25/19 AND NOTED UNLESS OTHERWISE NOTED.
4. THE WETLAND DELINEATION SHOWN HEREIN WAS CONDUCTED BY THE ATLANTIC WHITE GROUP INC. ON 3/2022.

GENERAL CONSTRUCTION NOTES

1. ALL SITE WORK TO COMPLETED THIS PROJECT IS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
2. IMMEDIATELY CONTACT AND COORDINATE WITH THE ENGINEER AND OWNER IF ANY DISCREPANCIES OR ALTERATIONS OF THE WORK PROPOSED ON THESE DRAWINGS IS REQUIRED.
3. UTILITY ALL PRECAUTIONS AND MEASURES TO ENSURE THE SAFETY OF THE PUBLIC, ALL PERSONNEL AND PROPERTY DURING CONSTRUCTION IN ACCORDANCE WITH OSHA STANDARDS INCLUDING THE INSTALLATION OF TEMPORARY PEDESTRIAN BARRICADES WHERE NECESSARY. ALL BARRICADES SHALL BE CONSTRUCTED AS DETAILED HEREIN AND IN THE FINAL. THE CONTRACTOR IS RESPONSIBLE FOR THE COST OF HOUSE DETAIL AND FOR COMPLYING WITH THE LOCAL OR STATE HOUSE DEPARTMENT FOR ALL REQUIRED HOUSE DETAIL.
4. WHERE ALL NECESSARY CONSTRUCTION NOTES AND SHALL FOR AND BE INCLUDED IN ALL NECESSARY CONSTRUCTION PERMITS. PAY ALL FEES INCLUDED IN PLANS DETAILED OR NOT ALSO BE OF NECESSARY VISITATION TO MEET THE NEEDS AND COORDINATE WITH THE OWNER AND THE ENGINEER.
5. ALL EXISTING CONDITIONS SHOWN ARE APPROXIMATE AND ARE BASED ON THE BEST INFORMATION AVAILABLE. PRIOR TO THE START OF CONSTRUCTION, VERIFY WITH THE PROPOSED IMPROVEMENTS SHOWN ON THESE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR UNKNOWN UTILITIES. IF ANY CONFLICTS ARE DISCOVERED, NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLING ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED.
6. THE CONTRACTOR IS RESPONSIBLE FOR ALL EXISTING UTILITIES AND STRUCTURES LOCATED ON THE PROPOSED SITE AREA BASED ON THE SURVEY PLAN ENTITLED "EXISTING CONDITIONS PLOT PLAN, LILY POND PARK" PREPARED BY DPW, LLC DATED 7/2/2019. NEVERTHELESS, IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE SIZE, LOCATION AND DEPTH OF ALL UNDERGROUND UTILITIES AND STRUCTURES IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. CONTACT THE APPROPRIATE UTILITY COMPANY AND ALL EXISTING PERTAINING TO THE SITE AND OBSERVE THOROUGHLY. IF IT APPEARS THAT THERE IS A CONFLICT BETWEEN THE PROPOSED IMPROVEMENTS AND EXISTING UTILITIES OR STRUCTURES, THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST THREE BUSINESS DAYS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO EXISTING UTILITIES OR STRUCTURES CAUSED BY THEIR WORK AND SHALL NOTIFY ANY DAMAGE WORK TO THE PROPER AUTHORITIES. THE ENGINEER SHALL NOT BE RESPONSIBLE FOR DAMAGES OCCURRED AS A RESULT OF UTILITIES LIMITED, INCOMPLETE OR INACCURATE SHOWN. THE CONTRACTOR MUST NOTIFY IN ADVANCE REGARDS OF THE LOCATION AND ELEVATION OF ALL WORK INSTALLED OR EXISTING OUTSIDE FENCING DURING CONSTRUCTION FOR THE PREPARATION OF THE HABITAT PLAN.
7. THE CONTRACTOR SHALL MAINTAIN ALL EXISTING UTILITIES SERVICES UNDER UNDISTURBED FROM UNLESS PRIOR THE ENTIRE CONSTRUCTION PERIOD. ANY DAMAGE TO EXISTING UTILITIES CAUSED BY CONTRACTOR'S OPERATIONS SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE IN ACCORDANCE WITH APPROVED SURFACE CONSTRUCTION SPECIFICATIONS AS DETERMINED BY THE ENGINEER. WITHIN THE 24 HOUR PERIOD, CONTRACTOR IS REQUIRED TO REMOVE, PATCH AND REPLACE UTILITIES AND COMPLETE CAUSTIN DUTIES.
8. IMPORT SOIL OR LOAM MATERIAL, WITHIN LIMITS IN EXISTING OR PLANNED OF SITE IS DEFINED BY THE MASSACHUSETTS CONSTRUCTION PLANS DEPARTMENT AND SHALL NOT BE ACCEPTED.
11. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH ADJUSTMENT ALL CONTROL POINTS AND BENCH MARKS DURING CONSTRUCTION AS CLOSELY AS POSSIBLE TO THE LOCATIONS AND ELEVATIONS SHOWN ON THE PLANS. ANY DISCREPANCIES SHALL BE REPORTED IMMEDIATELY TO THE ENGINEER.
12. SITE LAYOUT SURVEY REQUIRED FOR CONSTRUCTION MUST BE PROVIDED BY THE CONTRACTOR AND PERFORMED BY A MASSACHUSETTS REGISTERED PROFESSIONAL LAND SURVEYOR. THE CONTRACTOR IS RESPONSIBLE FOR CONSTRUCTING ALL IMPROVEMENTS IN THE LOCATIONS AS SHOWN ON THE SURVEY PLAN.
13. WRITTEN NOTICE OF THE ESTIMATED SURVEYOR, OR QUALIFIED REPRESENTATIVE, IN LIMITS FOR INSPECTION OF THE FOLLOWING HAS BEEN COMPLETED BY THE ENGINEER, RESPONSIBLE OF PREPARATION, PERFORMING OF PREPARATION, PERFORMING OF PREPARATION, PERFORMING

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EROSION & SEDIMENT CONTROL NOTES

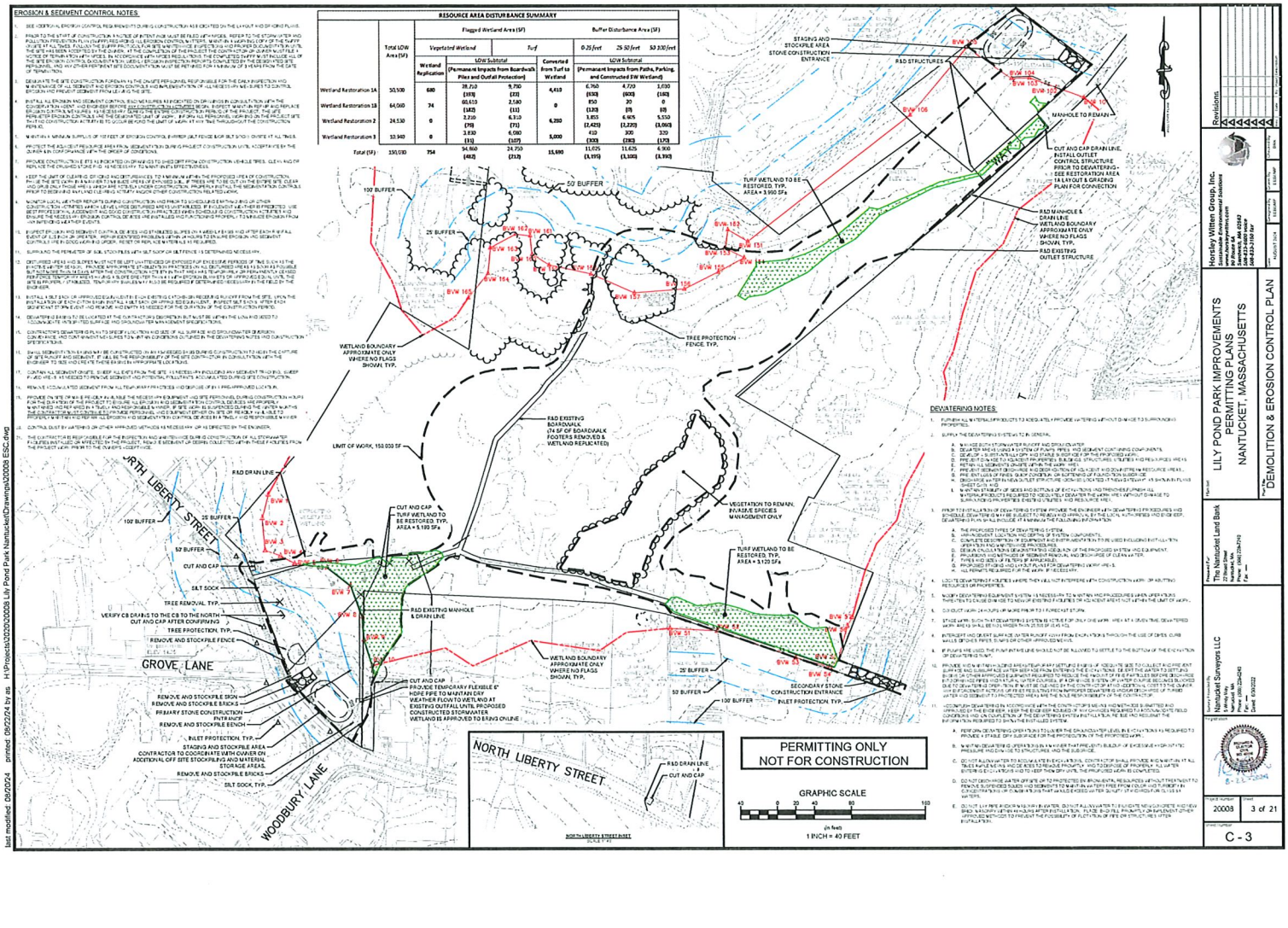
1. SEE CERTAIN EROSION CONTROL REQUIREMENTS DURING CONSTRUCTION ARE NOTED ON THE LAYOUT AND GRADING PLANS.
2. PRIOR TO THE START OF CONSTRUCTION A NOTICE OF INTENT AND MUST BE FILED AND MADE. REFER TO THE STORMWATER AND POLLUTION PREVENTION PLAN (SWPPP) FOR SPECIFICS. (1) EROSION CONTROL MEASURES, WHICH IN LIEU OF BOTH OF THE ABOVE, THE SITE HAS BEEN NOTIFIED BY THE OWNER. AT THE COMPLETION OF THE PROJECT THE CONTRACTOR SHALL SUBMIT A NOTICE OF TERMINATION (NOT) WHERE, IN ACCORDANCE WITH WHICH REGULATIONS THE COMPLETED SWPPP MUST INCLUDE ALL OF THE SITE EROSION CONTROL DOCUMENTATION, USED, EROSION INSPECTION REPORTS COMPLETED BY THE DESIGNATED SITE PERSONNEL, AND ANY OTHER PERMIT SITE DOCUMENTATION MUST BE RETAINED FOR A MINIMUM OF 3 YEARS FROM THE DATE OF TERMINATION.
3. DESIGNATE THE SITE CONSTRUCTION FOREMAN AS THE ON-SITE PERSON(S) RESPONSIBLE FOR THE DAILY INSPECTION AND MAINTENANCE OF ALL SEDIMENT AND EROSION CONTROLS AND IMPLEMENTATION OF ALL NEEDED ON-SITE MEASURES TO CONTROL EROSION AND PREVENT SEDIMENT FROM LEAVING THE SITE.
4. INSTALL ALL EROSION AND SEDIMENT CONTROL BMPS AS REQUIRED AS INDICATED ON DRAWINGS IN CONSULTATION WITH THE ENGINEER AND AS NECESSARY TO MEET THE INTENT OF THE SWPPP. ALL BMPS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND GUIDELINES. IF NECESSARY, BMPS SHALL BE REPLACED OR REINFORCED TO MAINTAIN EFFECTIVENESS. ADDITIONAL BMPS MAY BE REQUIRED AS DIRECTED BY THE OWNER, ENGINEER, OR LOCAL CONSERVATION COMMISSION. THE LIMIT OF DISTURBANCE SHALL BE CLEARLY MARKED PRIOR TO BEGINNING ANY LAND DISTURBING ACTIVITY. EXISTING VEGETATION SHALL BE PRESERVED WHERE POSSIBLE AND REMOVED ONLY WHERE NECESSARY FOR CONSTRUCTION. ALL BMPS SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE SWPPP AND MANUFACTURER'S SPECIFICATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURES AFTER THE SITE IS STABILIZED.
5. PROVIDE CONSTRUCTION ENTRANCE(S) AS INDICATED ON DRAWINGS TO AVOID DIRT FROM CONSTRUCTION VEHICLES BEING TRACKED ONTO PUBLIC ROADWAYS. CLEAN AND REPLACE CRUSHED STONE AS NECESSARY TO MAINTAIN EFFECTIVENESS.
6. KEEP THE LIMIT OF CLEARING OF TREES AND VEGETATION TO A MINIMUM WITHIN THE PROPOSED LIMITS OF CONSTRUCTION. PRIOR TO THE SITE WORK BEGINNING, THE LIMITS OF DISTURBANCE SHALL BE FLAGGED OR STAKED AND ALL TREES WITHIN THE LIMIT OF DISTURBANCE SHALL BE CLEARLY MARKED. ONLY TREES WITHIN THE LIMIT OF DISTURBANCE SHALL BE CUT DOWN. ALL TREES AND BRUSH ONLY THOSE AREAS WHERE ARE ACTIVELY UNDER CONSTRUCTION. PROPERLY INSTALL THE SEDIMENTATION CONTROLS PRIOR TO BEGINNING ANY LAND CLEARING ACTIVITY AND/OR OTHER CONSTRUCTION RELATED WORK.
7. MONITOR LOCAL WEATHER REPORTS DURING CONSTRUCTION AND PRIOR TO SCHEDULED EARTHWORKS OR OTHER CONSTRUCTION ACTIVITIES WHICH COULD LIKELY RESULT IN EROSION OR SEDIMENT, WHETHER OR NOT THEY ARE PERMITTED. USE BEST PROFESSIONAL JUDGEMENT AND SOUND CONSTRUCTION PRACTICES WHEN SCHEDULING CONSTRUCTION ACTIVITIES AND ENSURE THE NECESSARY EROSION CONTROL DEVICES ARE INSTALLED AND FUNCTIONING PROPERLY TO PREVENT EROSION FROM ANY ANTICIPATED WEATHER EVENTS.
8. EXPOSE ONLY AS MUCH AREA AS CAN BE FULLY STABILIZED AND PROTECTED BY THE END OF EACH WORKING DAY. IN THE EVENT OF A SUDDEN STORM, REPAIR ANY DISTURBED PROTECTIVE MEASURES AND ADJUST TO ENSURE MAXIMUM EFFECTIVENESS. SEDIMENT CONTROLS MUST BE DONE AS NEEDED IN ORDER TO MEET THE INTENT AS REQUIRED.
9. SURROUND THE PERIMETER OF SOIL STOCKPILES WITH SILT SOCK OR SILT FENCE AS DETERMINED NECESSARY.
10. DISTURBED AREAS AND SLOPES MUST NOT BE LEFT UNPROTECTED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH THAT EXCESS EROSION RESULTS. PROVIDE APPROPRIATE STABILIZATION PRACTICES IN ALL DISTURBED AREAS AS SOON AS POSSIBLE BUT NO MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED AND PRIOR TO ANY FORECASTED RAIN EVENT. TEMPORARY OR PERMANENT EROSION AND WATER CONTROL MEASURES SHALL BE IN PLACE PRIOR TO ANY FORECASTED RAIN EVENT AND MAINTAINED UNTIL THE SITE IS SUFFICIENTLY STABILIZED. TEMPORARY BARRIERS MAY ALSO BE REQUIRED AT DETERMINED LOCATIONS AS DIRECTED BY THE ENGINEER.
11. INSTALL A SILT SOCK OR APPROVED EQUIVALENT AT EACH EXISTING CATCH BASIN RECEIVING RUNOFF FROM THE SITE. UPON THE INSTALLATION OF EACH CATCH BASIN INSTALL A SILT SACK OR APPROVED EQUIVALENT. INSPECT SILT SACKS AFTER EACH SIGNIFICANT STORM EVENT AND REMOVE AND EMPTY AS NEEDED FOR THE DURATION OF THE CONSTRUCTION PERIOD.
12. DEWATERING AREA(S) TO BE LOCATED AT THE CONTRACTOR'S DISCRETION, BUT MUST BE WITHIN THE LIMIT OF WORK AND APPROVED BY THE ENGINEER.
13. CONTRACTOR'S DEWATERING PLAN TO SPECIFY LOCATION AND SIZE OF ALL SURFACE AND SPOIL/DEWATER DIVERSION BERMS, SILT FENCE, AND CONTAINMENT AS NEEDED TO MEET THE CONDITIONS OUTLINED IN THE DEWATERING NOTES AND CONSTRUCTION SPECIFICATIONS.
14. SHALL SEDIMENT TRAPS AND BASINS BE CONSTRUCTED IN AN AREA USED FOR BUILDING CONSTRUCTION TO MEET THE CAPTURE VOLUME REQUIREMENTS, THEY SHALL BE CONSTRUCTED PRIOR TO THE START OF CONSTRUCTION IN CONSULTATION WITH THE ENGINEER TO BE INSPECTED TO ENSURE THEY ARE IN APPROPRIATE LOCATIONS.
15. CLEAN ALL SEDIMENT DEPOSITS, SWEEP ALL DEBRIS FROM THE SITE, AND REMOVE IN ENTIRETY ALL SEDIMENT TRAPS AND SWEEP PAVED AREAS AS NEEDED TO REMOVE SEDIMENT AND POTENTIAL POLLUTANTS ACCUMULATED DURING SITE CONSTRUCTION.
16. REMOVE ACCUMULATED SEDIMENT FROM ALL TEMPORARY PRACTICES AND DISPOSE OF IN A PREAPPROVED LOCATION.
17. PROVIDE ON-SITE OWNER'S REPRESENTATIVE WITH THE NECESSARY EQUIPMENT AND SITE PERSONNEL DURING CONSTRUCTION HOURS FOR THE DURATION OF THE PROJECT TO ENSURE ALL EROSION AND SEDIMENTATION CONTROL DEVICES ARE PROPERLY MAINTAINED AND REPAIRED IN A TIMELY AND RESPONSIBLE MANNER. IF SITE WORK IS SUSPENDED DURING THE WINTER MONTHS THE CONTRACTOR SHALL ENSURE PROPER PERSONNEL AND EQUIPMENT REMAIN ON SITE OR READILY AVAILABLE TO PERFORM ANY NECESSARY EROSION CONTROL MEASURES IN THE EVENT OF A SNOWMELT OR RAINWATER EVENT.
18. CONTROL DUST BY WATERING OR OTHER APPROVED METHODS AS NECESSARY OR AS DIRECTED BY THE ENGINEER.
19. THE CONTRACTOR IS RESPONSIBLE FOR THE INSPECTION AND MAINTENANCE DURING CONSTRUCTION OF ALL STORMWATER BMPS AND THEIR FUNCTIONALITY AS PRESENTED IN THE PROJECT. REMOVE SEDIMENT OR DEBRIS COLLECTED BEHIND THESE FEATURES FROM THE PROJECT WORK PRIOR TO THE OWNER'S ACCEPTANCE.

RESOURCE AREA DISTURBANCE SUMMARY

	Total LOW Area (SF)	Flagged Wetland Area (SF)				Buffer Disturbance Area (SF)		
		Vegetated Wetland		Turf		0-25 feet	25-50 feet	50-100 feet
		Wetland Replication	LOW Subtotal (Permanent Impacts from Boardwalk Piles and Outfall Protection)		Converted from Turf to Wetland	LOW Subtotal (Permanent Impacts from Paths, Parking, and Constructed BW Wetland)		
Wetland Restoration 1A	50,500	680	28,710 (378)	9,790 (22)	4,410	6,760 (630)	4,720 (600)	3,030 (160)
Wetland Restoration 1B	64,060	74	60,610 (180)	2,580 (11)	0	850 (170)	20 (0)	0 (0)
Wetland Restoration 2	24,530	0	2,210 (79)	6,310 (71)	6,280	3,855 (2,425)	6,405 (2,220)	5,550 (3,060)
Wetland Restoration 3	10,940	0	3,830 (31)	6,080 (107)	5,000	410 (300)	200 (280)	320 (170)
Total (SF):	150,030	754	94,460 (402)	24,750 (210)	15,690	11,625 (4,195)	11,625 (3,300)	8,900 (3,390)

DEWATERING NOTES

1. FURNISH ALL MATERIALS AND LABOR NECESSARY TO ACCURATELY PROVIDE DEWATERING WITHOUT DAMAGE TO SURROUNDING PROPERTIES.
2. SUPPLY THE DEWATERING SYSTEM WITH, IN GENERAL:
   A. MEANS OF DIVERTING STORMWATER RUNOFF AND SPRING WATER
   B. DEWATER AREA(S) AND SYSTEM OF PUMPS, PIPES, AND SEDIMENT CONTAINING COMPONENTS
   C. DEVELOP A SUITABLE METHOD AND STABLE SUBSTRATE OF THE PROPOSED WORK.
   D. PIPE DETAILS AND TIE-IN TO EXISTING DRAINAGE, BUILDINGS, STRUCTURES, UTILITIES AND PROPERTIES AREAS
   E. PIPE SIZE, MATERIAL, AND SLOPE OF PIPE
   F. PIPE JOINT SEGMENTS SHOWING LOCATION OF CLOSURE AND CONNECTIONS TO RESOURCE AREAS.
   G. PIPE ENTRY LOSS OF FINES, QUICK CONDITION, OR SOFTENING OF FOUNDATION SUBGRADE
   H. DESIGN OF WATER AREA OUTLET STRUCTURE SHOWING LOCATION AND TYPE AND STRENGTH OF MATERIALS PLUGS SHEET DAMS AND
   I. METHOD STABILITY OF SIDES AND BOTTOMS OF EXCAVATIONS AND TRENCHES FURNISH ALL MATERIALS PRODUCTS REQUIRED TO DEQUATELY DEWATER THE WORK AREA WITHOUT DAMAGE TO SURROUNDING PROPERTIES EXISTING UTILITIES AND RESOURCE AREAS.
3. PRIOR TO INSTALLATION OF DEWATERING SYSTEM, PROVIDE THE ENGINEER WITH DEWATERING PROCEDURES AND SCHEDULE FOR REVIEW BY THE ENGINEER'S RESILIENCE AND APPROVAL BY THE LOCAL AUTHORITIES AND ECE DEPT. DEWATERING PLAN SHALL INCLUDE AT A MINIMUM THE FOLLOWING INFORMATION:
   A. THE PROPOSED TYPES OF DEWATERING SYSTEM
   B. IMPLEMENT LOCATION AND DEPTHS OF SYSTEM COMPONENTS
   C. COMPLETE DESCRIPTION OF EQUIPMENT AND ACTIVITIES NECESSARY TO BE USED INCLUDING INSTALLATION OPERATION AND MAINTENANCE PROCEDURES
   D. DESIGN CALCULATIONS DEMONSTRATING ADEQUACY OF THE PROPOSED SYSTEM AND EQUIPMENT
   E. PROVISIONS AND METHODS OF RESIDENT REMOVAL AND DISCHARGE OF CLEAN WATER
   F. PROVISIONS FOR SEDIMENT REMOVAL
   G. PIPING AND STORAGE FACILITY SIZE PLANS FOR DEWATERING WORK AREAS
   H. ALL PERMITS REQUIRED FOR THE WORK IF NECESSARY.
4. LOCATE DEWATERING OUTLETS WHERE THEY WILL NOT INTERFERE WITH CONSTRUCTION WORK OR ADJOINING RESOURCES OR PROPERTIES.
5. MONITOR DEWATERING EQUIPMENT & SYSTEM 24 HOURS PER DAY WHEN IN USE AND PROCEDURES WHEN OPERATIONS THREATEN TO CAUSE DISTURBANCE TO AREAS OF EXISTING FEATURES OR ADJACENT AREAS NOT WITHIN THE LIMIT OF WORK.
6. DISCHARGE WORK 24 HOURS OR MORE PRIOR TO A FORECAST STORM.
7. STAGE WORK SUCH THAT DEWATERING SYSTEM IS OUTSIDE OF (OR ONLY ONE WORK AREA AT A TIME) THE DEWATERED WORK AREA SHALL BE LOCATED WHERE IT WILL DISCHARGE TO:
8. INTERCEPT AND DIVERT SURFACE OR WATER RUNOFF COMING FROM EXCAVATION THROUGH THE USE OF DIKES, CURB WALLS DITCHES PIPES, SUMPS OR OTHER APPROVED MEANS.
9. IF PUMPS ARE USED, THE PUMP INTAKE SHALL NOT BE ALLOWED TO SETTLE TO THE BOTTOM OF THE EXCAVATION OR DEWATERING TANK.
10. PROVIDE WORK WITH A SUITABLE AND STABLE ARRAY OF MATERIALS IF SOILS OF INADEQUATE SIZE TO COLLECT ALL PIPE ENTRY SURFACE AND SUBSURFACE WATER BEFORE FROM ENTERING THE EXCAVATIONS OR ENTIRE DEPTH OF WATER TO SETTLING BASINS OR OTHER APPROVED EQUIPMENT REQUIRED TO REDUCE THE AMOUNT OF FINE PARTICLES BEFORE DISCHARGE INTO ANY RESOURCE AREA OR WATER BODY. KEEP THE EDGE OF WATER AT LEAST 25 FEET FROM ANY RESOURCE AREA ALLOWED DURING CONSTRUCTION. IF THE WORK IS WITHIN 25 FEET OF A RESOURCE AREA, PROVIDE A SILT FENCE BARRIER AT THE OUTER EDGE OF THE BUFFER ZONE. DO NOT DISCHARGE NOTICE OR WATER RESULTING FROM IMPROPER DEWATERING AND/OR DISPOSAL OF PUMPED WATER INTO DISTURBED OR PROTECTED AREAS WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
11. UPON WITH DEWATERING IN ACCORDANCE WITH THE CONSTRUCTION MEANS AND METHODS IS LIMITED AND UNRELATED BY THE ENGINEER. KEEP THE EDGE OF EXCAVATION AT LEAST 25 FEET FROM ANY RESOURCE AREA. IF THE WORK IS WITHIN 25 FEET OF A RESOURCE AREA, PROVIDE A SILT FENCE BARRIER AT THE OUTER EDGE OF THE BUFFER ZONE. DO NOT DISCHARGE NOTICE OR WATER RESULTING FROM IMPROPER DEWATERING AND/OR DISPOSAL OF PUMPED WATER INTO DISTURBED OR PROTECTED AREAS WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
   A. PERFORM DEWATERING OPERATIONS IN A MANNER THAT PREVENTS BUILDUP OF EXCESSIVE HYDROSTATIC PRESSURE AND DAMAGE TO STRUCTURES AND THE SUBGRADE.
   B. MONITOR DEWATERING OPERATIONS IN A MANNER THAT PREVENTS BUILDUP OF EXCESSIVE HYDROSTATIC PRESSURE AND DAMAGE TO STRUCTURES AND THE SUBGRADE.
   C. DO NOT ALLOW WATER TO ACCUMULATE IN EXCAVATIONS. CONTRACTOR SHALL REMOVE WATER IN ALL TIMES AS NECESSARY AND BE ABLE TO REMOVE PROMPTLY AND TO DISPOSE OF PROPERLY. ALL WATER ENTERING EXCAVATIONS AND TO KEEP THEM DRY UNTIL THE PROJECTED WORK IS COMPLETED.
   D. DO NOT DISCHARGE WATER OFF SITE OR TO PROTECTED OR NATURAL AREAS, RESOURCES WITHOUT TREATMENT TO REMOVE SUSPENDED SOILDS AND SEDIMENTS TO MAINTAIN WATER FREE FROM COLOR AND TURBIDITY IN CONCENTRATIONS OF OR GREATER THAN WATER QUALITY STANDARDS FOR CLASS III WATERS.
   E. DISCHARGE WATER IN A CONTAINED MANNER THAT WILL NOT CAUSE WATER TO FLOW OUTSIDE RESOURCE AREAS OR AREAS DESIGNATED FOR WORK AREA DEWATERING. PLACE BIO-BALL PRODUCTS OR EQUIVALENT OTHER APPROVED MEANS AT OUTLET POINT OF THE DISCHARGE TO PREVENT THE POSSIBILITY OF FLOTATION OF PIPE OR STRUCTURES AFTER INSTALLATION.



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GRAPHIC SCALE
40 0 20 40 80 160
(in feet)
1 INCH = 40 FEET

Revisions

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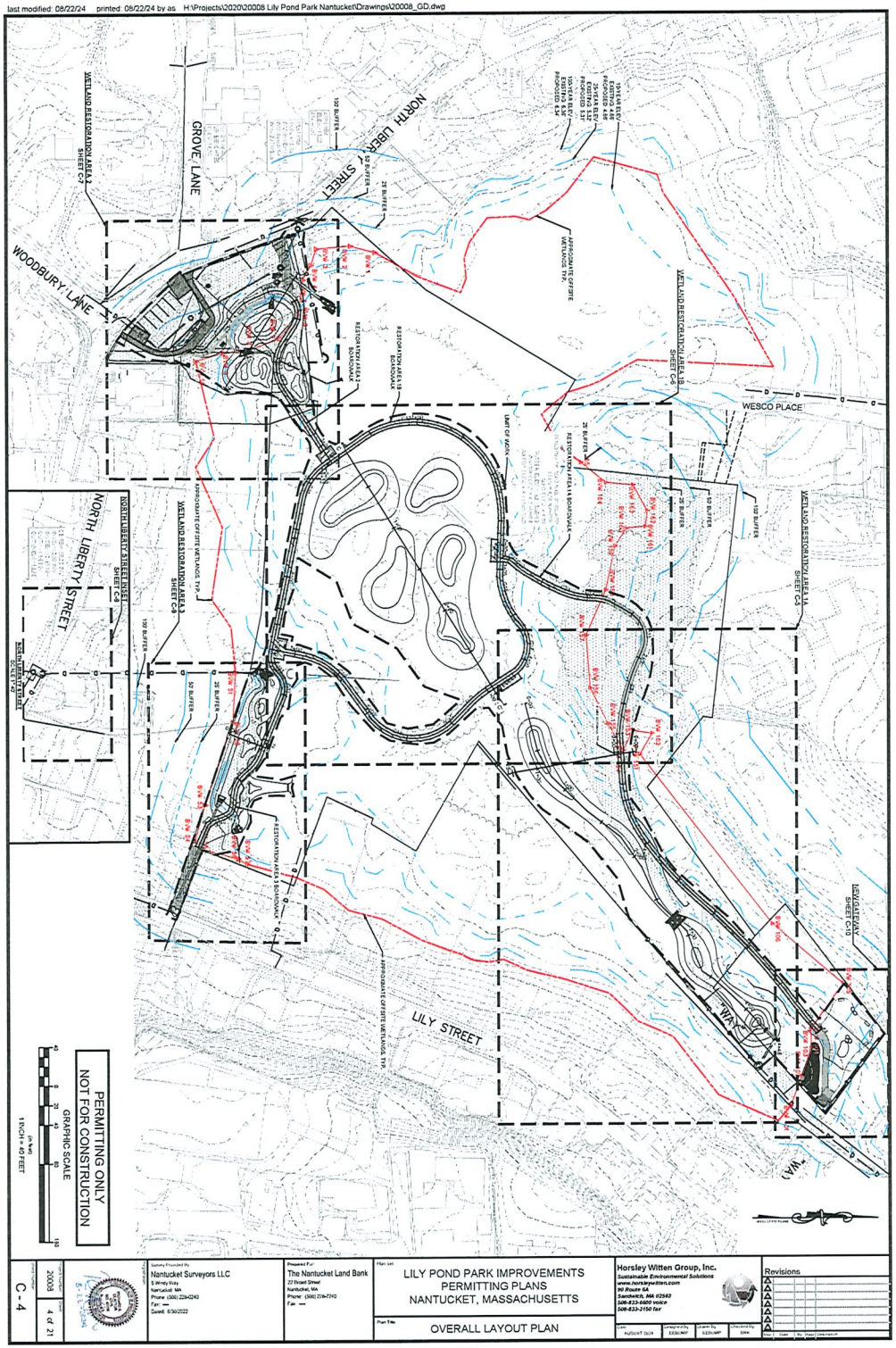
LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS
DEMOLITION & EROSION CONTROL PLAN

Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
Phone: (508) 228-7240
Fax: ---

Surveyed Prepared By:
Nantucket Surveyors LLC
5 Murray Way
Nantucket, MA
Phone: (508) 228-0240
Fax: ---
Dated: 6/30/2022

Project Number: 20008
Sheet: 3 of 21
Drawing Number: C - 3

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Sheet No. C - 4	Job No. 20008	Sheet No. 4 of 21	Survey Provided By: Nantucket Surveyors LLC, 5 Windy Way, Nantucket, MA, Phone: (508) 228-0240, Fax: —, Dated: 6/30/2022	Prepared For: The Nantucket Land Bank, 22 Broad Street, Nantucket, MA, Phone: (508) 228-7240, Fax: —

Plan Set: LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

Plan Title: OVERALL LAYOUT PLAN

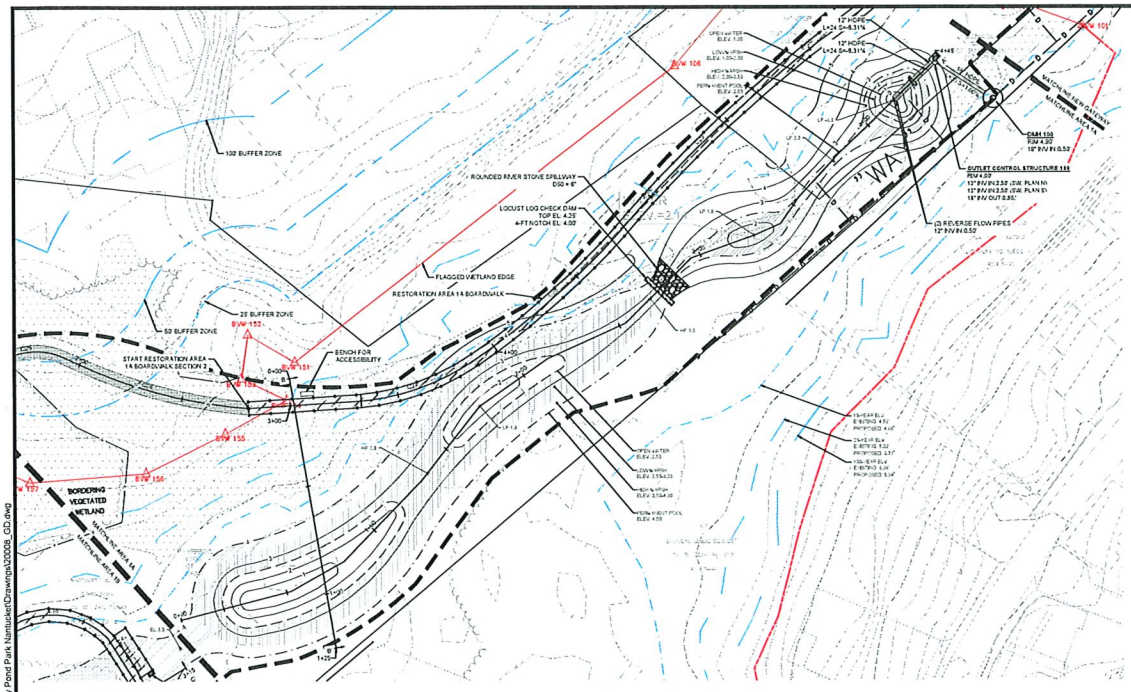
Horsley Witten Group, Inc.
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Plan	Designed By	Drawn By	Checked By
AUGUST 2024	EEB/JMP	EEB/JMP	DWA

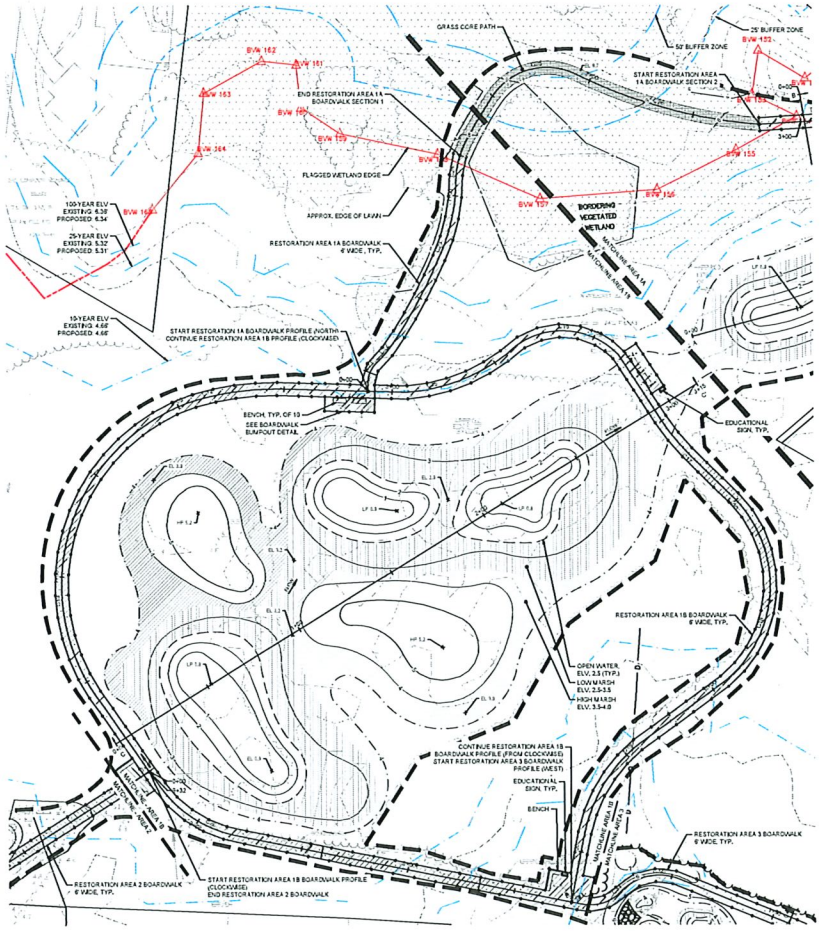
Revisions

No.	Date	By	Description
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102 BUFFER ZONE
ROUNDED RIVER STONE SPILLWAY
D50 = 6"
LOCUST LOG CHECK DAM
TOP EL. 4.25
4-FT NOTCH EL. 4.00
FLAGGED WETLAND EDGE
RESTORATION AREA 1A BOARDWALK
25 BUFFER ZONE
50 BUFFER ZONE
BW 152
BW 151
BW 153
BW 135
BW 156
BW 157
BW 106
BW 101
START RESTORATION AREA 1A BOARDWALK SECTION 2
BENCH FOR ACCESSIBILITY
BORDERING VEGETATED WETLAND
MATCHING AREA 1A
MATCHING AREA 1B
OUTLET CONTROL STRUCTURE 155
RIM 4.07
12" INV IN 2.57 (SW. PLAN N)
12" INV IN 2.57 (SW. PLAN S)
18" INV OUT 0.80
(2) REVERSE FLOW PIPES
12" INV IN 0.57
CMP 153
RIM 4.00
18" INV IN 0.57
12" HDPE
L=24 S=8.31%
12" HDPE
L=24 S=8.31%
OPEN WATER
ELEV. 1.00
LOW MARSH
ELEV. 2.50
HIGH MARSH
ELEV. 3.50
PERM. POOL
ELEV. 4.00
OPEN WATER
ELEV. 2.75
LOW MARSH
ELEV. 3.50
HIGH MARSH
ELEV. 3.50
PERM. POOL
ELEV. 4.00
1-YEAR ELEV.
EXISTING 4.70
PROPOSED 4.00
2-YEAR ELEV.
EXISTING 5.52
PROPOSED 5.37
100-YEAR ELEV.
EXISTING 6.46
PROPOSED 5.64
0+00
1+00
2+00
3+00
3+50
4+00
4+46
1+25
EL. 1.50
EL. 2.00
EL. 2.50
EL. 3.00
EL. 3.50
EL. 4.00
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EL. 5.00
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RESTORATION AREA 1A				
Number	Radius	Length	STARTING STATION	END STATION
C21	12.11	9.91	0+04.1	0+14.0
C22	50.49	11.57	0+14.0	0+25.6
C23	86.61	34.64	0+72.3	1+07.0
C24	58.33	18.77	1+07.0	1+25.8
C25	33.23	43.61	1+49.1	1+92.9
C26	230.92	87.84	1+92.9	2+80.8
C27	112.47	58.72	3+29.3	3+89.1
C28	371.11	103.98	3+89.1	4+93.0
C29	633.52	130.08	4+93.0	6+23.1
C30	371.51	40.54	6+23.1	6+63.7

RESTORATION AREA 1B BOARDWALK				
Number	Radius	Length	STARTING STATION	END STATION
C13	89.36	157.68	0+36.8	2+04.6
C14	129.96	42.63	2+04.6	2+47.2
C15	85.33	50.00	3+04.7	3+54.7
C16	35.44	57.03	3+56.7	4+13.7
C17	113.22	25.49	4+48.6	4+74.0
C18	56.59	102.33	4+95.8	5+98.2
C19	71.46	59.48	6+34.1	6+93.5
C20	57.23	41.82	8+82.0	9+23.8

PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
20 0 10 20 40 60
(in feet)
1 INCH = 20 FEET

Revisions

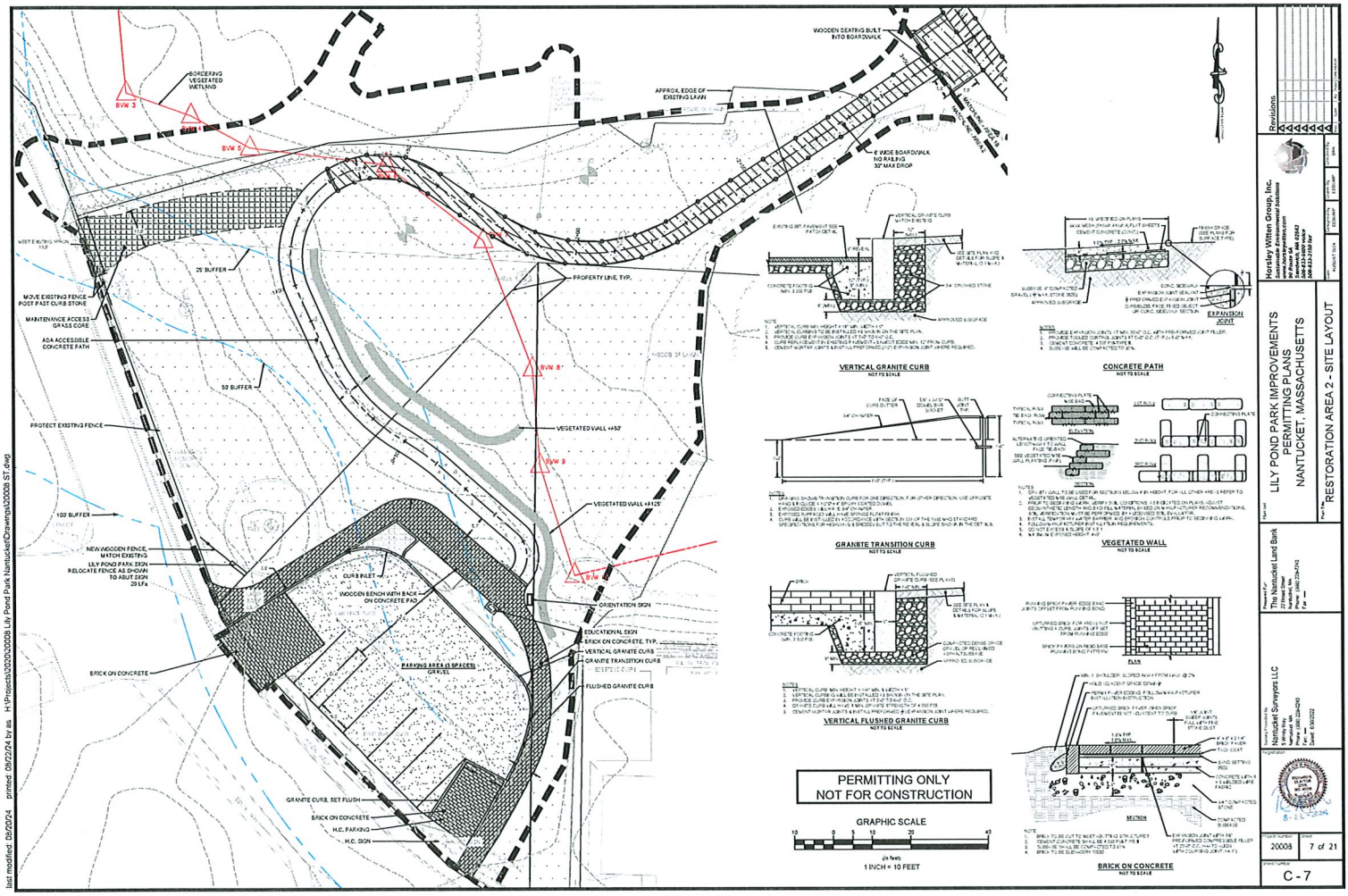
Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6600 tel
508-833-3150 fax

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS
Plan Title: RESTORATION AREA 1B - LAYOUT & GRADING

Prepared For: The Nantucket Land Bank
37 Main Street
Nantucket, MA
Phone: (508) 228-7240
Fax:

Surveyed & Prepared By: Nantucket Surveyors LLC
5 Amelia Way
Nantucket, MA
Phone: (508) 228-0840
Fax:
Dated: 6/30/2022

Project Number: 20008
Sheet: 6 of 21
Sheet Number: C - 6



Last Modified: 06/24/2026 at 9:48AM EDT

last modified: 06/20/24 printed: 06/22/24 by: ds H:\Projects\20008\20008 Lily Pond Park Nantucket\Drawings\20008-ST.dwg

Revisions

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6230 fax 508-833-3150
Project Mgr. | Designed | Drawn | Checked

Project Name: LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

Part Title: RESTORATION AREA 2 - SITE LAYOUT

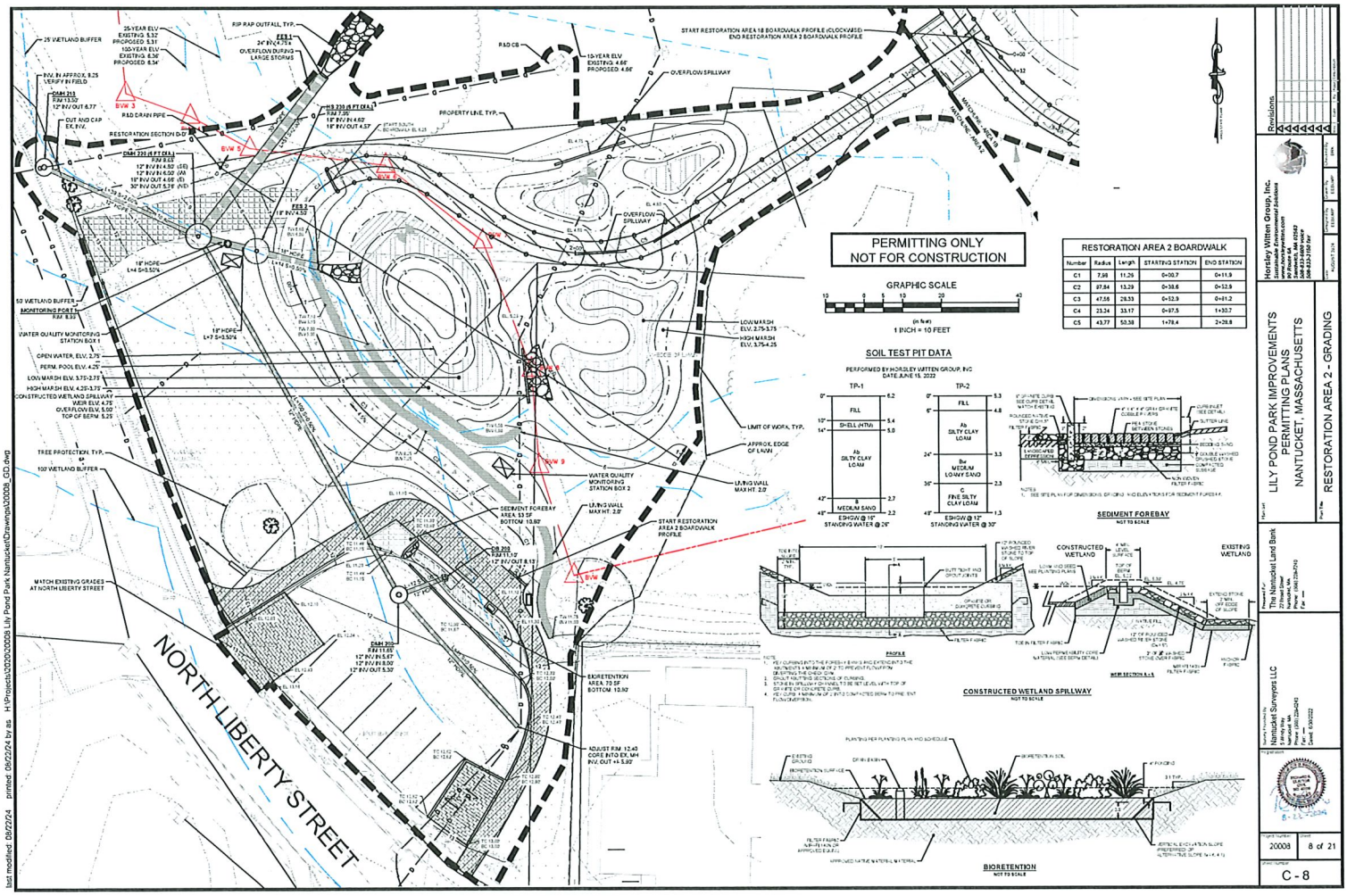
Prepared For: The Nantucket Land Bank
2 Bathing Beach Rd.
Nantucket, MA
Phone: (508) 228-7913
Fax: -

Prepared By: Nantucket Surveyors LLC
PO Box 1300
Nantucket, MA
Phone: (508) 228-2580
Date: 6/24/2022

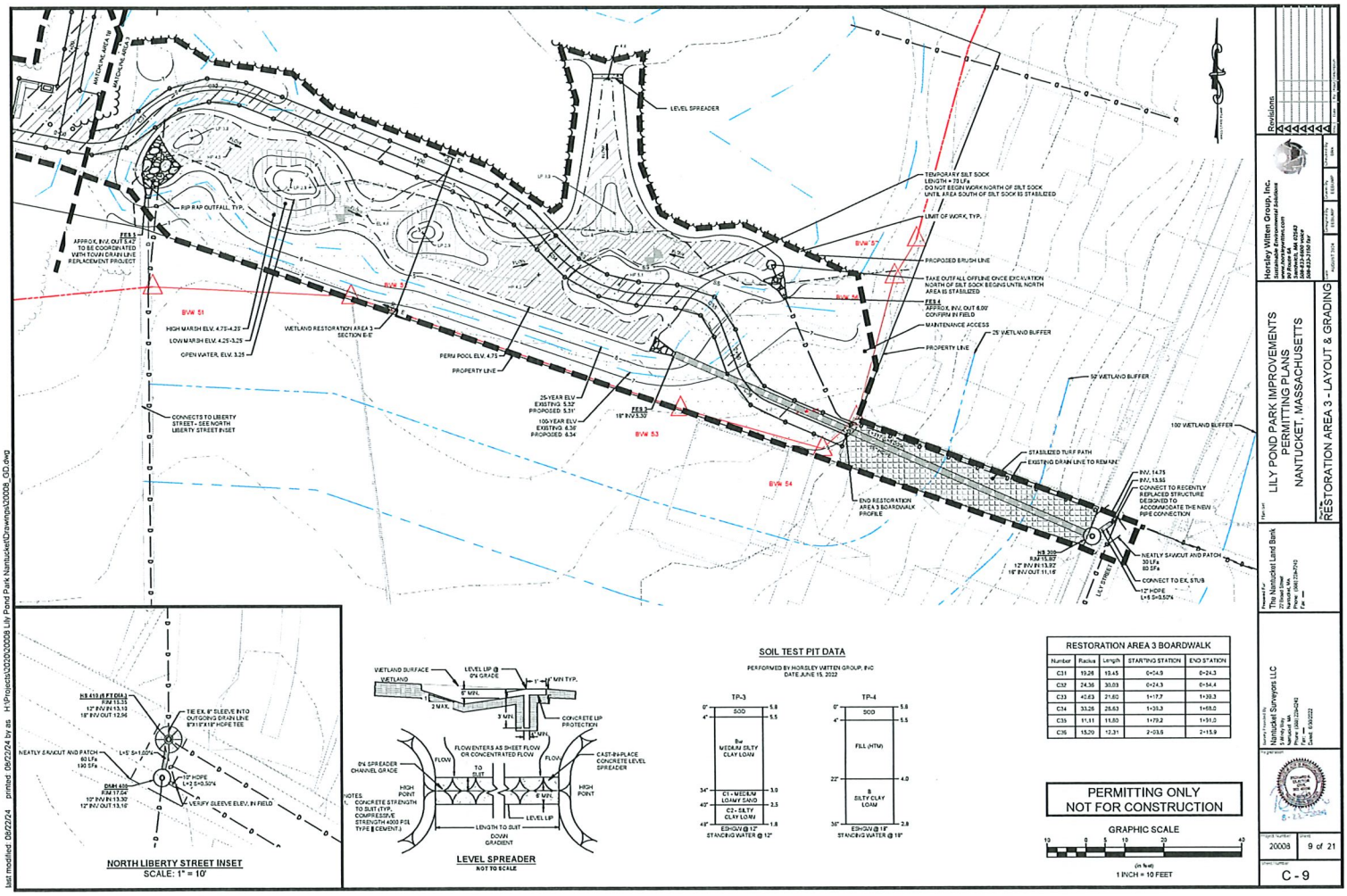
Registered Professional Engineer

Project Number: 20008
Sheet: 7 of 21

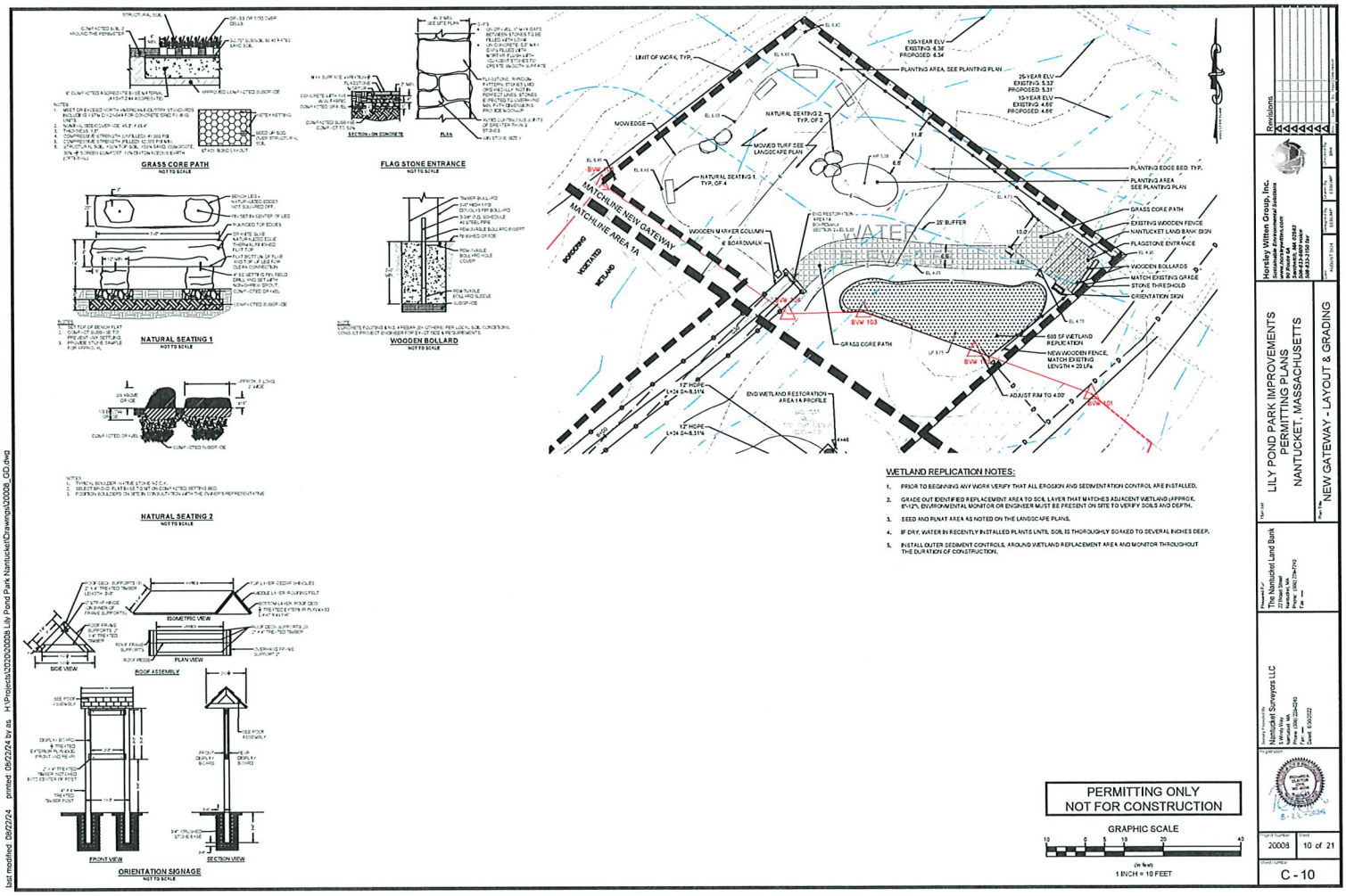
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last modified: 06/22/24 printed: 06/22/24 by: as H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008_GD.dwg



WETLAND REPLICATION NOTES:

1. PRIOR TO BEGINNING ANY WORK VERIFY THAT ALL EROSION AND SEDIMENTATION CONTROL ARE INSTALLED.
2. GRADE OUT IDENTIFIED REPLACEMENT AREA TO SOIL LAYER THAT MATCHES ADJACENT WETLAND (APPROX. 6"-12"). ENVIRONMENTAL MONITOR OR ENGINEER MUST BE PRESENT ON SITE TO VERIFY SOILS AND DEPTH.
3. SEED AND PLNAT AREA AS NOTED ON THE LANDSCAPE PLANS.
4. IF DRY, WATER IN RECENTLY INSTALLED PLANTS UNTIL SOIL IS THOROUGHLY SOAKED TO SEVERAL INCHES DEEP.
5. INSTALL OUTER SEDIMENT CONTROLS AROUND WETLAND REPLACEMENT AREA AND MONITOR THROUGHOUT THE DURATION OF CONSTRUCTION.

PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
10 0 5 10 20 40
(in feet)
1 INCH = 10 FEET

Revisions
1 6/24/2024 Per Town Comments

Hanley Witten Group, Inc.
Sustainable Environmental Solutions
www.hanleywitten.com
info@hanleywitten.com
Stoneham, MA 02180
(508) 833-3100 fax

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS
Part 1 NEW GATEWAY - LAYOUT & GRADING

Prepared for:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
Phone: (508) 228-7240
Fax: —

Nantucket Surveyors LLC
Surveying Plan
Nantucket, MA
Phone: (508) 228-2240
Dated: 6/30/2022

Land Surveyor Seal
Commonwealth of Massachusetts
Timothy J. Kelley
No. 49448
5-22-2024

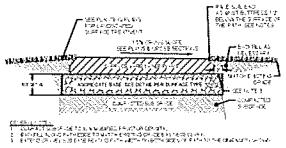
Job Number 20008
Sheet 10 of 21
Drawing Number C - 10

Last Modified: 06/24/2026 at 9:48AM EDT
last modified: 06/22/24 printed: 06/22/24 by: as H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008_GD.dwg

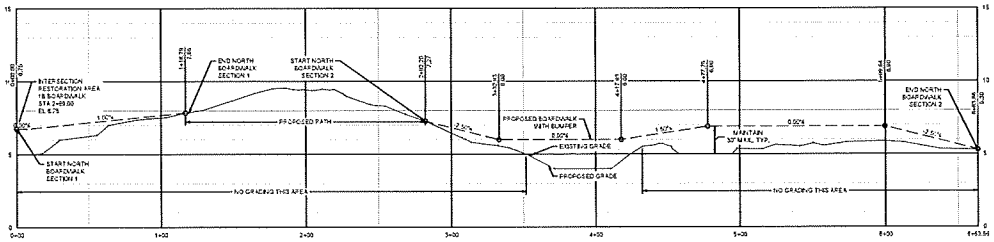
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BOARDWALK NOTES

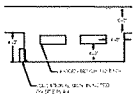
1. BOARDWALK SHALL BE NO MORE THAN 30" ABOVE FINISHED GRADE.
2. SLOPED SECTIONS OF BOARDWALK SHALL HAVE A MAXIMUM GRADE OF 2.50%.



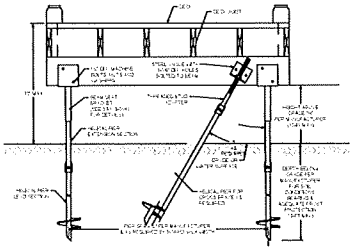
PROPOSED PATH SECTION
NOT TO SCALE



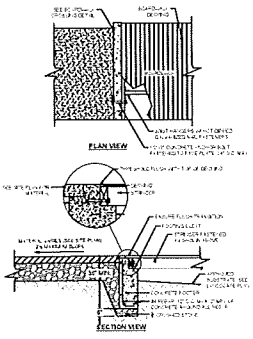
CENTERLINE PROFILE - RESTORATION AREA 1A BOARDWALK
HORIZONTAL SCALE 1" = 32'
VERTICAL SCALE 1" = 3'



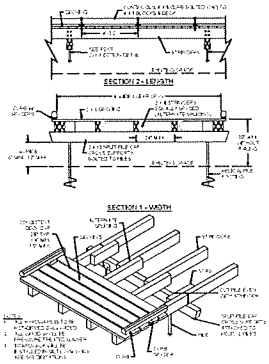
BOARDWALK BUMPOUT DETAIL
NOT TO SCALE



BOARDWALK HELICAL PILE FOUNDATION
NOT TO SCALE



BOARDWALK TRANSITION
NOT TO SCALE



BOARDWALK FRAMING
NOT TO SCALE

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Revisions
A

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6230
508-833-3150 fax

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

Sheet Title: BOARDWALK PROFILES AND DETAILS

Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
Phone: (508) 228-7240
Fax:

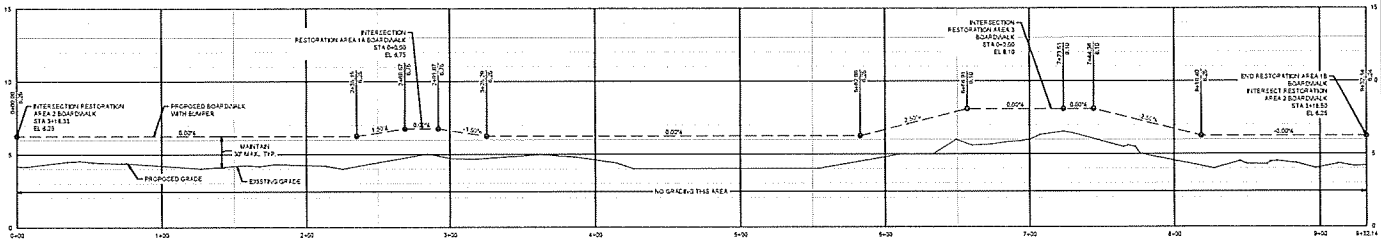
Surveyor:
Nantucket Surveyors LLC
PO Box 1164
Nantucket, MA
Phone: (508) 228-0040
Fax:
Dated: 6/06/2022

Project No. 20008
Sheet 11 of 21
Sheet No. C - 11

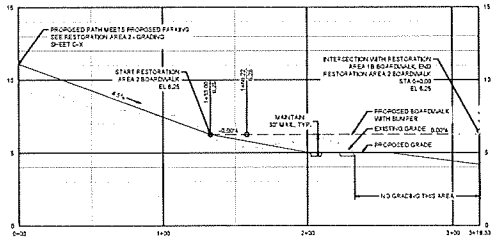
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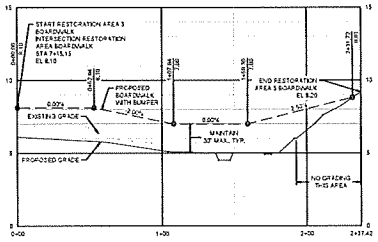
1. BOARDWALK SHALL BE NO MORE THAN 30" ABOVE FINISHED GRADE.
2. CLOSED SECTION OF BOARDWALK SHALL HAVE A MAXIMUM GRADE OF 2.50%.



CENTERLINE PROFILE - RESTORATION AREA 1B BOARDWALK
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 3'



CENTERLINE PROFILE - RESTORATION AREA 2 BOARDWALK
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 3'



CENTERLINE PROFILE - RESTORATION AREA 3 BOARDWALK
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 3'

PERMITTING PLAN ONLY
NOT FOR CONSTRUCTION

Revisions:

Hanley Wilcox Group, Inc.
Sustainable Environmental Solutions
www.hanleywilcox.com
508-833-6646
508-833-7150 fax

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

BOARDWALK PROFILES

Prepared for
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
Phone: (508) 228-7240
Fax: ---

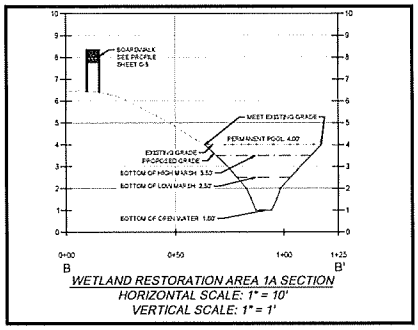
Nantucket Surveyors LLC
3 Amelia Ave
Nantucket, MA
Phone: (508) 228-0240
Fax: ---
Dated: 6/30/2022

20008 | 12 of 21

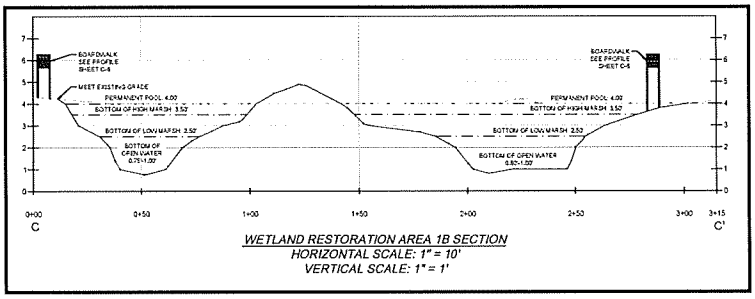
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Last Modified: 06/24/2026 at 9:48AM EDT

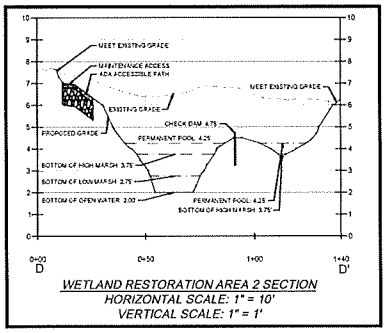
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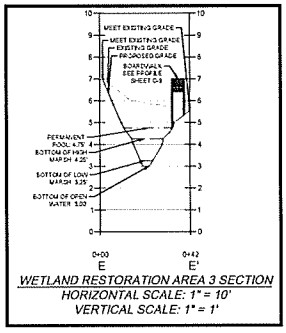
WETLAND RESTORATION AREA 1A SECTION
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 1'



WETLAND RESTORATION AREA 1B SECTION
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 1'



WETLAND RESTORATION AREA 2 SECTION
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 1'



WETLAND RESTORATION AREA 3 SECTION
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 1'

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NOT FOR CONSTRUCTION

GRAPHIC SCALE
20 0 10 20 40 80
(in feet)
1 INCH = 20 FEET

Revisions

Hornsby Witten Group, Inc.
Natural Resource Consultants
www.hornsbywitten.com
380 Main Street
Sandwich, MA 02563
508-833-6600 tel
508-833-3150 fax

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

WETLAND RESTORATION SECTIONS

Prepared For:
The Nantucket Land Bank
22 Broad Street
P.O. Box 1536
Nantucket, MA 02554
Phone: (508) 228-7763
Fax: ---

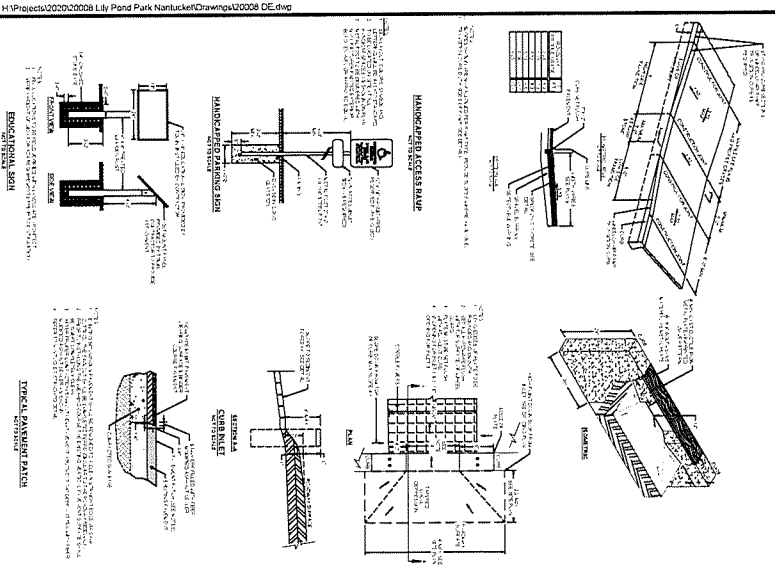
Prepared By:
Nantucket Surveyors LLC
3 Amy Way
Nantucket, MA 02554
Phone: (508) 228-0403
Fax: ---
Dated: 4/30/2023

20008

13 of 21

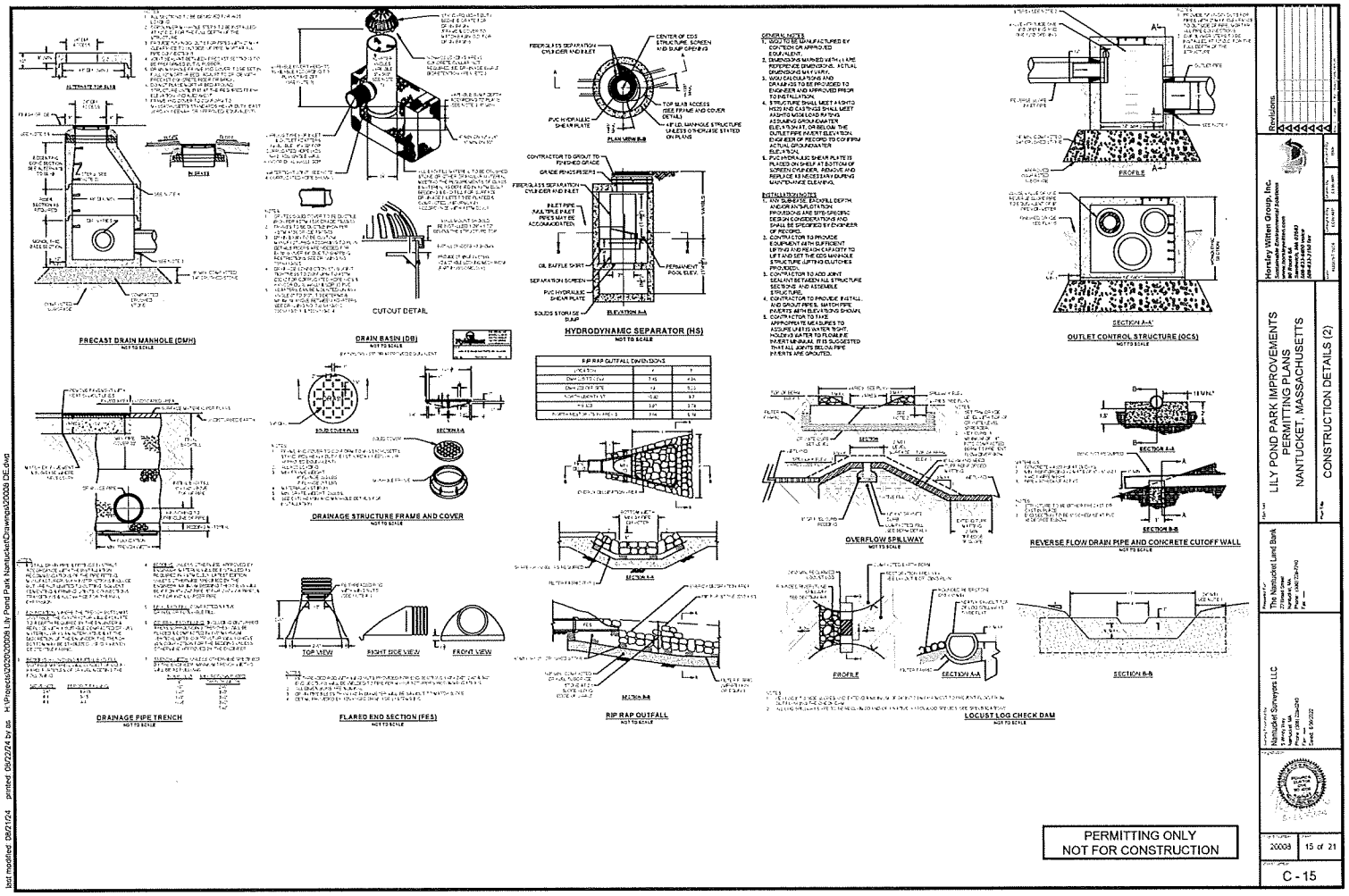
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C - 14	20008	14 of 21	Survey Furnished By: Nantucket Surveyors LLC, 5 Windy Way, Nantucket, MA, Phone: (508) 228-0240, Fax: ---, Dated: 6/30/2023	Prepared For: The Nantucket Land Bank, 22 Broad Street, Nantucket, MA, Phone: (508) 228-7240, Fax: ---	Main Title: LILY POND PARK IMPROVEMENTS PERMITTING PLANS NANTUCKET, MASSACHUSETTS Plan Title: CONSTRUCTION DETAILS (1)	Horsley Witten Group, Inc. Sustainable Environmental Solutions www.horsleywitten.com 90 Route 6A Sandwich, MA 02563 508-833-6600 voice 508-833-3150 fax Date: AUGUST 2024	Revisions 1 ..... 2 ..... 3 ..... 4 ..... 5 ..... 6 .....



Last Modified: 06/24/2026 at 9:48AM EDT

last modified: 06/21/24 printed: 06/23/24 by: ras H:\Projects\20009\20009 Lily Pond Park Nantucket\Drawings\20009 DE.dwg

Revisions

Hanley Wilcox Group, Inc.
Sustainable Environmental Solutions
49 Prince St
Nantucket, MA 02554
(508) 228-2500 (phone)
(508) 228-2501 (fax)
www.hanleywilcox.com

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

CONSTRUCTION DETAILS (2)

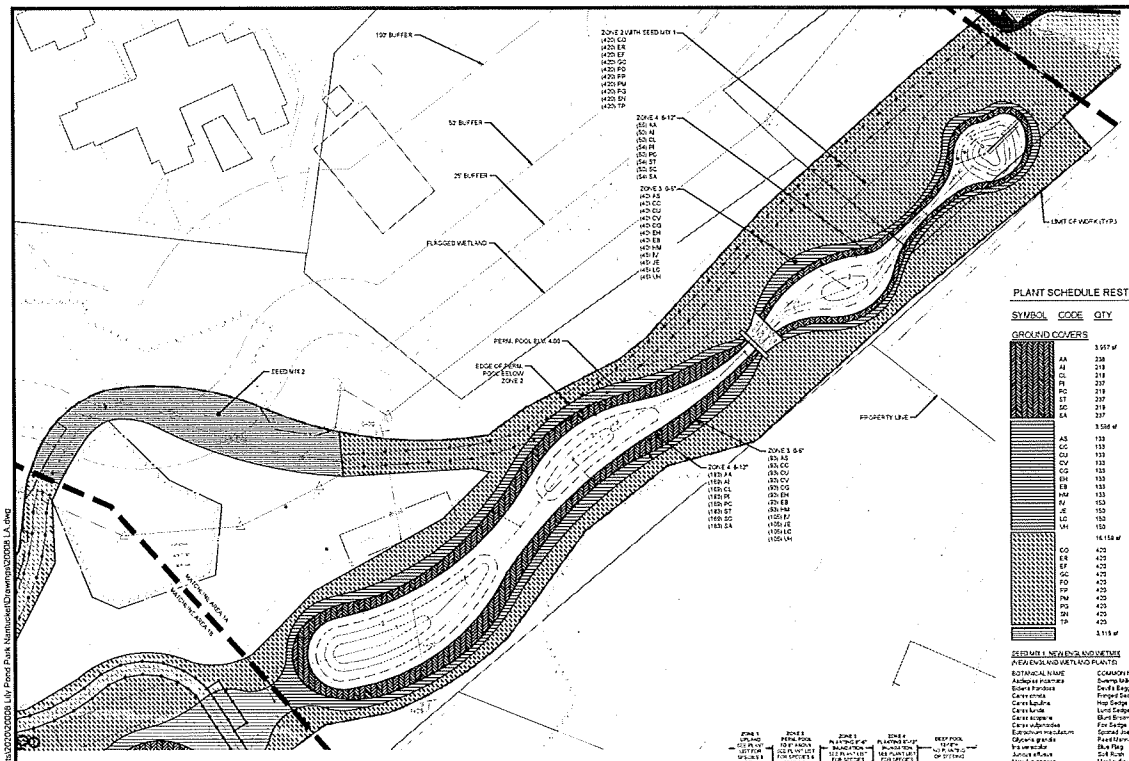
Prepared For:
The Nantucket Land Bank
2 Fairgrounds Road
Nantucket, MA
Phone: (508) 228-2760
Fax:

Prepared By:
Nantucket Surveyors LLC
PO Box 1
Nantucket, MA
Phone: (508) 228-2500
Email: 5/9/2022

Project No.
20009

Sheet No.
15 of 21

Drawing No.
C - 15



PLANT SCHEDULE RESTORATION AREA 1A

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
GROUND COVERS						
		3,997 sf	ZONE 4 6-12"			
	AA	238	Acorus americanus	Sweet Flag	Plugs	18" o.c.
	AI	219	Asclepias incarnata	Swamp Milkweed	Plugs	18" o.c.
	CL	218	Carex lurida	Lurid Sedge	Plugs	18" o.c.
	PS	237	Peltandra virginica	Arrow Arum	Plugs	18" o.c.
	PC	219	Pontederia cordata	Pickerel Weed	Plugs	18" o.c.
	ST	237	Schoenoplectus tabernaemontani	Softstem Bulrush	Plugs	18" o.c.
	SS	219	Scirpus cyperinus	Wool Grass	Plugs	18" o.c.
	SA	237	Sparganium americanum	Burreed	Plugs	18" o.c.
		3,584 sf	ZONE 3 0-6"			
	AS	153	Alisma subcordatum	American Water Plantain	Plugs	18" o.c.
	CC	153	Carex crinita	Fringed Sedge	Plugs	18" o.c.
	CU	153	Carex lupulina	Hop Sedge	Plugs	18" o.c.
	CV	153	Carex vulpinoidea	Fox Sedge	Plugs	18" o.c.
	GG	153	Glyceria grandis	White Tall-Aweed	Plugs	18" o.c.
	EH	153	Eupatorium hyssopifolium	Thoroughwort	Plugs	18" o.c.
	EB	153	Eupatorium perfoliatum	Common Boneset	Plugs	18" o.c.
	HM	153	Hibiscus moscheutos	Rose Mallow	Plugs	18" o.c.
	IV	153	Iris versicolor	Blue Flag	Plugs	18" o.c.
	JE	153	Juncus effusus	Soft Rush	Plugs	18" o.c.
	LC	153	Lobelia cardinalis	Cardinal Flower	Plugs	18" o.c.
	VH	153	Verbena hastata	Blue Vervain	Plugs	18" o.c.
		16,158 sf	ZONE 2 WITH SEED MIX 1			
	CG	423	Carex scoparia	Broom Sedge	Plugs	24" o.c.
	ER	423	Elymus riparius	Riverbank Rye	Plugs	24" o.c.
	EF	423	Eutrochium fistulosum	Hollow Joe Pye Weed	Plugs	24" o.c.
	GC	423	Gentiana clausa	Bottle Gentian	Plugs	24" o.c.
	PD	423	Panicum dichotomiflorum	Beardgrass	Plugs	24" o.c.
	PP	423	Poa palustris	Fowl Bluegrass	Plugs	24" o.c.
	PM	423	Pycnanthemum muticum	Blunt Mountainmint	Plugs	24" o.c.
	PG	423	Pycnanthemum virginianum	Mountain Mint	Plugs	24" o.c.
	SN	423	Symphyotrichum novae-angliae	New England Aster	Plugs	24" o.c.
	TP	423	Thelypteris palustris	Eastern Marsh Fern	Plugs	24" o.c.
		3,119 sf	SEED MIX 2			

SEED MIX 1: NEW ENGLAND WETMIX
(NEW ENGLAND WETLAND PLANTS)

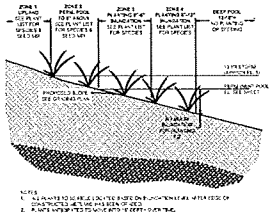
BOTANICAL NAME	COMMON NAME
Acalypha rhomboidea	Swamp Milkweed
Bidens frondosa	Devil's Beggarticks
Carex crinita	Fringed Sedge
Carex lupulina	Hop Sedge
Carex lurida	Lurid Sedge
Carex scoparia	Blunt Broom Sedge
Carex vulpinoidea	Fox Sedge
Eutrochium maculatum	Spotted Joe Pye Weed
Glyceria grandis	Reed Manna Grass
Iris versicolor	Blue Flag
Juncus effusus	Soft Rush
Mimulus ringens	Monkeyflower
Poa palustris	Fowl Bluegrass
Scirpus cyperinus	Dark Green Bulrush
Symphyotrichum lateriflorum	Calico Aster
Verbena hastata	Common Blue Vervain

SEED MIX 2: FESCUE MIX
(LAWN/HORTICULTURE)

BOTANICAL NAME	COMMON NAME
Deschampsia flexuosa	Wavy Hair Grass
Festuca glauca	Blue Fescue
Festuca ovina	Sheep Fescue
Festuca ovina glauca	Blue Sheep Fescue
Festuca rubra rubra	Red Fescue
Trifolium amoenum	Showy Indian Clover

PLANTING LAYOUT NOTES

1. FOR AREAS WITH MIXED PERENNIALS AND/OR GRASSES (SHOWN AS HATCHED AREAS ON PLANS), DO NOT PLANT IN A PATTERN OR WITH LARGE AREAS OF THE SAME SPECIES. PLANTS ONLY AS INDICATED ON THE PLANTING PLAN IN SMALL GROUPINGS OF THE SAME SPECIES TO CREATE A MORE NATURALISTIC APPEARANCE. PLANT THE SAME PLANT SPECIES IN GROUPS OF 9-12 AND NOT LARGER THAN 13, DEPENDING ON THE OVERALL NUMBER OF PLANTINGS.
2. AREAS SHOWN WITH ZONE 2 PLANTS / MATCHING TO BE SEEDED WITH SEED MIX 1.



PLANTING SECTION (INUNDATION LEVEL)
NOT TO SCALE

NOTES
1. ALL PLANTINGS ADJACENT TO WETLAND ENCROACHMENT AREA WITH EDGE OF PERMANENT POOL ELEVATION 4.00 FEET NGVD.
2. PLANTS WITHIN 25 FEET OF WETLANDS TO BE DEPT - SUB TYPE.

PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
20 0 10 20 40 60
(in feet)
1 INCH = 20 FEET

Revisions

Hanley Wilson Group, Inc.
Landscape Architecture & Environmental Services
www.hanleywilson.com
508-833-6600
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LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

RESTORATION AREA 1A - PLANTING

Prepared for:
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Prepared by:
Nantucket Surveyors LLC
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Phone: (508) 778-0410
Fax:
Date: 6/30/2022

20009
16 of 21
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PLANT SCHEDULE RESTORATION AREA 1B

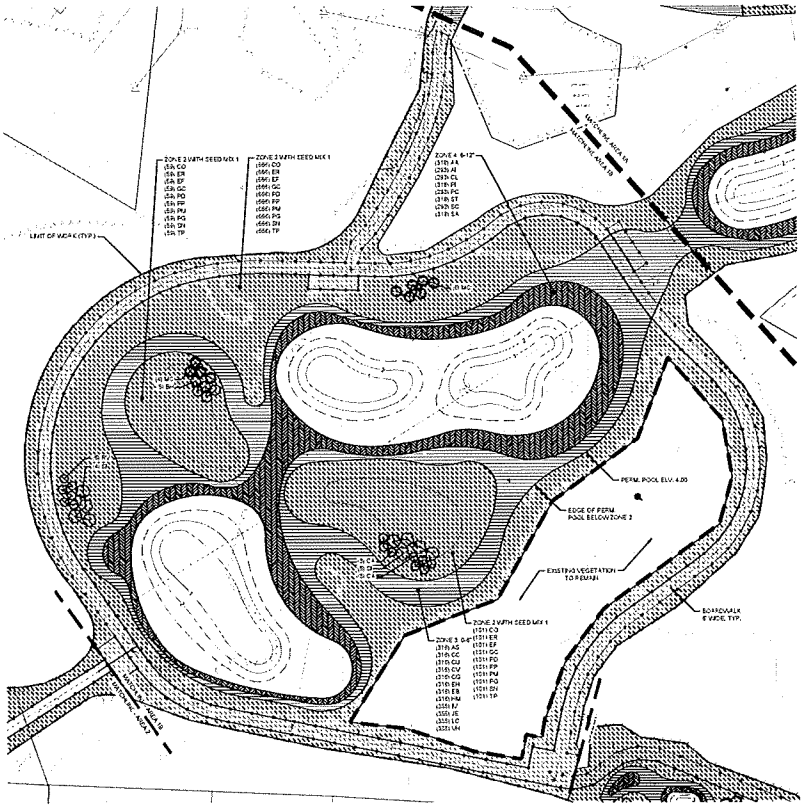
SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
SHRUBS						
	BH	5	Baccharis halimifolia	Groundsel Bush	5 gal.	60" o.c.
	CA	6	Clethra alnifolia	Summersweet	5 gal.	48" o.c.
	MC	15	Morella caroliniensis	Bayberry	5 gal.	60" o.c.
	RV	6	Rhododendron viscosum	Swamp Azalea	5 gal.	48" o.c.
	SI	6	Sambucus nigra	Black Elderberry	5 gal.	72" o.c.
GROUND COVERS						
		5,291 sf	ZONE 4 6-12"			
	AA	318	Acorus americanus	Sweet Flag	Plugs	18" o.c.
	AI	263	Asclepias incarnata	Swamp Milkweed	Plugs	18" o.c.
	CL	263	Carex lurida	Lurid Sedge	Plugs	18" o.c.
	PA	318	Peltandra virginica	Arrow Arum	Plugs	18" o.c.
	PC	263	Pontederia cordata	Pickerel Weed	Plugs	18" o.c.
	ST	318	Schoenoplectus tabernaemontani	Softstem Bulrush	Plugs	18" o.c.
	SC	263	Scirpus cyperinus	Wool Grass	Plugs	18" o.c.
	SA	318	Sparganium americanum	Burreed	Plugs	18" o.c.
		8,648 sf	ZONE 3 6-9"			
	AS	318	Alisma subcordatum	American Water Plantain	Plugs	18" o.c.
	CC	318	Carex crinita	Fringed Sedge	Plugs	18" o.c.
	CU	318	Carex lurida	Hop Sedge	Plugs	18" o.c.
	CV	318	Carex vulpinoidea	Fox Sedge	Plugs	18" o.c.
	CG	318	Chelone glabra	White Turtlehead	Plugs	18" o.c.
	EH	318	Eupatorium hyssopifolium	Thoroughwort	Plugs	18" o.c.
	EB	318	Eupatorium perfoliatum	Common Boneset	Plugs	18" o.c.
	HM	318	Hibiscus moscheutos	Rose Mallow	Plugs	18" o.c.
	IV	355	Iris versicolor	Blue Flag	Plugs	18" o.c.
	JE	355	Juncus effusus	Soft Rush	Plugs	18" o.c.
	LC	355	Lobelia cardinalis	Cardinal Flower	Plugs	18" o.c.
	VH	355	Verbena hastata	Blue Vervain	Plugs	18" o.c.
		31,790 sf	ZONE 2 WITH SEED MIX 1			
	CO	826	Carex scoparia	Broom Sedge	Plugs	24" o.c.
	ER	826	Elymus riparius	Riverbank Rye	Plugs	24" o.c.
	EF	826	Eutrochium fistulosum	Hollow Joe Pye Weed	Plugs	24" o.c.
	GC	826	Gentiana clausa	Bottle Gentian	Plugs	24" o.c.
	PD	826	Penstemon digitalis	Beardstongue	Plugs	24" o.c.
	PP	826	Poa palustris	Fowl Bluegrass	Plugs	24" o.c.
	PM	826	Pycnanthemum muticum	Blunt Mountainmint	Plugs	24" o.c.
	PO	826	Pycnanthemum virginianum	Mountain Mint	Plugs	24" o.c.
	SN	826	Symphyotrichum novae-angliae	New England Aster	Plugs	24" o.c.
	TP	826	Thelypteris palustris	Eastern Marsh Fern	Plugs	24" o.c.

SEED MIX 1: NEW ENGLAND WETIVE
(NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Asclepias incarnata	Swamp Milkweed
Bidens frondosa	Devil's Beggarticks
Carex crinita	Fringed Sedge
Carex lupulina	Hop Sedge
Carex lurida	Lurid Sedge
Carex stricta	Blunt Broom Sedge
Carex vulpinoidea	Fox Sedge
Eutrochium maculatum	Spotted Joe Pye Weed
Glyceria grandis	Reed Manna Grass
Iris versicolor	Blue Flag
Juncus effusus	Soft Rush
Mimulus ringens	Monkeyflower
Poa palustris	Fowl Bluegrass
Scirpus atrovirens	Dark Green Bulrush
Symphyotrichum laeve forma	Calico Aster
Verbena hastata forma	Common Vervain

PLANTING LAYOUT NOTES

1. FOR AREAS WITH MIXED PERENNIALS AND/OR GRASSES (SHOWN AS HATCHED AREAS ON PLANS), DO NOT PLANT IN A PATTERN OR WITH LARGE AREAS OF THE SAME SPECIES. IN GROWN PLANT AS INDICATED ON THE PLANTING PLANS INTO SMALL GROUPINGS OF THE SAME SPECIES TO CREATE A MORE NATURALISTIC APPEARANCE. PLANT THE SAME PLANT SPECIES IN GROUPS OF 8-12 AND NOT LARGER THAN 12, DEPENDING ON THE OVERALL NUMBER OF PLANTINGS.
2. AREAS SHOWN WITH ZONE 2 PLANTS HATCHING TO BE SEEDED WITH SEED MIX 1.



PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE

20 0 10 20 40 80

(in feet)
1 INCH = 20 FEET

Revisions						

Hanley Wilban Group, Inc.
Stormwater & Environmental Solutions
www.hwgpartners.com
49 Prince St.
Lakeville, MA 02347
(508) 923-3700 Fax

PROJECT NO.	DESIGNED	DRAWN	CHECKED

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

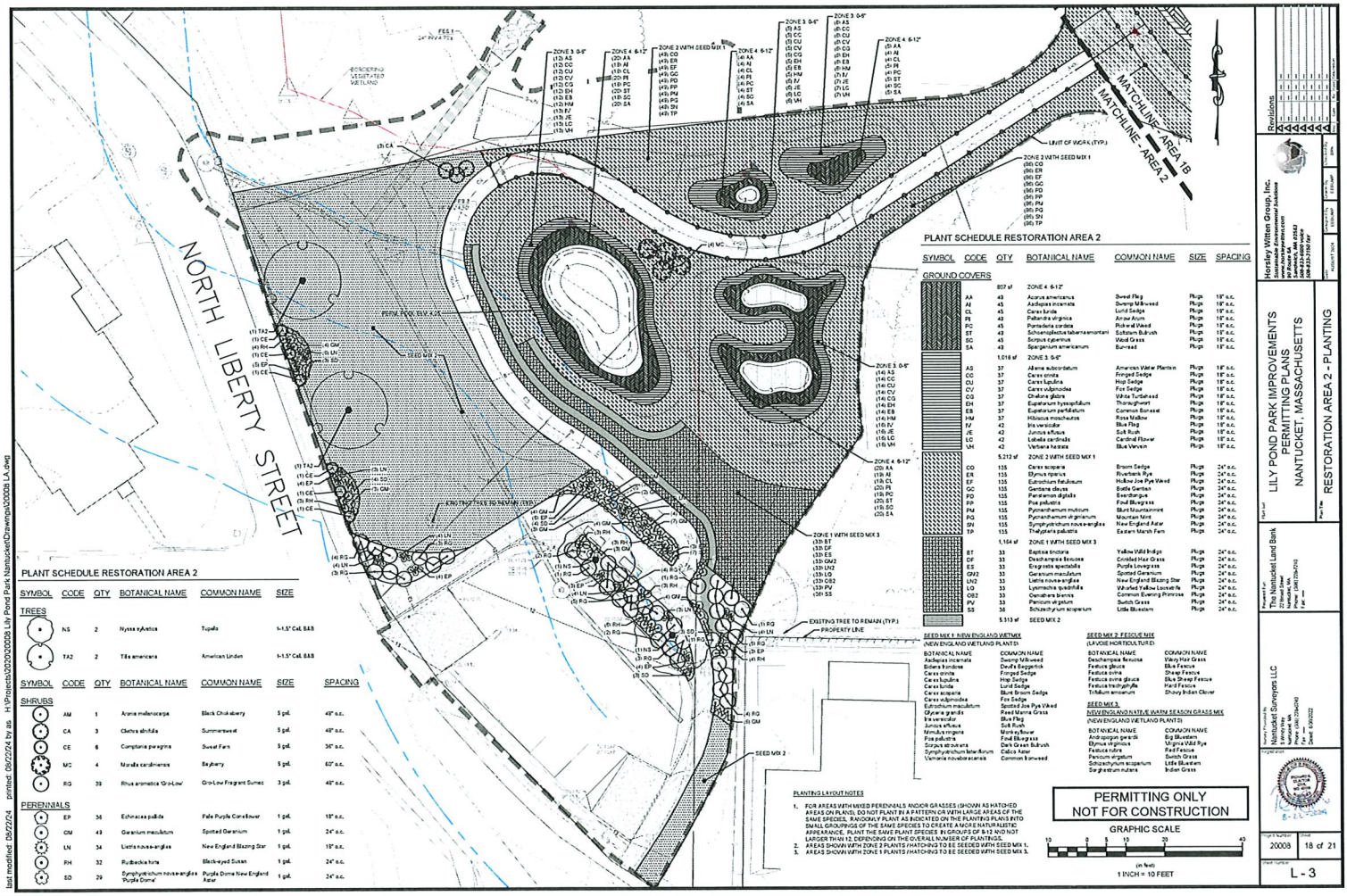
RESTORATION AREA 1B - PLANTING

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Attn:

Prepared by:
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P.O. Box 1184
Nantucket, MA
Phone: (508) 228-2400
Date: 6/24/2022

JOB NUMBER	SHEET
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PLANT SCHEDULE RESTORATION AREA 2

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE
TREES					
	NS	2	Nyssa sylvatica	Tupelo	1-1.5" Cal, B&B
	TA2	2	Tilia americana	American Linden	1-1.5" Cal, B&B
SHRUBS					
	AM	1	Aronia melanocarpa	Black Chokeberry	5 gal.
	CA	3	Clethra alnifolia	Summersweet	5 gal.
	CE	6	Comptonia peregrina	Sweet Fern	5 gal.
	MC	4	Morella cerifera	Bayberry	5 gal.
	RG	39	Rhus aromatica 'Gro-Low'	Gro-Low Fragrant Sumac	3 gal.
PERENNIALS					
	EP	36	Echinacea pallida	Pale Purple Coneflower	1 gal.
	GM	43	Geranium maculatum	Spotted Geranium	1 gal.
	LN	34	Liatris novae-angliae	New England Blazing Star	1 gal.
	RH	32	Rudbeckia hirta	Black-eyed Susan	1 gal.
	SD	29	Symphyotrichum novae-angliae 'Purple Dome'	Purple Dome New England Aster	1 gal.

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
	NS	2	Nyssa sylvatica	Tupelo	1-1.5" Cal, B&B	
	TA2	2	Tilia americana	American Linden	1-1.5" Cal, B&B	
	AM	1	Aronia melanocarpa	Black Chokeberry	5 gal.	48" o.c.
	CA	3	Clethra alnifolia	Summersweet	5 gal.	48" o.c.
	CE	6	Comptonia peregrina	Sweet Fern	5 gal.	36" o.c.
	MC	4	Morella cerifera	Bayberry	5 gal.	60" o.c.
	RG	39	Rhus aromatica 'Gro-Low'	Gro-Low Fragrant Sumac	3 gal.	48" o.c.
	EP	36	Echinacea pallida	Pale Purple Coneflower	1 gal.	18" o.c.
	GM	43	Geranium maculatum	Spotted Geranium	1 gal.	24" o.c.
	LN	34	Liatris novae-angliae	New England Blazing Star	1 gal.	18" o.c.
	RH	32	Rudbeckia hirta	Black-eyed Susan	1 gal.	24" o.c.
	SD	29	Symphyotrichum novae-angliae 'Purple Dome'	Purple Dome New England Aster	1 gal.	24" o.c.

PLANT SCHEDULE RESTORATION AREA 2

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
GROUND COVERS						
		807 sf	ZONE 4 6-12"			
	AA	49	Acorus americanus	Sweet Flag	Plugs	18" o.c.
	AI	45	Asclepias incarnata	Swamp Milkweed	Plugs	18" o.c.
	CL	45	Carex lurida	Lurid Sedge	Plugs	18" o.c.
	PA	49	Peltandra virginica	Arrow Arum	Plugs	18" o.c.
	PC	45	Pontederia cordata	Pickerel Weed	Plugs	18" o.c.
	ST	49	Schoenoplectus fallenianus tabernaemontani	Softstem Bulrush	Plugs	18" o.c.
	SC	45	Scirpus cyperinus	Wool Grass	Plugs	18" o.c.
	SA	49	Sparganium americanum	Burreed	Plugs	18" o.c.
		1,016 sf	ZONE 3 0-6"			
	AS	37	Alisma subcordatum	American Water Plantain	Plugs	18" o.c.
	CC	37	Carex crinita	Fringed Sedge	Plugs	18" o.c.
	CU	37	Carex lupulina	Hop Sedge	Plugs	18" o.c.
	CV	37	Carex vulpinoidea	Fox Sedge	Plugs	18" o.c.
	CG	37	Chelone glabra	White Turtlehead	Plugs	18" o.c.
	EH	37	Eupatorium hyssopifolium	Thoroughwort	Plugs	18" o.c.
	EB	37	Eupatorium perfoliatum	Common Boneset	Plugs	18" o.c.
	HM	37	Hibiscus moscheutos	Rose Mallow	Plugs	18" o.c.
	IV	42	Iris versicolor	Blue Flag	Plugs	18" o.c.
	JE	42	Juncus effusus	Soft Rush	Plugs	18" o.c.
	LC	42	Lobelia cardinalis	Cardinal Flower	Plugs	18" o.c.
	LH	42	Verbena hastata	Blue Vervain	Plugs	18" o.c.
		5,212 sf	ZONE 2 WITH SEED MIX 1			
	CO	135	Carex scoparia	Broom Sedge	Plugs	24" o.c.
	EN	135	Elymus riparius	Riverbank Rye	Plugs	24" o.c.
	EF	135	Eutrochium fistulosum	Hollow Joe Pye Weed	Plugs	24" o.c.
	GC	135	Gentiana clausa	Bottle Gentian	Plugs	24" o.c.
	PD	135	Panicum dichotomiflorum	Fall Panicgrass	Plugs	24" o.c.
	PP	135	Poa palustris	Fowl Bluegrass	Plugs	24" o.c.
	PM	135	Pycnanthemum muticum	Blunt Mountainmint	Plugs	24" o.c.
	PG	135	Pycnanthemum virginianum	Mountain Mint	Plugs	24" o.c.
	SN	135	Symphyotrichum novae-angliae	New England Aster	Plugs	24" o.c.
	TP	135	Thelypteris palustris	Eastern Marsh Fern	Plugs	24" o.c.
		1,164 sf	ZONE 1 WITH SEED MIX 3			
	BT	33	Baptisia tinctoria	Yellow Wild Indigo	Plugs	24" o.c.
	DF	33	Deschampsia flexuosa	Crinkled Hair Grass	Plugs	24" o.c.
	ES	33	Eragrostis spectabilis	Purple Lovegrass	Plugs	24" o.c.
	GM2	33	Geranium maculatum	Spotted Geranium	Plugs	24" o.c.
	LN2	33	Liatris novae-angliae	New England Blazing Star	Plugs	24" o.c.
	LO	33	Lysimachia quadrifolia	Whorled Yellow Loosestrife	Plugs	24" o.c.
	OB2	33	Oenothera biennis	Common Evening Primrose	Plugs	24" o.c.
	PV	33	Panicum virgatum	Switch Grass	Plugs	24" o.c.
	SS	36	Schizachyrium scoparium	Little Bluestem	Plugs	24" o.c.
		5,313 sf	SEED MIX 2			

SEED MIX 1: NEW ENGLAND WETMIX
(NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Asclepias incarnata	Swamp Milkweed
Bidens frondosa	Devil's Beggarticks
Carex crinita	Fringed Sedge
Carex lupulina	Hop Sedge
Carex lurida	Lurid Sedge
Carex scoparia	Blunt Broom Sedge
Carex vulpinoidea	Fox Sedge
Eutrochium maculatum	Spotted Joe Pye Weed
Glyceria grandis	Reed Manna Grass
Iris versicolor	Blue Flag
Juncus effusus	Soft Rush
Mimulus ringens	Monkey flower
Poa palustris	Fowl Bluegrass
Scirpus atrovirens	Dark Green Bulrush
Symphyotrichum lateriflorum	Calico Aster
Verbena novaboracensis	Common Ironweed

SEED MIX 2: FESCUE MIX
(LAYOIE HORTICULTURE)

BOTANICAL NAME	COMMON NAME
Deschampsia flexuosa	Wavy Hair Grass
Festuca glauca	Blue Fescue
Festuca ovina	Sheep Fescue
Festuca ovina glauca	Blue Sheep Fescue
Festuca trachyphylla	Hard Fescue
Trifolium amoenum	Showy Indian Clover

SEED MIX 3:
NEW ENGLAND NATIVE WARM SEASON GRASS MIX
(NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Andropogon gerardii	Big Bluestem
Elymus virginicus	Virginia Wild Rye
Festuca rubra	Red Fescue
Panicum virgatum	Switch Grass
Schizachyrium scoparium	Little Bluestem
Sorghastrum nutans	Indian Grass

Revisions

1	08/22/24	Per Town Comments

Hornley Witten Group, Inc.
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www.hornleywitten.com
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LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

Plan Title: RESTORATION AREA 2 - PLANTING

Sheet List

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Survey Prepared By:
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Phone: (508) 228-2440
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Dated: 6/30/2022

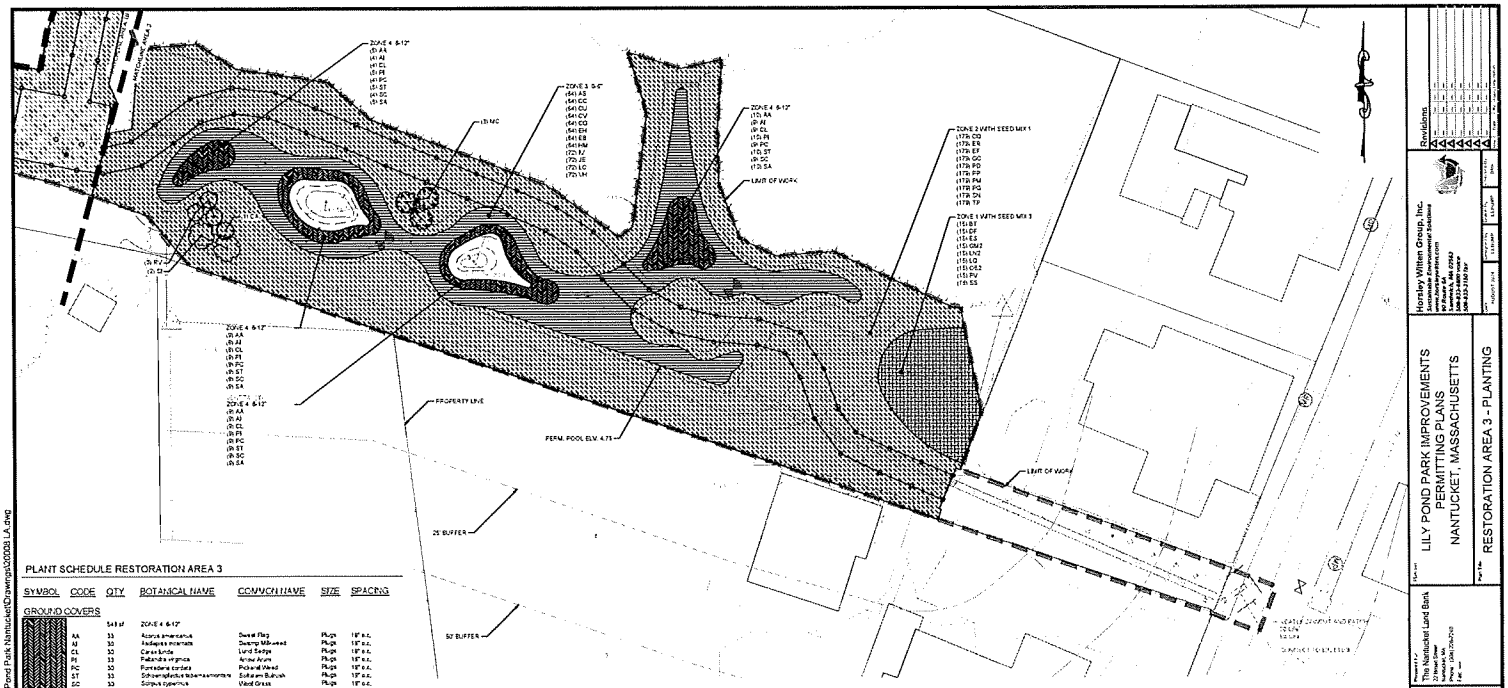
Registered Professional Engineer

Job Number: 20008
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PLANT SCHEDULE RESTORATION AREA 3

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
GROUND COVERS						
		549 sf	ZONE 4 6-12"			
	AA	33	Acorus americanus	Sweet Flag	Plugs	18" o.c.
	AE	33	Asclepias incarnata	Swamp Milkweed	Plugs	18" o.c.
	CL	33	Carex lurida	Lurid Sedge	Plugs	18" o.c.
	PR	33	Peltandra virginica	Arrow Arum	Plugs	18" o.c.
	PC	33	Pontederia cordata	Pickerel Weed	Plugs	18" o.c.
	ST	33	Schoenoplectus tabernaemontani	Softstem Bulrush	Plugs	18" o.c.
	SC	33	Scirpus cyperinus	Wool Grass	Plugs	18" o.c.
	SA	33	Sparganium americanum	Bur-reed	Plugs	18" o.c.
		1,743 sf	ZONE 3 3-6"			
	AS	64	Alisma subcordatum	American Water Plantain	Plugs	18" o.c.
	CC	64	Carex crinita	Fringed Sedge	Plugs	18" o.c.
	CU	64	Carex lupulina	Hop Sedge	Plugs	18" o.c.
	CV	64	Carex vulpinoidea	Fox Sedge	Plugs	18" o.c.
	EH	64	Chelone glabra	White Turtlehead	Plugs	18" o.c.
	EB	64	Eupatorium hyssopifolium	Thoroughwort	Plugs	18" o.c.
	EB	64	Eupatorium perfoliatum	Common Boneset	Plugs	18" o.c.
	HM	64	Hibiscus moscheutos	Rose Mallow	Plugs	18" o.c.
	IV	72	Iris versicolor	Blue Flag	Plugs	18" o.c.
	JE	72	Juncus effusus	Soft Rush	Plugs	18" o.c.
	LC	72	Lobelia cardinalis	Cardinal Flower	Plugs	18" o.c.
	VH	72	Verbena hastata	Blue Vervain	Plugs	18" o.c.
		6,605 sf	ZONE 2 WITH SEED MIX 1			
	CG	179	Carex scoparia	Broom Sedge	Plugs	24" o.c.
	ER	179	Elymus riparius	Riverbank Rye	Plugs	24" o.c.
	EF	179	Eutrochium fistulosum	Hollow Joe Pye Weed	Plugs	24" o.c.
	GC	179	Gentiana clausa	Bottle Gentian	Plugs	24" o.c.
	PD	179	Panicum dignitis	Beardgrass	Plugs	24" o.c.
	PP	179	Poa palustris	Fowl Bluegrass	Plugs	24" o.c.
	PM	179	Pycnanthemum muticum	Blunt Mountainmint	Plugs	24" o.c.
	PG	179	Pycnanthemum virginianum	Mountain Mint	Plugs	24" o.c.
	SH	179	Symphyotrichum novae-angliae	New England Aster	Plugs	24" o.c.
	TP	179	Thalictrum pubescens	Eastern Meadow Rue	Plugs	24" o.c.
		5,25 sf	ZONE 1 WITH SEED MIX 3			
	BT	15	Baptisia tinctoria	Yellow Wild Indigo	Plugs	24" o.c.
	CE	15	Chamaecrista fasciculata	Combed Hair Grass	Plugs	24" o.c.
	CS	15	Eragrostis spectabilis	Purple Lovegrass	Plugs	24" o.c.
	GM2	15	Geranium maculatum	Spotted Geranium	Plugs	24" o.c.
	LN2	15	Liatris novae-angliae	New England Blazing Star	Plugs	24" o.c.
	LO	15	Lysimachia quadrifolia	Whorled Yellow Loosestrife	Plugs	24" o.c.
	O42	15	Oenothera biennis	Common Evening Primrose	Plugs	24" o.c.
	PV	15	Panicum virgatum	Switch Grass	Plugs	24" o.c.
	SS	15	Schizachyrium scoparium	Little Bluestem	Plugs	24" o.c.

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
SHRUBS						
	CA	1	Clethra alnifolia	Summersweet	5 gal.	48" o.c.
	MC	3	Morella pensylvanica	Bayberry	5 gal.	60" o.c.
	RV	3	Rhododendron viscosum	Swamp Azalea	5 gal.	48" o.c.
	SI	2	Sambucus nigra	Black Elderberry	5 gal.	72" o.c.

SEED MIX 1 NEW ENGLAND WETMIX (NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Asclepias incarnata	Swamp Milkweed
Bidens frondosa	Devil's Beggartick
Carex crinita	Fringed Sedge
Carex lupulina	Hop Sedge
Carex lurida	Lurid Sedge
Carex scoparia	Blunt Broom Sedge
Carex vulpinoidea	Fox Sedge
Eutrochium maculatum	Spotted Joe Pye Weed
Glyceria grandis	Reed Manna Grass
Iris versicolor	Blue Flag
Juncus effusus	Soft Rush
Mimulus ringens	Monkey flower
Poa palustris	Fowl Bluegrass
Scirpus atrovirens	Dark Green Bulrush
Symphyotrichum lateriflorum	Calico Aster
Verbena novaboracensis	Common Ironweed

SEED MIX 3
NEW ENGLAND NATIVE WARM SEASON GRASS MIX
(NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Andropogon gerardii	Big Bluestem
Elymus virginicus	Virginia Wild Rye
Festuca rubra	Red Fescue
Panicum virgatum	Switch Grass
Schizachyrium scoparium	Little Bluestem
Sorghastrum nutans	Indian Grass

PLANTING LAYOUT NOTES

1. FOR AREAS WITH MIXED PERENNIALS AND/OR GRASSES SHOWN AS HATCHED AREAS ON PLANS, DO NOT PLANT IN A PATTERN OR WITH LARGE AREAS OF THE SAME SPECIES. RANDOMLY PLANT AS INDICATED ON THE PLANTING PLANS INTO SMALL GROUPINGS OF THE SAME SPECIES TO CREATE A MORE NATURALISTIC APPEARANCE. PLANT THE SAME PLANT SPECIES IN GROUPS OF 9-12 AND NOT LARGER THAN 12, DEPENDING ON THE OVERALL NUMBER OF PLANTINGS.
2. AREAS SHOWN WITH ZONE 2 PLANTS / HATCHING TO BE SEEDED WITH SEED MIX 1.
3. AREAS SHOWN WITH ZONE 1 PLANTS / HATCHING TO BE SEEDED WITH SEED MIX 3.

PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
10 0 5 10 20 40
(in feet)
1 INCH = 10 FEET

Revisions

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LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

RESTORATION AREA 3 - PLANTING

Prepared for:
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Nantucket, MA
Phone: (508) 228-2400
Email:
Date: 6/24/2022

20008

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Last Modified: 06/24/2026 at 9:48AM EDT

PLANT SCHEDULE GATEWAY

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
TREES						
	AR	3	Acer rubrum	Red Maple	1-1.5" Cal. B&B	
	NS	3	Nyssa sylvatica	Tupelo	1-1.5" Cal. B&B	
SHRUBS						
	AM	5	Aronia melanocarpa	Black Chokeberry	5 gal.	48" o.c.
	BH	2	Baccharis halimifolia	Groundsel Bush	5 gal.	60" o.c.
	CA	6	Clethra alnifolia	Summersweet	5 gal.	48" o.c.
	IG	6	Ilex glabra	Inkberry Holly	5 gal.	48" o.c.
GROUND COVERS						
		1,618 sf	ZONE 3 WITH SEED MIX 1			
	CO	47	Carex scoparia	Broom Sedge	Plugs	24" o.c.
	ER	47	Elymus riparius	Riverbank Rye	Plugs	24" o.c.
	EF	47	Eutrochium fistulosum	Hollow Joe Pye Weed	Plugs	24" o.c.
	GS	47	Gentiana clausa	Bottle Gentian	Plugs	24" o.c.
	PD	47	Panicum dichotomiflorum	Fall Panicgrass	Plugs	24" o.c.
	PP	47	Poa palustris	Fowl Bluegrass	Plugs	24" o.c.
	PM	47	Pycnanthemum muticum	Blunt Mountainmint	Plugs	24" o.c.
	PO	47	Pycnanthemum virginianum	Mountain Mint	Plugs	24" o.c.
	SN	47	Symphyotrichum novae-angliae	New England Aster	Plugs	24" o.c.
	TF	47	Thelypteris palustris	Eastern Marsh Fern	Plugs	24" o.c.
		1,433 sf	ZONE 1 WITH SEED MIX 3			
	BT	47	Baptisia tinctoria	Yellow Wild Indigo	Plugs	24" o.c.
	DF	47	Deschampsia flexuosa	Crinkled Hair Grass	Plugs	24" o.c.
	ES	47	Eragrostis spectabilis	Purple Lovegrass	Plugs	24" o.c.
	GM2	47	Geranium maculatum	Spotted Geranium	Plugs	24" o.c.
	LN2	47	Liatris novae-angliae	New England Blazing Star	Plugs	24" o.c.
	LG	47	Lysimachia quadrifolia	Whorled Yellow Loosestrife	Plugs	24" o.c.
	OB2	47	Oenothera biennis	Common Evening Primrose	Plugs	24" o.c.
	PV	47	Panicum virgatum	Switch Grass	Plugs	24" o.c.
	SS	51	Schizachyrium scoparium	Little Bluestem	Plugs	24" o.c.
		3,237 sf	SEED MIX 2			

SEED MIX 1: NEW ENGLAND WETMIX
(NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Asclepias incarnata	Swamp Milkweed
Bidens frondosa	Devil's Beggarticks
Carex crinita	Fringed Sedge
Carex lupulina	Hop Sedge
Carex lurida	Lurid Sedge
Carex scoparia	Blunt Broom Sedge
Carex stipmoides	Fox Sedge
Eutrochium maculatum	Spotted Joe Pye Weed
Glyceria grandis	Reed Manna Grass
Iris versicolor	Blue Flag
Juncus effusus	Soft Rush
Mimulus ringens	Monkeyflower
Poa palustris	Fowl Bluegrass
Scirpus atrovirens	Dark Green Bulrush
Symphyotrichum laeve flexum	Calico Aster
Verbena hastata scabra	Common Ironweed

SEED MIX 2: FESCUE MIX
(LAVOIE HORTICULTURE)

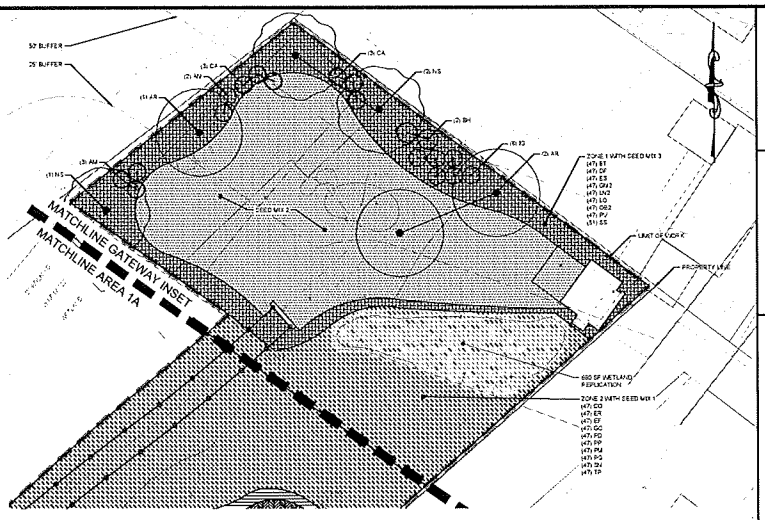
BOTANICAL NAME	COMMON NAME
Deschampsia flexuosa	Wavy Hair Grass
Festuca glauca	Blue Fescue
Festuca ovina	Sheep Fescue
Festuca ovina glauca	Blue Sheep Fescue
Festuca trachyphylla	Hard Fescue
Trifolium amoenum	Showy Indian Clover

SEED MIX 3: NEW ENGLAND NATIVE WARM SEASON GRASS MIX
(NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Andropogon gerardii	Big Bluestem
Elymus virginicus	Virginia Wild Rye
Festuca rubra	Red Fescue
Panicum virgatum	Switch Grass
Schizachyrium scoparium	Little Bluestem
Sorghastrum nutans	Indian Grass

PLANTING LAYOUT NOTES

1. FOR AREAS WITH MIXED PERENNIALS AND/OR GRASSES (SHOWN AS HATCHED AREAS ON PLANS), DO NOT PLANT IN A PATTERN OR WITH LARGE AREAS OF THE SAME SPECIES. RANDOMLY PLANT AS INDICATED ON THE PLANTING PLANS INTO SMALL GROUPINGS OF THE SAME SPECIES TO CREATE A MORE NATURALISTIC APPEARANCE. PLANT THE SAME PLANT SPECIES IN GROUPS OF 8-12 AND NOT LARGER THAN 12, DEPENDING ON THE OVERALL NUMBER OF PLANTINGS.



PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
10 0 5 10 20 40
(in feet)
1 INCH = 10 FEET

Revisions			

Hanley Wilten Group, Inc.
Landscape Architecture
Site Design
Environmental Consultation
Planning
45 Bowen St.
Providence, RI 02903
(401) 331-5300 (voice)
(401) 331-5301 (fax)
www.hanleywilten.com

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

NEW GATEWAY - PLANTING

Prepared for:
The Nantucket Land Bank
2 Bathing Beach Rd.
Nantucket, MA
Phone: (508) 228-7240
Fax:

Prepared by:
Nantucket Surveyors LLC
Surveyors
Land Planners
Nantucket, MA
Phone: (508) 228-0403
Fax:
Date: 6/20/2022

Project No.	Sheet No.
20008	20 of 21

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last modified: 06/22/24 printed: 06/22/24 by: as H:\Projects\20008\20008 Lily Pond Park Nantucket\Drawings\20008 LA.dwg

Last Modified: 06/24/2026 at 9:48AM EDT

last modified: 09/15/24 printed: 06/23/24 by: ss H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008 L-6 DE.dwg

GENERAL PLANTING NOTES:

1. THE FOLLOWING NOTES ARE PROVIDED AS GENERAL PLANTING GUIDELINES ONLY. THOROUGHLY REVIEW THE PROJECT SPECIFICATIONS FOR ALL LANDSCAPE REQUIREMENTS PRIOR TO THE COMMENCEMENT OF ANY LANDSCAPE WORK. SUBMIT IN WRITING TO THE LANDSCAPE ARCHITECT ANY QUESTIONS OR CLARIFICATIONS REQUIRED AT A MINIMUM OF 30 DAYS PRIOR TO ORDERING ANY MATERIALS OR BEGINNING ANY LANDSCAPE CONSTRUCTION.
2. SUBMIT TO THE LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL ALL REQUIRED LANDSCAPE SUBMITTALS AS DESCRIBED IN THE SPECIFICATIONS INCLUDING A PLANT LIST WITH PLANT SIZE AND QUANTITIES TO BE ORDERED PRIOR TO DELIVERY TO THE PROJECT SITE.
3. FURNISH AND INSTALL ALL PLANTS AS SHOWN ON THE DRAWINGS AND IN THE SIZE AND QUANTITIES SPECIFIED ON THE PLANTING SCHEDULE. PLANT SUBSTITUTION SELECTION MUST BE APPROVED BY BIOLOGIST OR LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
4. ALL PLANTS TO COMPLY WITH APPLICABLE REQUIREMENTS OF ANSI Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK" LATEST EDITION, PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION INC.
5. PLANTS TO BE GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT FOR AT LEAST TWO (2) YEARS. USE HEALTHY NURSERY GROWN PLANTS THAT HAVE A WELL DEVELOPED ROOT SYSTEM. PLANTS MUST BE FREE OF DISEASE, INSECTS, EGGS OR LARVAE.
6. INSTALL PLANTS WITHIN ONE (1) WEEK OF PURCHASE. IF PLANTS ARE TO BE STORED AT THE SITE PRIOR TO PLANTING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THEY ARE PROPERLY MAINTAINED, WATERED, AND REMAIN HEALTHY.
7. PROCEED WITH PLANTING ONLY WHEN EXISTING AND FORECASTED WEATHER CONDITIONS PERMIT. SUBMIT TO THE LANDSCAPE ARCHITECT IN WRITING THE PROPOSED PLANTING SCHEDULE. OBTAIN APPROVAL OF PLANTING SCHEDULE FROM THE LANDSCAPE ARCHITECT PRIOR TO PERFORMING ANY WORK.
8. SEASONS FOR PLANTING

SPRING	DECIDUOUS	APRIL 1 TO JUNE 15
	EVERGREEN	APRIL 1 TO JUNE 15
	PERENNIALS	APRIL 15 TO JUNE 1
	GROUNDCOVERS	APRIL 15 TO JUNE 1
FALL	DECIDUOUS	SEPTEMBER 15 TO NOVEMBER 15
	EVERGREEN	SEPTEMBER 15 TO NOVEMBER 15
	PERENNIALS	SEPTEMBER 15 TO NOVEMBER 15
	GROUNDCOVERS	SEPTEMBER 15 TO NOVEMBER 15
LIVE STAKES	PLANTS WHILE DORMANT FROM DECEMBER 1ST THROUGH MARCH 31ST	

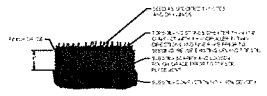
9. PLANTING UNDER FROZEN CONDITIONS WILL NOT BE PERMITTED. PLANTING BEFORE OR AFTER THE ABOVE REFERENCED PLANTING DATES WILL INCREASE THE LIKELIHOOD OF PLANT ESTABLISHMENT FAILURE. ANY DEVIATION FROM THE ABOVE REFERENCED PLANTING DATES IS UNDERTAKEN AT SOLE RISK OF THE CONTRACTOR AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ANY ADDITIONAL MAINTENANCE AND WATERING WHICH MAY BE REQUIRED TO ENSURE SATISFACTORY PLANT ESTABLISHMENT.
10. FURNISH ONE YEAR MANUFACTURER WARRANTY FOR TREES, PLANTS AND GROUND COVER AGAINST DEFECTS INCLUDING DEATH AND UNSATISFACTORY GROWTH, EXCEPTIONS ARE DEFECTS RESULTING FROM LACK OF ADEQUATE MAINTENANCE, NEGLECT OR ABUSE BY OWNER, OR ABNORMAL WEATHER CONDITIONS UNUSUAL FOR WARRANTY PERIOD. THE DATE OF FINAL ACCEPTANCE OF ALL COMPLETED PLANTING WORK ESTABLISHES THE END OF INSTALLATION AND INITIAL MAINTENANCE PERIOD AND THE COMMENCEMENT OF THE GUARANTEE PERIOD.
11. ALL TREES WITHIN 6'-0" OF WALKWAYS AND SIDEWALKS TO HAVE A 6'-8" STANDARD BRANCHING HEIGHT.
12. INSPECT ALL AREAS TO BE PLANTED OR SEEDED PRIOR TO STARTING ANY LANDSCAPE WORK. REPORT ANY DEFECTS SUCH AS INCORRECT GRADING, INCORRECT SUBGRADE ELEVATIONS OR DRAINAGE PROBLEMS, ETC. TO THE LANDSCAPE ARCHITECT AND ENGINEER PRIOR TO BEGINNING WORK. COMMENCEMENT OF WORK INDICATES ACCEPTANCE OF SUBGRADE AREAS TO BE PLANTED. AND THE LANDSCAPE CONTRACTOR ASSUMES RESPONSIBILITY FOR ALL LANDSCAPE WORK.
13. PROVIDE PROPER PREPARATION OF ALL PROPOSED PLANTED AND SEEDED AREAS PER THE NOTES AND SPECIFICATIONS.
14. ALL PLANT LAYOUT AND ACTUAL PLANTING LOCATIONS ARE TO BE FIELD VERIFIED BY LANDSCAPE ARCHITECT PRIOR TO PLANTING. NOTIFY THE LANDSCAPE ARCHITECT AT A MINIMUM OF 48 HOURS IN ADVANCE PRIOR TO SCHEDULING ANY FIELD INSPECTIONS.
15. BALL AND BURLAP: REMOVE BURLAP AND WIRE BASKETS FROM TOPS OF BALLS AND FROM TOP HALF OF FOOTBALL AS INDICATED ON DRAWINGS. REMOVE PALLETS, IF ANY, BEFORE SETTING.
16. POTTED PLANTS: REMOVE THE PLANT FROM THE POT AND LOOSEN OR SCORE THE ROOTS BEFORE PLANTING TO PROMOTE OUTWARDS ROOT GROWTH INTO THE SOIL.
17. PLUGS: PLANT UPRIGHT AND NOT AT AN ANGLE. DIG PLANTING HOLES LARGE ENOUGH AND DEEP ENOUGH TO ACCOMMODATE THE ENTIRE ROOT MASS. PLANT PLUGS WITH NO TWISTED OR BALLED ROOTS AND WITH NO ROOTS EXPOSED ABOVE THE GRADE LINE. HAND PACK THE SOIL AROUND THE ENTIRE PLUG ROOT MASS.
18. DIG THE TREE PLANTING HOLE TO THE SAME DEPTH AS THE ROOT BALL AND TWO TO THREE TIMES WIDER. SCORE ALL SIDES OF THE HOLE. PLACE THE PLANT IN THE HOLE SO THE TOP OF ROOT BALL IS EVEN WITH SOIL SURFACE. FILL THE HOLE HALFWAY AND THEN ADD WATER ALLOWING IT TO SEEP INTO BACK FILLED MATERIAL. BE SURE TO REMOVE ALL AIR POCKETS FROM BACK FILLED SOIL. DO NOT SPREAD SOIL ON TOP OF THE ROOTBALL. IF SOIL IS EXTREMELY POOR, REPLACE BACK FILL WITH GOOD QUALITY TOP SOIL. AMEND THE SOIL AS NECESSARY.
19. CREATE A 2" TO 4" BERM AROUND THE EDGE OF PLANTING HOLE WITH REMAINING SOIL TO RETAIN WATER.
20. REMOVE ALL PLANT TAGS AND FLAGS FROM THE PLANTS.
21. MULCH ALL PLANTING BEDS AS INDICATED ON DRAWINGS. UNLESS NOTED OTHERWISE, ALL PLANTS TO RECEIVE 3-3 INCHES OF MULCH. DO NOT PILE OR MOUND MULCH AROUND THE PLANT STEMS OR TRUNK.
22. TRIM BROKEN AND DEAD BRANCHES FROM TREES AND SHRUBS AFTER PLANTING. NEVER CUT A LEADER.
23. DO NOT USE NITROGEN CONTAINING FERTILIZERS, PESTICIDES OR CHEMICALS DURING PLANTING AND MAINTENANCE OF THE LANDSCAPING OR LAWN AREAS.

GENERAL SEEDING NOTES:

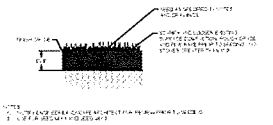
1. SEND A REPRESENTATIVE SAMPLE OF THE TOPSOIL TO A TESTING LABORATORY FOR STANDARD SOIL ANALYSIS AS DESCRIBED IN THE SPECIFICATIONS. SUBMIT TO THE LANDSCAPE ARCHITECT AND ENGINEER TEST RESULTS WITH RECOMMENDED SOIL TREATMENTS TO PROMOTE PLANT AND GRASS GROWTH. CORRECT DEFICIENCIES IN THE LOAM AND STOCKPILED TOPSOIL AS DIRECTED BY THE TESTING AGENCY.
2. ALL AREAS THAT ARE DISTURBED AND/OR GRADED DURING CONSTRUCTION ARE TO BE BROUGHT TO FINISHED GRADE WITH AT LEAST 4" MINIMUM DEPTH OF GOOD QUALITY LOAM AND SEEDED WITH A QUICK GERMINATING GRASS SEED SUCH AS NEW ENGLAND EROSION CONTROL RESTORATION MIX OR AS SPECIFIED ON THE PLANS.
3. PRIOR TO THE PLACEMENT OF TOP SOIL, LOOSEN THE SUBGRADE OF ALL PROPOSED SEEDED AREAS TO A DEPTH OF 8" AND RAKE TO REMOVE STONES LARGER THAN 1 INCH, STICKS, ROOTS, RUBBISH AND OTHER EXTRANEOUS MATTER AND LEGALLY DISPOSE TO AN OFF SITE LOCATION.
4. DO NOT SPREAD TOPSOIL IF THE SUBGRADE IS FROZEN, EXCESSIVELY WET, COMPACTED OR NOT PROPERLY PREPARED PER THE NOTES AND SPECIFICATIONS.
5. SEE SPECIFICATIONS FOR SEASONAL REQUIREMENTS FOR SEEDING.

WATERING NOTES:

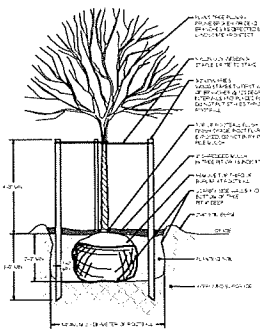
1. PROVIDE PROPER PLANT CARE, MAINTENANCE AND WATERING ON SITE UNTIL SUCH TIME AS THE LANDSCAPING IS ACCEPTED BY THE PROPERTY OWNER AS SATISFACTORY PER THE SPECIFICATIONS OR AS DETERMINED BY ANY WRITTEN AGREEMENTS BETWEEN THE CONTRACTOR AND PROPERTY OWNER.
2. ESTABLISH AN APPROPRIATE WATERING SCHEDULE FOR ALL PLANT MATERIAL BASED UPON PLANT SPECIES REQUIREMENTS AND SITE CONDITIONS. PROVIDE SCHEDULE IN WRITING TO THE LANDSCAPE ARCHITECT AND OWNER FOR REVIEW AND APPROVAL. ADHERE TO THE APPROVED SCHEDULE UNTIL PLANTS ARE FULLY ESTABLISHED.
3. AT A MINIMUM THE NEWLY SEEDED AND/OR HYDROSEEDED LAWNS SHOULD BE WATERED DAILY. SPECIAL CARE SHOULD BE TAKEN TO ENSURE THAT THE LAWN IS NOT SATURATED DURING WATERING. IF AN IRRIGATION SYSTEM IS NOT PROVIDED, USE A TEMPORARY IRRIGATION SYSTEM OR HAND-HELD GARDEN HOSE FOR WATERING SEEDED AREAS. THE AREA MUST BE MAINTAINED CONSISTENTLY MOIST FOR THE BEST GERMINATION RESULTS. ADDITIONAL WATERING MAY BE REQUIRED BY PLANTING AND SEEDING OCCUR OUTSIDE OF THE RECOMMENDED PLANTING SEASONS.



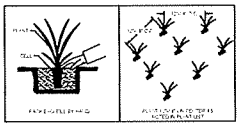
LOAM AND SEED - SEED MIX 2
NOTES SCALE



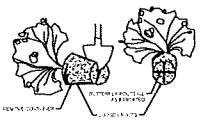
RESTORATION SEEDING - SEED MIXES 1 AND 3
NOTES SCALE



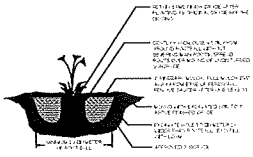
DECIDUOUS TREE PLANTING
NOTES SCALE



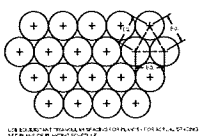
PERENNIAL PLUG PLANTING
NOTES SCALE



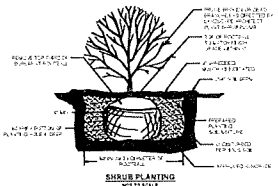
CONTAINER PLANT ROOTBALL TREATMENT
NOTES SCALE



PERENNIAL CONTAINER PLANTING
NOTES SCALE



PLANTING SPACING
NOTES SCALE



SHRUB PLANTING
NOTES SCALE

PERMITTING ONLY
NOT FOR CONSTRUCTION

Revisions					

Hanley Witten Group, Inc.
Sustainable Environmental Solutions
P.O. Box 1148
49 Pleasant Street
Nantucket, MA 02554
(508) 228-7474
(508) 332-7187 fax
www.hanleywitten.com

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

PLANTING DETAILS

Project for:
The Nantucket Land Bank
2 Fairgrounds Road
Nantucket, MA
Phone: (508) 228-2810
Fax: -

Prepared by:
Nantucket Surveyors LLC
Surveyor
Phone: (508) 228-2810
Cell: 6/9/2022

20008

21 of 21

L - 6

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
And the Town of Nantucket Wetlands Bylaw Chapter 136

Provided by MassDEP:
SE48- 3826
MassDEP File #

eDEP Transaction #

Nantucket
City/Town

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

11/22/24
1. Date of Issuance

Please indicate the number of members who will sign this form.
This Order must be signed by a majority of the Conservation Commission.

7
2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

Seth Engelbourg(C)

Linda Williams(VC)

Joe Plandowski

Mike Misurelli

Tim Braine

John Schafer

RJ Turcotte

☒ by hand delivery on

Date

☐ by certified mail, return receipt requested, on

Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request of Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

Last Modified: 06/24/2026 at 9:48AM EDT

Last Modified: 06/24/2026 at 9:48AM EDT

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
And the Town of Nantucket Wetlands Bylaw Chapter 136

Provided by MassDEP: SE48-3827
MassDEP File #

eDEP Transaction #

Nantucket
City/Town

A. General Information

1. From: Nantucket
Conservation Commission

2. This issuance is for (check one): a. ☒ Order of Conditions b. ☐ Amended Order of Conditions

3. To: Applicant:

Rachel (a. First Name) | Freeman (b. Last Name)

Nantucket Islands Land Bank
c. Organization

22 Broad Street
d. Mailing Address

Nantucket (e. City/Town) | MA (f. State) | 02554 (g. Zip Code)

4. Property Owner (if different from applicant):

a. First Name | b. Last Name

c. Organization

d. Mailing Address

e. City/Town | f. State | g. Zip Code

5. Project Location:

8 Wesco Place
a. Street Address

Nantucket
b. City/Town

42.3.4 & 42.4.3
c. Assessors Map/Plat Number

1 & 2.1; 47, 48, & 93
d. Parcel/Lot Number

Latitude and Longitude, if known: 41.28570N (d. Latitude) | 70.10493W (e. Longitude)

A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):

a. County	b. Certificate Number (if registered land)
Nantucket	
c. Book	**d. Page**
242, 320, 712, 1802	43, 204, 1, 74

7. Dates:

a. Date Notice of Intent Filed	b. Date Public Hearing Closed	c. Date of Issuance
October 24, 2024	November 21, 2024	November 22, 2024

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):

Lily Pond Improvement Plans
a. Plan Title

b. Prepared By	c. Signed and Stamped by
Horsey Witten Group, Inc	Richard A. Claytor, P.E
d. Final Revision Date	**e. Scale**
August 2024	various

f. Additional Plan or Document Title	g. Date

B. Findings

1. Findings pursuant to the Massachusetts Wetlands Protection Act:

Following the review of the above-referenced Notice of Intent and based on the information provided in this application and presented at the public hearing, this Commission finds that the areas in which work is proposed is significant to the following interests of the Wetlands Protection Act (the Act). Check all that apply:

a. ☒ Public Water Supply	b. ☒ Land Containing Shellfish	c. ☒ Prevention of Pollution
d. ☒ Private Water Supply	e. ☒ Fisheries	f. ☒ Protection of Wildlife Habitat
g. ☒ Groundwater Supply	h. ☒ Storm Damage Prevention	i. ☒ Flood Control
	j. ☒ Wetland Scenic Views (bylaw)	k. ☒ Recreation (Bylaw)

2. This Commission hereby finds the project, as proposed, is: (check one of the following boxes)

Approved subject to:

a. ☒ the following conditions which are necessary in accordance with the performance standards set forth in the wetlands regulations. This Commission orders that all work shall be performed in accordance with the Notice of Intent referenced above, the following General Conditions, and any other special conditions attached to this Order. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, these conditions shall control.

Last Modified: 06/24/2026 at 9:48AM EDT

B. Findings (cont.)

Denied because:

b. ☐ the proposed work cannot be conditioned to meet the performance standards set forth in the wetland regulations. Therefore, work on this project may not go forward unless and until a new Notice of Intent is submitted which provides measures which are adequate to protect the interests of the Act, and a final Order of Conditions is issued. **A description of the performance standards which the proposed work cannot meet is attached to this Order.**

c. ☐ the information submitted by the applicant is not sufficient to describe the site, the work, or the effect of the work on the interests identified in the Wetlands Protection Act. Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides sufficient information and includes measures which are adequate to protect the Act's interests, and a final Order of Conditions is issued. **A description of the specific information which is lacking and why it is necessary is attached to this Order as per 310 CMR 10.05(6)(c).**

3. ☒ Buffer Zone Impacts: Shortest distance between limit of project disturbance and the wetland resource area specified in 310 CMR 10.02(1)(a) — 0' (a. linear feet)

Inland Resource Area Impacts: Check all that apply below. (For Approvals Only)

Resource Area	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
4. ☐ Bank	a. linear feet	b. linear feet	c. linear feet	d. linear feet
5. ☒ Bordering Vegetated Wetland	694 a. square feet	694 b. square feet	754 c. square feet	754 d. square feet
6. ☐ Land Under Waterbodies and Waterways	a. square feet	b. square feet	c. square feet	d. square feet
	e. c/y dredged	f. c/y dredged		
7. ☐ Bordering Land Subject to Flooding	a. square feet	b. square feet	c. square feet	d. square feet
Cubic Feet Flood Storage	e. cubic feet	f. cubic feet	g. cubic feet	h. cubic feet
8. ☐ Isolated Land Subject to Flooding	a. square feet	b. square feet		
Cubic Feet Flood Storage	c. cubic feet	d. cubic feet	e. cubic feet	f. cubic feet
9. ☐ Riverfront Area	a. total sq. feet	b. total sq. feet		
Sq ft within 100 ft	c. square feet	d. square feet	e. square feet	f. square feet
Sq ft between 100-200 ft	g. square feet	h. square feet	i. square feet	j. square feet

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B. Findings (cont.)

Coastal Resource Area Impacts: Check all that apply below. (For Approvals Only)

	Proposed Alteration	Permitted Alteration	Proposed Replacement	Permitted Replacement
10. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. ☐ Land Under the Ocean	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
12. ☐ Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. ☐ Coastal Beaches	a. square feet	b. square feet	c. nourishment	cu yd d. nourishment
14. ☐ Coastal Dunes	a. square feet	b. square feet	cu yd c. nourishment	cu yd d. nourishment
15. ☐ Coastal Banks	a. linear feet	b. linear feet		
16. ☐ Rocky Intertidal Shores	a. square feet	b. square feet		
17. ☐ Salt Marshes	a. square feet	b. square feet	c. square feet	d. square feet
18. ☐ Land Under Salt Ponds	a. square feet	b. square feet		
	c. c/y dredged	d. c/y dredged		
19. ☐ Land Containing Shellfish	a. square feet	b. square feet	c. square feet	d. square feet
20. ☐ Fish Runs	Indicate size under Coastal Banks, Inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above			
	a. c/y dredged	b. c/y dredged		
21. ☐ Land Subject to Coastal Storm Flowage	a. square feet	b. square feet		

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B. Findings (cont.)

22. ☐ Restoration/Enhancement *:

a. square feet of BVW | b. square feet of salt marsh

23. ☐ Stream Crossing(s):

a. number of new stream crossings | b. number of replacement stream crossings

C. General Conditions Under Massachusetts Wetlands Protection Act

The following conditions are only applicable to Approved projects.

1. Failure to comply with all conditions stated herein, and with all related statutes and other regulatory measures, shall be deemed cause to revoke or modify this Order.
2. The Order does not grant any property rights or any exclusive privileges; it does not authorize any injury to private property or invasion of private rights.
3. This Order does not relieve the permittee or any other person of the necessity of complying with all other applicable federal, state, or local statutes, ordinances, bylaws, or regulations.
4. The work authorized hereunder shall be completed within three years from the date of this Order unless either of the following apply:
   a. the work is a maintenance dredging project as provided for in the Act; or
   b. the time for completion has been extended to a specified date more than three years, but less than five years, from the date of issuance. If this Order is intended to be valid for more than three years, the extension date and the special circumstances warranting the extended time period are set forth as a special condition in this Order.
5. This Order may be extended by the issuing authority for one or more periods of up to three years each upon application to the issuing authority at least 30 days prior to the expiration date of the Order.
6. If this Order constitutes an Amended Order of Conditions, this Amended Order of Conditions does not extend the issuance date of the original Final Order of Conditions and the Order will expire on **11/22/2027** unless extended in writing by the Department.
7. Any fill used in connection with this project shall be clean fill. Any fill shall contain no trash, refuse, rubbish, or debris, including but not limited to lumber, bricks, plaster, wire, lath, paper, cardboard, pipe, tires, ashes, refrigerators, motor vehicles, or parts of any of the foregoing.
8. This Order is not final until all administrative appeal periods from this Order have elapsed, or if such an appeal has been taken, until all proceedings before the Department have been completed.

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

9. No work shall be undertaken until the Order has become final and then has been recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land upon which the proposed work is to be done. In the case of the registered land, the Final Order shall also be noted on the Land Court Certificate of Title of the owner of the land upon which the proposed work is done. The recording information shall be submitted to the Conservation Commission on the form at the end of this Order, which form must be stamped by the Registry of Deeds, prior to the commencement of work.

10. A sign shall be displayed at the site not less then two square feet or more than three square feet in size bearing the words,

    "Massachusetts Department of Environmental Protection" [or, "MassDEP"]

    "File Number SE48-3827 "

11. Where the Department of Environmental Protection is requested to issue a Superseding Order, the Conservation Commission shall be a party to all agency proceedings and hearings before MassDEP.

12. Upon completion of the work described herein, the applicant shall submit a Request for Certificate of Compliance (WPA Form 8A) to the Conservation Commission.

13. The work shall conform to the plans and special conditions referenced in this order.

14. Any change to the plans identified in Condition #13 above shall require the applicant to inquire of the Conservation Commission in writing whether the change is significant enough to require the filing of a new Notice of Intent.

15. The Agent or members of the Conservation Commission and the Department of Environmental Protection shall have the right to enter and inspect the area subject to this Order at reasonable hours to evaluate compliance with the conditions stated in this Order, and may require the submittal of any data deemed necessary by the Conservation Commission or Department for that evaluation.

16. This Order of Conditions shall apply to any successor in interest or successor in control of the property subject to this Order and to any contractor or other person performing work conditioned by this Order.

17. Prior to the start of work, and if the project involves work adjacent to a Bordering Vegetated Wetland, the boundary of the wetland in the vicinity of the proposed work area shall be marked by wooden stakes or flagging. Once in place, the wetland boundary markers shall be maintained until a Certificate of Compliance has been issued by the Conservation Commission.

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

18. All sedimentation barriers shall be maintained in good repair until all disturbed areas have been fully stabilized with vegetation or other means. At no time shall sediments be deposited in a wetland or water body. During construction, the applicant or his/her designee shall inspect the erosion controls on a daily basis and shall remove accumulated sediments as needed. The applicant shall immediately control any erosion problems that occur at the site and shall also immediately notify the Conservation Commission, which reserves the right to require additional erosion and/or damage prevention controls it may deem necessary. Sedimentation barriers shall serve as the limit of work unless another limit of work line has been approved by this Order.

NOTICE OF STORMWATER CONTROL AND MAINTENANCE REQUIREMENTS

19. **The work associated with this Order (the "Project") is** (1) ☐ **is not** (2) ☒ **subject to the Massachusetts Stormwater Standards. If the work is subject to the Stormwater Standards, then the project is subject to the following conditions:**

a) All work, including site preparation, land disturbance, construction and redevelopment, shall be implemented in accordance with the construction period pollution prevention and erosion and sedimentation control plan and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Construction General Permit as required by Stormwater Condition 8. Construction period erosion, sedimentation and pollution control measures and best management practices (BMPs) shall remain in place until the site is fully stabilized.

b) No stormwater runoff may be discharged to the post-construction stormwater BMPs unless and until a Registered Professional Engineer provides a Certification that:
i. all construction period BMPs have been removed or will be removed by a date certain specified in the Certification. For any construction period BMPs intended to be converted to post construction operation for stormwater attenuation, recharge, and/or treatment, the conversion is allowed by the MassDEP Stormwater Handbook BMP specifications and that the BMP has been properly cleaned or prepared for post construction operation, including removal of all construction period sediment trapped in inlet and outlet control structures;
ii. as-built final construction BMP plans are included, signed and stamped by a Registered Professional Engineer, certifying the site is fully stabilized;
iii. any illicit discharges to the stormwater management system have been removed, as per the requirements of Stormwater Standard 10;
iv. all post-construction stormwater BMPs are installed in accordance with the plans (including all planting plans) approved by the issuing authority, and have been inspected to ensure that they are not damaged and that they are in proper working condition;
v. any vegetation associated with post-construction BMPs is suitably established to withstand erosion.

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

c) The landowner is responsible for BMP maintenance until the issuing authority is notified that another party has legally assumed responsibility for BMP maintenance. Prior to requesting a Certificate of Compliance, or Partial Certificate of Compliance, the responsible party (defined in General Condition 18(e)) shall execute and submit to the issuing authority an Operation and Maintenance Compliance Statement ("O&M Statement) for the Stormwater BMPs identifying the party responsible for implementing the stormwater BMP Operation and Maintenance Plan ("O&M Plan") and certifying the following: *i.*) the O&M Plan is complete and will be implemented upon receipt of the Certificate of Compliance, and *ii.*) the future responsible parties shall be notified in writing of their ongoing legal responsibility to operate and maintain the stormwater management BMPs and implement the Stormwater Pollution Prevention Plan.

d) Post-construction pollution prevention and source control shall be implemented in accordance with the long-term pollution prevention plan section of the approved Stormwater Report and, if applicable, the Stormwater Pollution Prevention Plan required by the National Pollution Discharge Elimination System Multi-Sector General Permit.

e) Unless and until another party accepts responsibility, the landowner, or owner of any drainage easement, assumes responsibility for maintaining each BMP. To overcome this presumption, the landowner of the property must submit to the issuing authority a legally binding agreement of record, acceptable to the issuing authority, evidencing that another entity has accepted responsibility for maintaining the BMP, and that the proposed responsible party shall be treated as a permittee for purposes of implementing the requirements of Conditions 18(f) through 18(k) with respect to that BMP. Any failure of the proposed responsible party to implement the requirements of Conditions 18(f) through 18(k) with respect to that BMP shall be a violation of the Order of Conditions or Certificate of Compliance. In the case of stormwater BMPs that are serving more than one lot, the legally binding agreement shall also identify the lots that will be serviced by the stormwater BMPs. A plan and easement deed that grants the responsible party access to perform the required operation and maintenance must be submitted along with the legally binding agreement.

f) The responsible party shall operate and maintain all stormwater BMPs in accordance with the design plans, the O&M Plan, and the requirements of the Massachusetts Stormwater Handbook.

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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

g) The responsible party shall:
1. Maintain an operation and maintenance log for the last three (3) consecutive calendar years of inspections, repairs, maintenance and/or replacement of the stormwater management system or any part thereof, and disposal (for disposal the log shall indicate the type of material and the disposal location);
2. Make the maintenance log available to MassDEP and the Conservation Commission ("Commission") upon request; and
3. Allow members and agents of the MassDEP and the Commission to enter and inspect the site to evaluate and ensure that the responsible party is in compliance with the requirements for each BMP established in the O&M Plan approved by the issuing authority.

h) All sediment or other contaminants removed from stormwater BMPs shall be disposed of in accordance with all applicable federal, state, and local laws and regulations.

i) Illicit discharges to the stormwater management system as defined in 310 CMR 10.04 are prohibited.

j) The stormwater management system approved in the Order of Conditions shall not be changed without the prior written approval of the issuing authority.

k) Areas designated as qualifying pervious areas for the purpose of the Low Impact Site Design Credit (as defined in the MassDEP Stormwater Handbook, Volume 3, Chapter 1, Low Impact Development Site Design Credits) shall not be altered without the prior written approval of the issuing authority.

l) Access for maintenance, repair, and/or replacement of BMPs shall not be withheld. Any fencing constructed around stormwater BMPs shall include access gates and shall be at least six inches above grade to allow for wildlife passage.

Special Conditions (if you need more space for additional conditions, please attach a text document):

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D. Findings Under Municipal Wetlands Bylaw or Ordinance

1. Is a municipal wetlands bylaw or ordinance applicable? ☒ Yes ☐ No

2. The Nantucket Conservation Commission hereby finds (check one that applies):

   a. ☐ that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

   1. Municipal Ordinance or Bylaw | 2. Citation

   Therefore, work on this project may not go forward unless and until a revised Notice of Intent is submitted which provides measures which are adequate to meet these standards, and a final Order of Conditions is issued.

   b. ☐ that the following additional conditions are necessary to comply with a municipal ordinance or bylaw:

   1. Municipal Ordinance or Bylaw | 2. Citation

3. The Commission orders that all work shall be performed in accordance with the following conditions and with the Notice of Intent referenced above. To the extent that the following conditions modify or differ from the plans, specifications, or other proposals submitted with the Notice of Intent, the conditions shall control.
   The special conditions relating to municipal ordinance or bylaw are as follows (if you need more space for additional conditions, attach a text document):
   Please view additional findings and conditions page(s)

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B1. Additional Conditions

The Town of Nantucket Conservation Commission has found it necessary to include these additional conditions as a standard part of every Order. If the condition applies, then the corresponding box will be checked:

☒ 1. Pursuant to General Condition Number 8, this Order of Conditions must be registered with the Registry of Deeds for Nantucket, and proof of recording shall be submitted to the Commission prior to the commencement of any work approved in this Order.

☒ 2. No work approved under this Order shall take place until all administrative appeal periods from the Order have elapsed, or, if an appeal has been filed, until all proceedings have been completed.

☒ 3. The landowner, applicant, and/or the contractor will notify the Commission in writing five days prior to the start of work. The letter shall state the name, address, and telephone number of the project supervisor who will be responsible for insuring onsite compliance with this Order. (All erosion/sedimentation control devices shall be installed BEFORE the start of work.)

☒ 4. Prior to any activity at the site, a snow fence, siltation fence or a line of straw bales shall be staked as shown on the plan of record. After the fence or straw bales are installed, notice shall be given to the Nantucket Conservation Commission. **No work shall begin on the site for 72 hours after said notice is given; so as to allow Commission members time to inspect all siltation devices.** The snow fence, siltation fence, or straw bale line erected to prevent siltation, erosion, filling of the wetland, and trap windblown debris during construction, will also serve as a limit of the activity for work crews. It shall remain in good repair during all phases of construction, and it shall not be removed until all soils are stabilized and revegetated or until permission to remove it is given by the Commission.

☒ 5. An as-built plan, signed and stamped by a registered professional engineer or land surveyor in the Commonwealth of Massachusetts and having the same scale as the final approved plans, shall be submitted to the Commission at the same time as a written request for a Certificate of Compliance, and shall specify how, if at all, the completed plan differs from the final approved plan. The as-built plan shall include, but not be limited to, the following: any/culvert inverts for inflow and outfalls; pipe slope, size, and composition; location of any other drainage structures and their composition; limits of fill or alteration; location of all structures and pavement within 100 feet of the wetland; the edge of the wetland; the grade contours within 100 feet of the wetland.

☒ 6. Members, employees, and agents of the Commission shall have the right to enter and inspect the premises to evaluate compliance with the conditions and performance standards stated in this Order, the Massachusetts Wetlands Protection Act, and pertinent Massachusetts regulations (310CMR10:00 through 10:99). The Commission may require the submittal of any data deemed necessary by the Commission for that evaluation.

☒ 7. The applicant, owners, successors, or assignees shall be responsible for maintaining any on-site drainage structures and outfalls, assuring the lasting integrity of vegetative cover on the site, and monitoring of site activities so as to prevent erosion, siltation, sedimentation, chemical contamination, or other detrimental impact to any on-site or off-site resource area. It shall be the responsibility of the property owner of record to ensure compliance with the maintenance conditions required by this Order.

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B1. Additional Conditions (cont.)

☒ 8. This document shall be included in all construction contracts and subcontracts dealing with the work proposed and shall supersede other contract requirements.

☒ 9. A complete copy of this permit, including its drawings, Special Conditions, and any Amendments shall be available at the work site whenever work is being performed. The permittee shall provide a copy of this permit to all contractors, subcontractors, and other personnel performing work relating to this project in order to assure full knowledge and compliance with the permit's terms and conditions.

☒ 10. Natural vegetation between the wetland edge and upland edge of the Undisturbed Buffer shall be left intact. Within 48 hours of project completion, weather permitting, all disturbed areas shall be replanted as previously approved by the Commission. There shall be at least a 25-foot undisturbed buffer on the upland side of the wetland boundary, unless otherwise specified by this Order. This shall be an ongoing Condition that shall survive the expiration of this permit and shall be so noted on the Certificate of Compliance.

☒ 11. To minimize adverse effects on wildlife and water resources, the use of any pesticide or fertilizer requires explicit permission to be granted by the Commission. This shall be an ongoing Condition that shall survive the expiration of this permit and shall be so noted on the Certificate of Compliance.

☒ 12. In all cases, no part of any structure, including decks, stairs, cantilevers, etc., may be closer than 50 feet from the approved wetland boundary unless otherwise specified in this Order. This shall be an ongoing Condition that shall survive the expiration of this permit and shall be so noted on the Certificate of Compliance.

☒ 13. Any refuse material found on the site shall be disposed of at an approved landfill and in no case may these materials be buried or disposed of in or near a wetland.

☒ 14. This Order of Conditions shall apply to any successor in interest or successor in control of the property.

☒ 15. No underground petroleum product storage tanks are allowed within 100 feet of any wetland or within any velocity (V) flood zone as indicated on the most recent FEMA floodplain maps.

☒ 16. No work under this Order of Conditions may proceed until the applicant has filed all necessary permits and applications with:
Board of Health, ZBA, HDC, Building Inspector, Army Corps of Engineers, DEP, Waterways, MNH, etc.

☒ 17. All construction and alterations must comply with the above referenced plans and the Conditions of this Order. Any changes intended to be made in the plans or in the work shall require the applicant to file a new Notice of Intent, or to inquire of the Commission in writing whether the change is substantial enough to require a new filing. No change in plan or work under this filing is permissible without a new Notice of Intent, or permission from the Commission.

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FINDINGS and ADDITIONAL CONDITIONS

Massachusetts Wetlands Protection Act (MGL Chapter 131, Section 40)
Town of Nantucket Wetlands Bylaw (Chapter 136)

Address:	Lily Pond Park Improvement
Assessor's Map and Parcel:	42.3.4; 42.4.3 – 1 ; 2.1; 47,48, ; 93
Property Owner:	Nantucket Islands Land Bank
Applicant:	Nantucket Islands Land Bank
DEP File Number:	SE48-3827
Filing Date:	October 24, 2024
Date Hearing Closed:	November 21, 2024
Date Orders Issued:	November 22, 2024
Plan of Record Information:	Lily Pond Park Improvement Plans prepared by Horsley Witten Group, Inc. signed and stamped by Richard A. Claytor, P.E, dated August 2024

Permit Overview:
This order permits the proposed installation of green and gray stormwater infrastructure, installation of ADA trail system, seating areas, parking improvements, and educational signage at Lily Pond Park within Bordering Vegetated Wetland and associated Buffer Zones. A waiver is required for this project as proposed.

Additional Findings:

1. The area does not fall within mapped NHESP habitat and does not require NHESP review.

In addition to the General Conditions contained elsewhere in this document, the Commission includes the following Special Conditions pursuant to MGLCh131s40 and the Town of Nantucket Wetlands Protection Bylaw, Chapter 136:

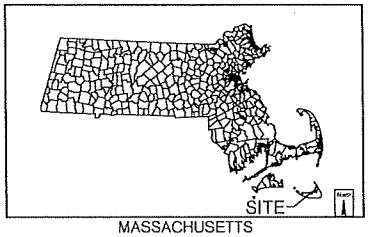
18. All work shall be performed in accordance with the Site and Work Description contained within the Notice of Intent and plan notes set out on the plan of record, provided project narratives, and protocols.
19. Any fill needed for the site needs to come from the site itself or any fill brought to the site shall provide a soil test for staff to review, this shall include nutrient content, heavy metals and VOC's at a minimum. Any invasive species found in these areas with fill shall be removed and appropriately disposed of off property.
20. All reports are required by anniversary of this orders date of issuance, until a Certificate of Compliance is issued.

WAIVERS UNDER THE NANTUCKET WETLANDS BYLAW/REGULATIONS
Waivers are required for this project under § 390-18B(1) that all projects must maintain a 25' natural undisturbed area adjacent to a Vegetated Wetland. The proposed wetland restoration will require temporary disturbance to Resource area and Buffer zone but will not result in additional adverse effects to the resource areas, therefore, the Commission grants a waiver under § 390-3F(3)(a).

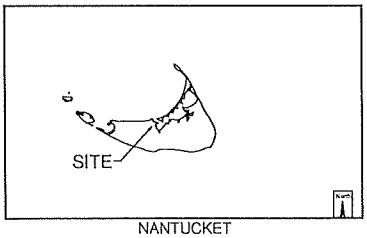
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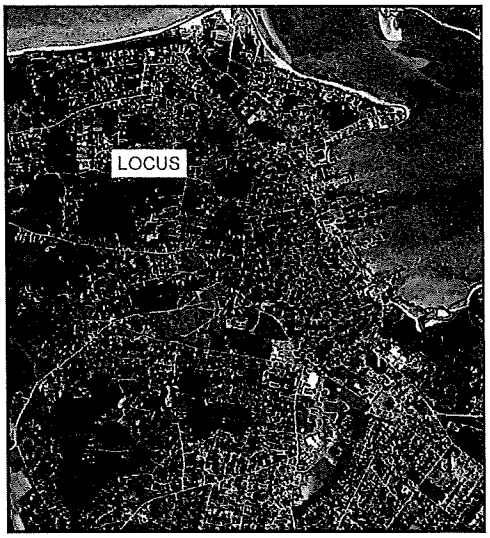
LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS
AUGUST 2024



MASSACHUSETTS
Graphic Scale
SCALE IN FEET



NANTUCKET
Graphic Scale
SCALE IN FEET



VICINITY MAP
Graphic Scale
1-inch = 1000-feet

Sheet List Table	
Sheet Number	Sheet Title
1	COVER SHEET
2	CONSTRUCTION NOTES AND DETAILS
3	DEMOLITION & EROSION CONTROL PLAN
4	OVERALL LAYOUT PLAN
5	RESTORATION AREA 1A - LAYOUT & GRADING
6	RESTORATION AREA 1B - LAYOUT & GRADING
7	RESTORATION AREA 2 - SITE LAYOUT
8	RESTORATION AREA 2 - GRADING
9	RESTORATION AREA 3 - LAYOUT & GRADING
10	NEW GATEWAY - LAYOUT & GRADING
11	BOARDWALK PROFILES AND DETAILS
12	BOARDWALK PROFILES
13	WETLAND RESTORATION SECTIONS
14	CONSTRUCTION DETAILS (1)
15	CONSTRUCTION DETAILS (2)
16	RESTORATION AREA 1A - PLANTING
17	RESTORATION AREA 1B - PLANTING
18	RESTORATION AREA 2 - PLANTING
19	RESTORATION AREA 3 - PLANTING
20	NEW GATEWAY - PLANTING
21	PLANTING DETAILS

GENERAL NOTES:
1. THIS PLAN SET IS NOT FOR CONSTRUCTION.
2. SITE INFORMATION:
   PLAT & LOT: 240-A3, 1902-74, 235-204, 713-001
   ADDRESS: 8 HICKOO PLACE, 34 LILY STREET, 15-19 N LIBERTY STREET
   ZONING DISTRICT: RA5
3. THE PROPERTY IS LOCATED WITHIN F.I.R.M. ZONE X AS SHOWN ON COMMUNITY PANEL NO.25019 C 0360 DATED JUNE 8, 2014.
4. WETLANDS ARE PRESENT ON THE SITE.

Plan Set:
LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
(508) 228-7240

Prepared By:
Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com

Headquarters: 90 Route 6A, Sandwich, MA 02563, (508) 833-6600 voice, (508) 833-3150 fax
113 Water Street, 6th Floor, Boston, MA 02109, (617) 263-5183 voice, (617) 371-4799 fax
1 Turks Head Place, Suite 300, Providence, RI 02903, (401) 272-1717 voice, (401) 438-6308 fax
113 R3 Water Street, Exeter, NH 03833, (603) 658-1100 voice

Revisions			

Project Number: 20008
Sheet Number: 1 of 21
Drawing Number: C - 1

PERMITTING ONLY
NOT FOR CONSTRUCTION

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last modified: 08/20/24 printed: 08/22/24 by as H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008 CN.dwg

EXISTING CONDITION NOTES:

1. THE EXISTING CONDITIONS REPRESENTED WITHIN THIS PLAN SET IS BASED ON A PLAN ENTITLED "EXISTING CONDITIONS PLOT PLAN" BY PAUL PEPE AND ASSOCIATES SURVEYORS, LLC ON 12/13/23 AND IS ONE REVISED AT 5/16/2024.
2. TOPOGRAPHY FROM THE 2024 NANTUCKET TOWN GIS IS USED IN AREAS OUTSIDE THE SURVEY.
3. THE VERTICAL DATUM IS NAVD88 UNLESS OTHERWISE NOTED.
4. THE HORIZONTAL DATUM SHOWN HEREON WAS ESTABLISHED BY THE HORSLEY WITTEN GROUP, INC. ON 6/2025.

GENERAL CONSTRUCTION NOTES:

1. ALL SITE WORK TO COMPLETE THIS PROJECT IS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
2. ANY DIRECT CONTACT AND CORRESPONDENCE WITH THE ENGINEER AND OWNER OF ANY DECISION OR ALTERATION OF THE WORK PROPOSED IN THESE DRAWINGS IS TO BE AGREED.
3. UTILITIES ARE PRESUMED TO BE AS SHOWN ON THE PLANS AS A COURTESY TO THE PUBLIC. ALL PERSONNEL AND PROPERTY DURING CONSTRUCTION IN ACCORDANCE WITH OSHA STANDARDS INCLUDING THE INSTALLATION OF TEMPORARY PROTECTIVE STRUCTURES SAFETY LIGHTING, GUARD, FENCE DETAIL AND/OR PLACARDS AS DETERMINED BY THE TOWN. THE CONTRACTOR IS RESPONSIBLE FOR THE COST OF POLICE DETAIL AND FOR COORDINATION WITH THE LOCAL OR STATE POLICE DEPARTMENT FOR ALL REQUIRED POLICE DETAILS.
4. WHERE ALL NECESSARY CONSTRUCTION NOTICES HAVE AND APPLY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS. PAY ALL FEES INCLUDING IF PLACE DETAILS AND APPLY ALL BONDS IF NEEDED. PAY ALL COSTS ASSOCIATED WITH THE SAME AND COORDINATE WITH THE OWNER AND THE ENGINEER.
5. ALL EXISTING CONDITIONS SHOWN ARE APPROXIMATE AND ARE BASED ON THE BEST INFORMATION AVAILABLE PRIOR TO THE START OF CONSTRUCTION. VERIFY THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR FUTURE UTILITIES OR OTHER PROPOSED IMPROVEMENTS. IF CONFLICTS ARE DISCOVERED, NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLING ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED.
6. THE CONTRACTOR IS RESPONSIBLE FOR ANY OF EXISTING UTILITIES OR STRUCTURES AS INDICATED ON THE PLANS OR DISCOVERED IN THE COURSE OF THE WORK. THE CONTRACTOR SHALL PLAN AND PERFORM ALL EXCAVATION IN SUCH A MANNER AS TO AVOID DAMAGE TO EXISTING UTILITIES AND STRUCTURES. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES AND MUNICIPAL DEPARTMENTS WHICH HAVE UTILITIES WITHIN THE AREA OF WORK AT LEAST THREE BUSINESS DAYS PRIOR TO ANY EXCAVATION. CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY IN THE TOWN, AND "DIG SAFE" (1-888-344-7233) AT LEAST THREE BUSINESS DAYS PRIOR TO ANY EXCAVATION TO ENSURE THE EXACT FIELD LOCATION OF UTILITIES. THE CONTRACTOR MUST PRESERVE EXISTING UTILITIES BETWEEN THE PROPOSED UTILITIES AND EXISTING UTILITIES IS REQUIRED, MAY REQUIRE EXISTING UTILITIES TO BE HAND EXCAVATED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REPAIR OF ANY DAMAGED UTILITIES AND STRUCTURES AT NO EXPENSE TO THE OWNER. THE CONTRACTOR SHALL MAINTAIN ACCURATE RECORDS OF THE LOCATION AND DEPTH OF ALL UTILITIES AND SERVICES ENCOUNTERED DURING CONSTRUCTION FOR THE PREPARATION OF THE "AS-BUILT" PLAN.
7. THE CONTRACTOR MUST MAINTAIN ALL EXISTING UTILITIES IN WORKING ORDER AND PROTECT FROM DAMAGE DURING THE ENTIRE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL NOTIFY THE OWNER AND ENGINEER IMMEDIATELY OF ANY DISRUPTION OF UTILITY SERVICE DURING CONSTRUCTION AND SHALL COOPERATE WITH THE OWNER IN RESTORING SUCH SERVICE AS QUICKLY AS POSSIBLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS INCURRED IN THE REPAIR OF DAMAGED UTILITIES. EXCAVATION REQUIRED WITHIN THE PROXIMITY OF EXISTING UTILITIES MUST BE DONE BY HAND.
8. CONFORM TO ALL TOWN OF NANTUCKET REGULATIONS WITH THE PROPER LOCAL & STATE AGENCY. THE CONTRACTOR IS RESPONSIBLE FOR ALL NOTICES AND FEES INCLUDING UTILITY LOCATIONS, AND/OR STATE PERMITS REQUIRED FOR THE PROJECT WORK. IF THIS WORK IS REQUIRED TO BE DONE OUTSIDE THE NORMAL HOURS OF OPERATION FOR THE FACILITY, THE CONTRACTOR MUST PLAN ACCORDINGLY.
9. THE CONTRACTOR SHALL PROTECT EXISTING PAVEMENT AS INDICATED ON THE DRAWINGS. BACKFILL AND COMPACT TRENCHES AS SPECIFIED ON THE DRAWINGS AND IN THE SPECIFICATIONS. IF SETTLEMENT OCCURS DUE TO INADEQUATE COMPACTION AS DETERMINED BY THE ENGINEER DURING THE WARRANTY PERIOD, CONTRACTOR IS REQUIRED TO REMOVE & REPLACE AS LIFTED SPACE COMPLETE TO EACH DAMAGED AREA.
10. DAMAGED OR DISTURBED MATERIAL, WHETHER FROM AN EXISTING OR FORMER PAVED SITE IS DESIGNATED BY THE ENGINEER AS EXCESS OR UNSUITABLE, SHALL BE DISPOSED OF IN A LEGAL MANNER OFF THE SITE.
11. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH HORIZONTAL CONTROL POINTS AS USED ON HIS OWN DURING CONSTRUCTION. IN ADDITION, ALL CONTROL POINTS AND BENCHMARKS SHOWN ON THE PLANS SHALL BE PROTECTED BY THE CONTRACTOR AND REPLACED BY A REGISTERED PROFESSIONAL LAND SURVEYOR, IF DISTURBED OR DESTROYED.
12. SITE LAYOUT SURVEY IS REQUIRED FOR CONSTRUCTION AND TO BE PROVIDED BY THE CONTRACTOR AND PERFORMED BY A REGISTERED PROFESSIONAL LAND SURVEYOR. THE CONTRACTOR IS RESPONSIBLE FOR CONFORMITY WITH THE LAYOUT OF ALL SITE SURVEY WORK.
13. A WRITTEN NOTICE OF SITE WORK TO BE PERFORMED BY THE CONTRACTOR AND PERFORMED BY A REGISTERED PROFESSIONAL LAND SURVEYOR. THE CONTRACTOR IS RESPONSIBLE FOR CONFORMITY WITH THE LAYOUT OF ALL SITE SURVEY WORK.
14. A WRITTEN NOTICE OF SITE WORK TO BE PERFORMED BY THE CONTRACTOR AND PERFORMED BY A REGISTERED PROFESSIONAL LAND SURVEYOR. THE CONTRACTOR IS RESPONSIBLE FOR CONFORMITY WITH THE LAYOUT OF ALL SITE SURVEY WORK.
15. UNLESS OTHERWISE NOTED ON THE DRAWINGS AND/OR IN THE SPECIFICATIONS, ALL SITE CONSTRUCTION IS TO BE PLANNED AND METHODOLOGIES ARE TO CONFORM TO THE MOST RECENT VERSION OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAYS AND BRIDGES AND THE CONSTRUCTION STANDARDS OF THE TOWN OF NANTUCKET DEPARTMENT OF PUBLIC WORKS. ANY DEVIATIONS FROM THESE SPECIFICATIONS SHALL BE APPROVED BY THE ENGINEER AND THE TOWN OF NANTUCKET DEPARTMENT OF PUBLIC WORKS PRIOR TO THE START OF CONSTRUCTION.
16. PROVIDE ALL CONSTRUCTION SIGNAGE IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS AS REQUIRED TO ENSURE WORKER AND PUBLIC SAFETY AT ALL TIMES.
17. REMOVE ALL SURFACE DEBRIS, TRASH, OTHER UNSUITABLE MATERIAL AS CONSTRUCTION IS COMPLETED PER PHASE OF WORK. LEAVE THE SITE IN A CLEAN AND ORDERLY CONDITION AT THE END OF EACH WORK DAY. ALL DEBRIS IS TO BE REMOVED FROM THE SITE AND DISPOSED OF IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL REGULATIONS. WHERE THE PLANS DESIGNATE ANY MATERIALS TO BE STOCKPILED ON SITE, PROVIDE ADEQUATE EROSION CONTROL MEASURES AS REQUIRED BY THE CONSERVATION AGENT OF THE TOWN.
18. PROVIDE DUST CONTROL AS REQUIRED BY THE CONSERVATION AGENT OF THE TOWN.
19. ALL TRUCKS LEAVING THE SITE MUST BE COVERED.
20. NO BURNING OF CONSTRUCTION DEBRIS OR OTHER MATERIALS SHALL BE PERMITTED ON THE SITE.
21. IT IS THE END OF CONSTRUCTION. REMOVE ALL CONSTRUCTION DEBRIS AND SURPLUS MATERIALS FROM THE SITE AS DIRECTED BY THE SPECIFICATIONS. PERFORM FINISH GRADING AS SHOWN ON THE PLANS AND IN SECTION OF THE WORK. REPAIR ANY DAMAGE TO ALL MATERIALS AND BLEND ALL WATER COURSE DEPRESSIONS FROM THE SITE.
22. PROVIDE A SOLID WOOD OR METAL FENCE AROUND THE PROPERTY AS INDICATED ON THE PLANS AND BUILT OR PAINTED AS INDICATED. THE FENCE SHALL BE KEPT IN GOOD CONDITION AT ALL TIMES. THE CONTRACTOR SHALL REPAIR OR REPLACE ALL PORTIONS OF THE FENCE THAT ARE DAMAGED OR DESTROYED DURING CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS INCURRED IN THE REPAIR OR REPLACEMENT OF THE FENCE.

BASIC CONSTRUCTION SEQUENCE:

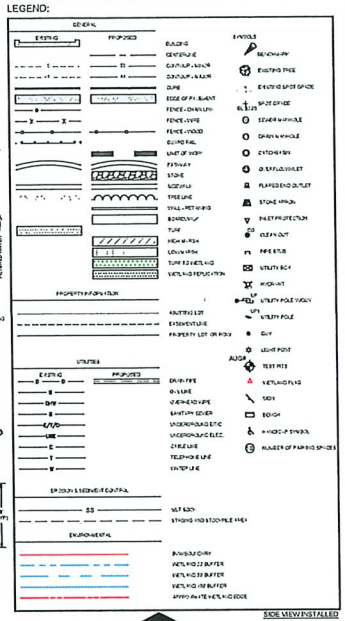
THE FOLLOWING CONSTRUCTION SEQUENCE IS TO BE USED AS A GUIDE ONLY. CONTRACTOR MAY MODIFY THIS SEQUENCE AS NECESSARY TO ACCOMMODATE HIS OWN CONSTRUCTION METHODS AND SCHEDULE, BUT ANY DEVIATION MUST BE APPROVED PRIOR TO CONSTRUCTION.

1. SURVEY AND STAKE THE PROPOSED LIMIT OF DISTURBANCE AND LIMIT OF TREE REMOVAL.
2. PLACE SEDIMENTATION BARRIERS AS INDICATED ON THE PLANS AND STAKE AS SHOWN ON THE PLANS. WHERE SILT SOCK IS SHOWN ON THE PLANS, IT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND AS APPROVED BY THE LOCAL CONSERVATION COMMISSION PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY (EROSION PROTECTION BMP).
3. INSTALL TEMPORARY CONSTRUCTION ENTRANCES AS INDICATED ON THE PLANS TO PREVENT OFF-SITE TRACKING OF SOIL AND OTHER DEBRIS AND TO BE USED TO GAIN ACCESS TO THE SITE BY ALL CONSTRUCTION OR DELIVERY VEHICLES.
4. STAGE WORK TO BEGIN IN THE NORTHWEST AREA OF THE PROJECT SITE (LOT 1) AND WORK PROGRESSING TO THE SOUTH OF THE SITE, COMPLETE WORK IN THE SOUTHEAST AREA OF THE SITE (LOT 3) FIRST. ALL CONSTRUCTION TRAFFIC SHALL ENTER AND EXIT THE SITE VIA THE NORTH LIBERTY STREET ENTRANCE. STABILIZE ALL OTHER AREAS OF THE PROJECT SITE BEFORE STABILIZING THE SOUTHWEST AREA NORTH LIBERTY STREET WITH LOAM AND SEED AREA OF WORK.
5. BEGIN CLEARING THE SITE AS REQUIRED.
6. SURVEY AND STAKE THE PROPOSED STORM WATER MANAGEMENT UNDERGROUND INFILTRATION AREAS. DO NOT BEGIN EXCAVATION UNTIL MEETING WITH TOWN AREA OF WORK AND STRUCTURES.
7. EXCAVATE AND ROUGH GRADE THE PROPOSED STORM WATER MANAGEMENT AREAS AND INFILTRATION SYSTEMS AND INSTALL AND STABILIZE SEDIMENT BARRIERS AS INDICATED ON THE PLANS. THE BOTTOM OF THE INFILTRATION SYSTEMS SHALL NOT BE EXCAVATED TO FINAL GRADE UNTIL THE REMAINING CONTRIBUTING AREA IS FULLY STABILIZED. TEMPORARY STORM WATER MANAGEMENT AREAS ARE TO BE USED AS NEEDED TO PROTECT THE PERMANENT STORM WATER MANAGEMENT AREAS FROM SEDIMENT CONTAMINATION.
8. BEGIN CONSTRUCTING BUILDINGS IN THE SEQUENCE OF STORM WATER MANAGEMENT AREAS AND INFILTRATION AREAS. TOPSOIL IS TO BE STRIPPED FROM THE AREA OF THE PROPOSED STORM WATER MANAGEMENT AREAS AND STOCKPILED IN APPROVED OFF SITE LOCATION. TOPSOIL STOCKPILES MUST BE PROTECTED BY A SEDIMENT BARRIER.
9. INSTALL TEMPORARY EROSION AND SEDIMENT CONTROLS AS SHOWN ON THE PLANS. EFFECTIVELY MAINTAIN THESE CONTROLS AS NEEDED THROUGHOUT THE CONSTRUCTION PERIOD TO PROTECT ADJOINING PROPERTIES.
10. INSTALL DRAINAGE PIPES, DRAINAGE MANHOLES, CATCH BASINS AND UNDERGROUND INFILTRATION STRUCTURES. BEGIN WORK AT THE DOWNSTREAM END OF EACH LINE AND PROGRESS UPSTREAM. PROTECT CATCH BASIN INLETS WITH INSERT BASKETS. THE STORM WATER MANAGEMENT SYSTEM SHALL NOT BE USED AS A SEDIMENT TRAP DURING CONSTRUCTION. INSTALL RIP-RAP AT OUTLETS AS INDICATED ON THE PLANS AND AS REQUIRED. USE A MIX OF STONE SIZES TO PROVIDE A WELL GRADED MIXTURE. INSTALL RIP-RAP AT OUTLETS AS INDICATED ON THE PLANS AND AS REQUIRED. USE A MIX OF STONE SIZES TO PROVIDE A WELL GRADED MIXTURE. INSTALL FILTER FABRIC UNDER RIP-RAP AS INDICATED ON THE PLANS AND AS REQUIRED. USE A MIX OF STONE SIZES TO PROVIDE A WELL GRADED MIXTURE.
11. COMPLETE ALL PAVING AND CURBING AS REQUIRED.
12. SURVEY AND STAKE ALL LANDSCAPING AREAS AND PLANTINGS. PREPARE AND STABILIZE ALL LANDSCAPE AREAS AS INDICATED ON THE PLANS AND AS REQUIRED. DO NOT PLANT TREES AND SHRUBS IN AREAS WHERE UNDERGROUND UTILITIES OR STRUCTURES ARE TO BE INSTALLED. PLANT TREES AND SHRUBS AS INDICATED ON THE PLANS AND AS REQUIRED. DO NOT PLANT TREES AND SHRUBS IN AREAS WHERE UNDERGROUND UTILITIES OR STRUCTURES ARE TO BE INSTALLED. PLANT TREES AND SHRUBS AS INDICATED ON THE PLANS AND AS REQUIRED.
13. COMPLETE ALL PAVING AND CURBING AS REQUIRED.
14. SURVEY AND STAKE ALL LANDSCAPING AREAS AND PLANTINGS. PREPARE AND STABILIZE ALL LANDSCAPE AREAS AS INDICATED ON THE PLANS AND AS REQUIRED. DO NOT PLANT TREES AND SHRUBS IN AREAS WHERE UNDERGROUND UTILITIES OR STRUCTURES ARE TO BE INSTALLED. PLANT TREES AND SHRUBS AS INDICATED ON THE PLANS AND AS REQUIRED.
15. COMPLETE ALL PAVING AND CURBING AS REQUIRED.
16. SURVEY AND STAKE ALL LANDSCAPING AREAS AND PLANTINGS. PREPARE AND STABILIZE ALL LANDSCAPE AREAS AS INDICATED ON THE PLANS AND AS REQUIRED. DO NOT PLANT TREES AND SHRUBS IN AREAS WHERE UNDERGROUND UTILITIES OR STRUCTURES ARE TO BE INSTALLED. PLANT TREES AND SHRUBS AS INDICATED ON THE PLANS AND AS REQUIRED.
17. ENGINEER TO APPROVE THE REMOVAL OF ALL TEMPORARY SILT EROSION AND SEDIMENTATION CONTROLS AS SHOWN ON THE PLANS AND AS REQUIRED. ESTABLISHMENT OF ALL DISTURBED AREAS IS TO DETERMINE WHEN THE CONTRIBUTING AREA HAS REACHED A MINIMUM OF 90% STABILIZATION.

GENERAL GRADING AND DRAINAGE NOTES:

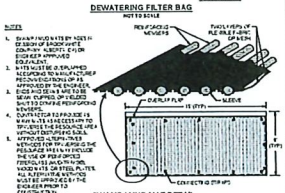
1. ALL OUT WASTE SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
2. EXISTING OFF-SITE CONTOUR INTERVALS SHOWN AT 1' OR 2' CIVIL.
3. PROPOSED GRADE CONTOURS INTERVAL AS SHOWN AT 1' CIVIL.
4. ALL SLOPES TO BE STABILIZED WITH LOAM AND SEED AS SPECIFIED.
5. ALL EXISTING DRAINAGE STRUCTURES TO REMAIN UNLESS OTHERWISE NOTED.
6. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS FOR ALL NATURAL AND PAVED AREAS, IMMEDIATELY NOTIFY THE ENGINEER IF POSITIVE DRAINAGE CANNOT BE PROVIDED.
7. PROPOSED SPOT ELEVATIONS ARE SHOWN TO FINISH PAVEMENT OR GRADE UNLESS NOTED OTHERWISE.

LEGEND:

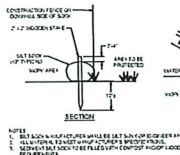


DEWATERING SUMP
NOT TO SCALE

DEWATERING FILTER BAG
NOT TO SCALE

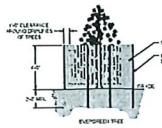


SWAMP / MUD MAT DETAIL
NOT TO SCALE



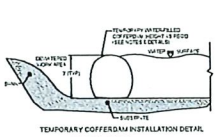
NOTES
1. SILT SOCK IS NOT FEASIBLE WHERE THERE IS A CONCRETE APRON AS SHOWN.
2. SILT SOCK IS TO BE PLACED ON THE CONTOUR AS SHOWN ON THE PLANS.
3. SEDIMENT SHALL BE REMOVED AT THE END OF EACH WORK DAY.
4. FOLLOWING CONSTRUCTION AND SITE STABILIZATION, SILT SOCK SHALL BE REMOVED.

SILT SOCK
NOT TO SCALE

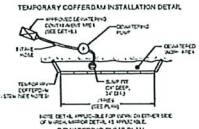


NOTES
1. TREE PROTECTION SHALL BE OF WIRE REINFORCED SNOW FENCE OR APPROVED EQUAL.
2. POST SHALL BE WOOD PLACED AT 8' INTERVALS, AND EXTENDED INTO THE GROUND FOR 1' TEST SECTION AS SHOWN ON THE PLANS.
3. THE FENCE SHALL REMAIN IN PLACE UNTIL ALL CONSTRUCTION HAS BEEN COMPLETED AND THE BUFFER AREA IS RESTORED AS REQUIRED.

TREE PROTECTION
NOT TO SCALE



TEMPORARY COFFERDAM INSTALLATION DETAIL
NOT TO SCALE

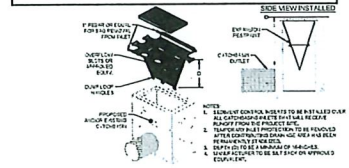


NOTE DETAIL APPLICABLE FOR WORK ON EITHER SIDE OF SURFACE WATER BODIES

DEWATERING PUMP PLAN

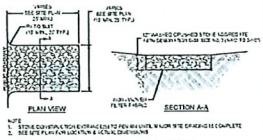
NOTES
1. THE DEWATERING PLAN INCLUDING THE TEMPORARY COFFERDAM SYSTEM TO BE REVIEWED SHALL BE APPROVED BY THE ENGINEER. WATERCOURSES IMPACTED BY ROAD CROSSINGS OR OTHER APPROVED WORK STRUCTURES SHALL BE ACCEPTABLE ALTERNATIVES.
2. THE TEMPORARY COFFERDAM SYSTEM SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. BEGIN WORK AT THE DOWNSTREAM END OF THE WORK AREA.
3. THE TEMPORARY COFFERDAM SYSTEM SHALL CONSIST OF WATER FILLED BARRIERS ARE PERMITTED TO BE INSTALLED WHERE FLOW AND PRESSURE INCREASES TO ALLOW FOR DUCTILE IRON PIPE AND FITTINGS AND VALVES TO THE EXTENT LEAKAGE OF FIELD TESTED, SEE SHOP DRAWINGS.
4. ALL EXCAVATED MATERIALS OR DEBRIS SHALL BE PLACED ON A PLASTIC LINED AREA AND PROTECTED FROM EROSION AND SEDIMENTATION.
5. ENGINEER SHALL BE NOTIFIED 48 HOURS PRIOR TO THE START OF DEWATERING ACTIVITIES.

TEMPORARY COFFERDAM INSTALLATION
NOT TO SCALE



NOTES
1. SEDIMENT CONTROL INSERTS TO BE INSTALLED OVER ALL CATCHBASIN GRATES THAT WILL RECEIVE RUNOFF FROM THE PROJECT SITE.
2. SEDIMENT CONTROL INSERTS TO BE REMOVED WHEN CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED.
3. DEPTH (D) TO BE A MINIMUM OF 18-INCHES.
4. INSERT ACCEPTABLE TO BE SILT SACK OR APPROVED EQUIVALENT.

INLET PROTECTION
NOT TO SCALE



STONE CONSTRUCTION ENTRANCE
NOT TO SCALE

NOTES
1. STONE CONSTRUCTION ENTRANCE SHALL BE INSTALLED AT ALL WORK SITE ENTRANCES TO ENSURE THAT ALL VEHICLES LEAVING THE SITE PASS OVER THE STONE CONSTRUCTION ENTRANCE.
2. STONE CONSTRUCTION ENTRANCE SHALL BE MAINTAINED IN GOOD CONDITION AT ALL TIMES AND SHALL BE REPAIRED AS NECESSARY TO PREVENT SEDIMENT FROM ENTERING THE PUBLIC WAY.
3. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC WAYS MUST BE REMOVED IMMEDIATELY.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL MUNICIPAL FINES IMPOSED ON THE OWNER AND/OR CONTRACTOR RESULTING FROM THE TRACKING OF SEDIMENT ONTO PUBLIC WAYS.
5. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ADEQUATE DRAINAGE FACILITIES AS NECESSARY TO PREVENT WATER FROM FLOWING ONTO PUBLIC WAYS.
6. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN ADEQUATE DRAINAGE FACILITIES AS NECESSARY TO PREVENT WATER FROM FLOWING ONTO PUBLIC WAYS.

STORMWATER FACILITY OPERATION & MAINTENANCE:

THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER INSPECTION, WORK AND MAINTENANCE OF ALL STORMWATER MANAGEMENT FACILITIES AS OUTLINED BELOW AND/OR AS DIRECTED BY THE ENGINEER, AND/OR THE TOWN OF NANTUCKET DEPARTMENT OF PUBLIC WORKS OR THE ENGINEER.

1. INSPECT AND PERFORM REGULAR MAINTENANCE ON ALL CATCH BASINS, STORMWATER MANAGEMENT AREAS AND INFILTRATION SYSTEMS AS DESCRIBED BELOW OR AS DIRECTED BY THE ENGINEER PRIOR TO THE END OF CONSTRUCTION.
2. REMOVE AND DISPOSE ALL SEDIMENT AND DEBRIS TO A PRE-APPROVED LOCATION.
3. REPAIR TO THE STORMWATER INFILTRATION PREVENTION AS NECESSARY FOR ADDITIONAL INFILTRATION AS NEEDED TO ENSURE WATER FROM UNDERGROUND AND WATER FROM ABOVE IS INFILTRATED AS DESIGNED. ENSURE ALL SYSTEMS ARE FUNCTIONING AS DESIGNED.
4. IT IS ILLEGAL FOR ANYONE OTHER THAN A LICENSED PROFESSIONAL ENGINEER TO MODIFY, REMOVE OR ALTER ANY PART OF THE STORMWATER MANAGEMENT SYSTEM. ANY ALTERATIONS TO THE SYSTEM MUST BE APPROVED BY THE ENGINEER AND THE TOWN OF NANTUCKET DEPARTMENT OF PUBLIC WORKS.
5. SPECIFIC MAINTENANCE PROCEDURES DURING CONSTRUCTION:
   1. ENSURE ALL STRUCTURES, INLETS, SLOPES AND DRAINAGE PIPES ARE CLEAN AND FREE OF DEBRIS, SEDIMENT OR ANY OTHER MATERIAL THAT MAY AFFECT PROPER FLOW OF WATER. ALL CATCH BASINS SHALL BE CLEANED AT THE END OF CONSTRUCTION AND AS NECESSARY DURING CONSTRUCTION. CLEAN OUT ANY SEDIMENT THAT HAS ACCUMULATED IN THE SUMP OF EACH CATCH BASIN AND DISPOSE OF IN ACCORDANCE WITH ALL APPLICABLE LAWS AND REGULATIONS.
   2. REMOVE ALL DEBRIS AND TRASH FROM ALL STORMWATER MANAGEMENT AREAS AND INFILTRATION SYSTEMS AS NECESSARY.
   3. INSPECT ALL STRUCTURES, PIPES AND INFILTRATION SYSTEMS AT LEAST ONCE A MONTH AND AFTER EACH RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS. REPAIR ANY DAMAGE TO STRUCTURES, PIPES OR INFILTRATION SYSTEMS AS NECESSARY.
   4. ENSURE ALL SLOPES, DRAINAGE SWALES AND INFILTRATION SYSTEMS ARE STABILIZED AND FREE OF EROSION. REPAIR ANY EROSION AS NECESSARY.
   5. ENSURE ALL STRUCTURES, PIPES AND INFILTRATION SYSTEMS ARE FREE OF DEBRIS AND SEDIMENT. REMOVE ANY DEBRIS AND SEDIMENT AS NECESSARY.
   6. ENSURE ALL STRUCTURES, PIPES AND INFILTRATION SYSTEMS ARE FREE OF DEBRIS AND SEDIMENT. REMOVE ANY DEBRIS AND SEDIMENT AS NECESSARY.
   7. ENSURE ALL STRUCTURES, PIPES AND INFILTRATION SYSTEMS ARE FREE OF DEBRIS AND SEDIMENT. REMOVE ANY DEBRIS AND SEDIMENT AS NECESSARY.
   8. ENSURE ALL STRUCTURES, PIPES AND INFILTRATION SYSTEMS ARE FREE OF DEBRIS AND SEDIMENT. REMOVE ANY DEBRIS AND SEDIMENT AS NECESSARY.
   9. ENSURE ALL STRUCTURES, PIPES AND INFILTRATION SYSTEMS ARE FREE OF DEBRIS AND SEDIMENT. REMOVE ANY DEBRIS AND SEDIMENT AS NECESSARY.
   10. ENSURE ALL STRUCTURES, PIPES AND INFILTRATION SYSTEMS ARE FREE OF DEBRIS AND SEDIMENT. REMOVE ANY DEBRIS AND SEDIMENT AS NECESSARY.

PERMITTING ONLY
NOT FOR CONSTRUCTION

Revisions

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Project
LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

Sheet Title
CONSTRUCTION NOTES AND DETAILS

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Project Number: 20008
Sheet: 2 of 21
Drawing Number: C - 2

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EROSION & SEDIMENT CONTROL NOTES:

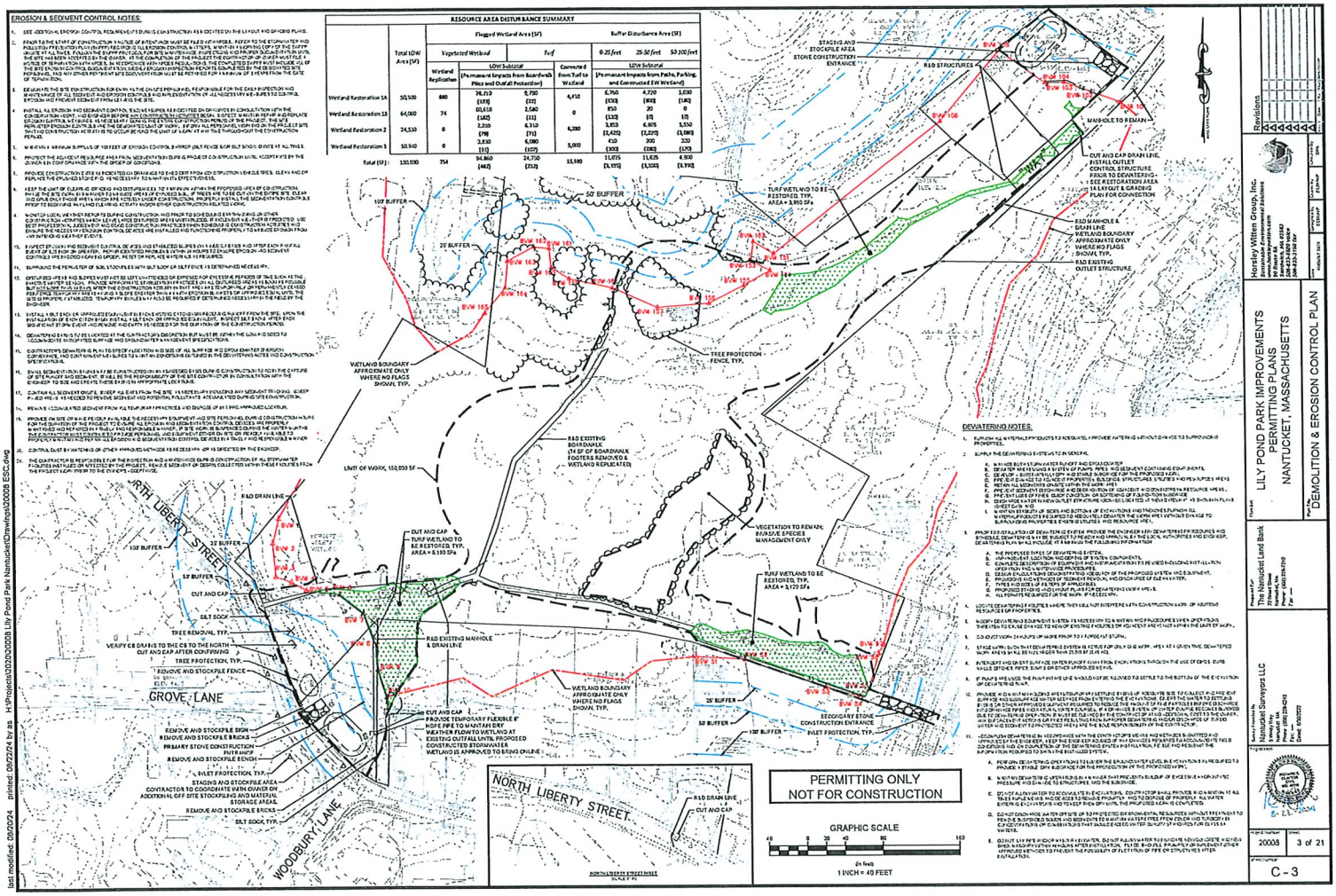
1. SEE ADDITIONAL EROSION CONTROL REQUIREMENTS DURING CONSTRUCTION AS DETAILED ON THE LAYOUT AND GRADING PLANS.
2. PRIOR TO THE START OF CONSTRUCTION A NOTICE OF INTENT MUST BE FILED WITH MEPA. REFER TO THE STORMWATER AND POLLUTION PREVENTION PLAN (SWPPP) FOR ADDITIONAL EROSION CONTROL & STEPS, WHICH IN A NON-INCLUSIVE COPY OF THE SWPPP SHOULD BE KEPT ALL TIMES. EVALUATE THE SWPPP PRACTICES FOR SITE MAINTENANCE, INSPECTIONS AND PROPER DOCUMENTATION OF IT. THE SITE HAS BEEN ASSIGNED BY THE OWNER. AT THE COMPLETION OF THE PROJECT THE OWNER SHALL OF OWNER'S AUTHORIZED REPRESENTATIVE SHALL SIGN THE NOTICE OF TERMINATION (NOT) FOR THE SWPPP. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SITE EROSION CONTROL MEASURES AS NOTED HEREIN AND SHALL ENSURE THAT ALL PERSONNEL INVOLVED IN THE PROJECT SITE PERSONNEL HAS ANY OTHER PERTINENT SITE DOCUMENTATION MUST BE REVIEWED PRIOR TO THE START OF CONSTRUCTION.
3. DESIGNATE THE SITE CONSTRUCTION FOREMAN AS THE ON-SITE PERSONNEL RESPONSIBLE FOR THE DAILY INSPECTION AND MAINTENANCE OF ALL EROSION AND EROSION CONTROLS AND IMPLEMENTATION OF ALL MEASURES AS REQUIRED TO CONTROL EROSION AND PREVENT SEDIMENTATION AT ALL TIMES.
4. INSTALL ALL EROSION AND SEDIMENT CONTROL BARRIERS AS DETAILED ON DRAWINGS IN CONSULTATION WITH THE CONSERVATION AGENT. ADD EROSION BARRIERS AND CONSTRUCTION ENTRANCES AS LOCAL CONDITIONS MAY REQUIRE AND REPLACE EROSION CONTROL BARRIERS AS NECESSARY DURING THE ENTIRE CONSTRUCTION PERIOD OF THE PROJECT. THE SITE REPLACEMENT EROSION CONTROL SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. PRIOR TO ALL PERSONNEL WORKING ON THE PROJECT SITE THAT FOR CONSTRUCTION ACTIVITIES TO OCCUR BEYOND THE LIMIT OF WORK AT ANY TIME THROUGHOUT THE CONSTRUCTION PERIOD.
5. MAINTAIN A MINIMUM SUPPLY OF 100 FEET OF EROSION CONTROL BARRIER (SILT FENCE &/OR SILT SOCK) ON SITE AT ALL TIMES.
6. PROTECT THE ADJACENT PERVIOUS AREAS FROM SEDIMENTATION DURING PROGRESS OF CONSTRUCTION UNTIL ACCEPTANCE BY THE OWNER OR CONFORMANCE WITH THE OPERATION CONDITIONS.
7. PROVIDE CONSTRUCTION EXITS AS INDICATED ON DRAWINGS TO PREVENT DIRT FROM CONSTRUCTION VEHICLES TRACKS ONTO PAVED AREAS AND STOP EXITS AS NECESSARY TO MAINTAIN EFFECTIVENESS.
8. KEEP THE LIMIT OF CLEARING OF EXISTING VEGETATION TO A MINIMUM WITHIN THE PROPOSED LIMIT OF CONSTRUCTION. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL CLEARLY MARK THE LIMIT OF CLEARING IN THE FIELD AND SHALL NOT CLEAR OR DISTURB AREAS OUTSIDE OF THE ENTIRE SITE. CLEAR AND GRUB ONLY THOSE AREAS WHICH ARE ACTIVELY UNDER CONSTRUCTION. PROPERLY INSTALL THE SEDIMENTATION CONTROLS PRIOR TO BEGINNING ANY LAND CLEARING ACTIVITY AND/OR ANY CONSTRUCTION RELATED WORK.
9. MONITOR LOCAL WEATHER REPORTS DURING CONSTRUCTION AND PRIOR TO SOIL DISTURBANCE IN THE ZONE OF ANY CONSTRUCTION ACTIVITIES WHICH LEAVE LARGE DISTURBED AREAS VULNERABLE. IF HEAVY RAIN IS PREDICTED, USE BEST PROFESSIONAL JUDGEMENT AND GOOD CONSTRUCTION PRACTICES WHEN DECIDING IF CONSTRUCTION ACTIVITIES CAN ENSURE THE NEEDED STORM EROSION CONTROL DEVICES ARE INSTALLED AND FUNCTIONING PROPERLY TO MINIMIZE DISRUPTION OF NORMAL WORK AND EXPOSED SOILS.
10. INSPECT EROSION AND SEDIMENT CONTROL DEVICES AND STABILIZED SLOPES ON A WEEKLY BASIS AND AFTER EACH HALF-INCH OR GREATER RAINFALL EVENT. REPAIR DAMAGED DEVICES WITHIN 24 HOURS TO ENSURE EROSION AND SEDIMENT CONTROLS ARE IN GOOD CONDITION OPERATION. REMOVE SEDIMENT AS NEEDED.
11. REMOVE ALL TEMPORARY EROSION CONTROL MEASURES AFTER PERMANENT STABILIZATION IS ESTABLISHED AND AS DIRECTED BY THE ENGINEER.
12. MAINTAIN ALL ROADWAYS, MOVING, PARKING OR STORAGE AREAS FREE OF MUD, DUST, DEBRIS AND LITTER RESULTING FROM CONSTRUCTION ACTIVITIES. IMMEDIATELY REMOVE ANY SEDIMENT TRACKED OR FLOWED ONTO PUBLIC OR PRIVATE PAVEMENT OR OTHER IMPROVED AREAS. SWEEP PAVED AREAS AT THE END OF EACH DAY OR AS REQUIRED.
13. PROVIDE ON-SITE DUST CONTROL AS REQUIRED TO PREVENT AIR POLLUTION DUE TO DUST. DUST CONTROL MEASURES MAY INCLUDE, BUT ARE NOT LIMITED TO, THE USE OF WATER TRUCKS, SPRINKLER SYSTEMS, AND HAND WATERING AS NECESSARY. DUST CONTROL MEASURES SHALL BE IMPLEMENTED AS NECESSARY TO PREVENT DUST FROM BLOWING ONTO ADJACENT PROPERTIES AND ROADWAYS. IF SITE WORK IS SUSPENDED DURING THE WINTER MONTHS, THE CONTRACTOR SHALL STABILIZE EXPOSED AREAS AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE PERSONNEL AND EQUIPMENT EITHER ON SITE OR READILY AVAILABLE TO IMPLEMENT DUST CONTROL MEASURES AS REQUIRED. FAILURE TO CONTROL DUST AS REQUIRED MAY RESULT IN A STOP WORK ORDER.
14. CONTROL DUST BY WATERING OR OTHER APPROVED METHODS AS NECESSARY OR AS DIRECTED BY THE ENGINEER.
15. THE CONTRACTOR IS RESPONSIBLE FOR THE INSPECTION AND MAINTENANCE DURING CONSTRUCTION OF ALL STORMWATER FACILITIES INSTALLED OR AFFECTED BY THIS PROJECT. THIS IS A MINIMUM OF DEPTH COLLECTED WITHIN THESE FACILITIES FROM THE PROJECT'S CONSTRUCTION TO THE OWNER'S ACCEPTANCE.

RESOURCE AREA DISTURBANCE SUMMARY

	Total LOW Area (SF)	Flagged Wetland Area (SF)			Buffer Disturbance Area (SF)		
		Vegetated Wetland	Turf		0-25 feet	25-50 feet	50-100 feet
		Wetland Replication	LOW Subtotal (Permanent Impacts from Boardwalk Piles and Outfall Protection)	Converted from Turf to Wetland	LOW Subtotal (Permanent Impacts from Paths, Parking, and Constructed BW Wetland)		
Wetland Restoration 1A	50,520	880	76,710 (183)	5,790 (22)	6,410	6,760 (130)	4,720 (80)	3,630 (18)
Wetland Restoration 1B	64,000	74	60,610 (182)	2,580 (11)	0	850 (120)	20 (1)	0 (0)
Wetland Restoration 2	24,530	0	2,210 (79)	6,310 (71)	6,280	3,855 (2,425)	6,905 (1,227)	5,550 (1,060)
Wetland Restoration 3	10,940	0	3,830 (11)	6,080 (107)	5,000	420 (300)	300 (228)	320 (170)
Total (SF):	150,030	754	94,860 (465)	24,750 (212)	15,690	11,075 (3,075)	11,625 (1,535)	9,500 (1,378)

DEWATERING NOTES:

1. PURSUE ALL MATERIAL PRODUCTS TO ADEQUATELY PROVIDE WATER FLOW WITHOUT DOWN-SIDE TO SURROUNDING PROPERTIES.
2. SUPPLY PUMP DEWATERING SYSTEMS AS IN GENERAL
   a. 3-INCH DIESEL STORMWATER PUMP TO DISCHARGE
   b. DEWATER WITH SUMP & SYSTEM OF PUMPS, PIPES AND SEDIMENT CONTAINING EQUIPMENTS.
   c. DEWATER & DISPOSE WITH LOW-PRESSURE DISCHARGE OF THE PUMPED WATER.
   d. PIPE DISCHARGE TO UNDISTURBED AREAS, DISCHARGE STRUCTURES, FILTERED THROUGH FILTERED MEDIA
   e. PIPE DISCHARGE TO DISTURBED AREAS, DISCHARGE STRUCTURES, FILTERED THROUGH FILTERED MEDIA.
   f. PROVIDE SEDIMENT DISCHARGE BAGS AT THE DISCHARGE OF EQUIPMENT IN CONTAMINATED PRESSURE AREAS.
   g. PREVENT USE OF PIPES, QUICK CONDITION, OR SOFTENING OF EQUIPMENT IN SENSITIVE AREAS.
   h. QUICK-VALVE TYPE IN NEW OUTLET STRUCTURE WITH BOLTED FIXED 4" INCH WATER FLOW
   i. WATER STRAIGHT OF SIDES AND BOTTOM OF EXCAVATIONS AND TRENCHES AS PUMPS ALL WATER AND PRODUCTS EXPOSED TO REMOVAL OR DISTURBED BY THE CONTRACTOR WITHOUT DAMAGE TO SURROUNDING PROPERTIES, EXISTING UTILITIES AND RESOURCE AREAS.
3. PRIOR TO INSTALLATION OF DEWATERING SYSTEM, PROVIDE THE ENGINEER WITH DEWATERING PLAN INCLUDING, BUT NOT LIMITED TO THE FOLLOWING INFORMATION:
   a. THE PROPOSED TYPES OF DEWATERING SYSTEM.
   b. THE PROPOSED LOCATION AND DETAILS OF SYSTEM COMPONENTS.
   c. COMPLETE DESCRIPTION OF EQUIPMENT AND MATERIALS TO BE USED INCLUDING INSTALLATION SPECIFICATIONS FROM MANUFACTURER'S PROCEDURES.
   d. DESIGN CALCULATIONS DEMONSTRATING ADEQUACY OF THE PROPOSED SYSTEM AND EQUIPMENT.
   e. PROPOSED METHODS OF SEDIMENT REMOVAL AND DISPOSAL OF DEWATERED SEDIMENT.
   f. PROPOSED METHODS OF DISCHARGE.
   g. PROPOSED STAGING AND SEQUENCE OF PLANS FOR DEWATERING EACH AREA.
   h. ALL PERMITS REQUIRED FOR THE WORK AND ACCESS WAYS.
4. LOCATE DEWATERING FACILITIES WHERE THEY WILL NOT INTERFERE WITH CONSTRUCTION WORK OR ADJOINING RESOURCES OR PROPERTIES.
5. MONITOR DEWATERING EQUIPMENT SYSTEMS AS NECESSARY TO ENSURE WITH MINIMUM PROCEDURES WHEN OPERATIONS THEY HAVE TO CAUSE DAMAGES TO ANY OF ADJACENT AREAS OR ADJACENT PROPERTIES WITHIN THE LIMIT OF WORK.
6. DO NOT OPERATE 24 HOURS OR MORE PRIOR TO A FORECAST STORM.
7. STAGE WHEN SUCH THAT DEWATERING SYSTEM IS NOT REQUIRED ONLY ONE WORK AREA AT A GIVEN TIME. DEWATERED WORK AREAS WILL BE FILLED AS NEEDED WITH STONE (3/4 TO 1 1/2 IN).
8. INTERCEPT AND DIVERT SURFACE DEWATER RUNOFF FLOW FROM EXCAVATIONS THROUGH THE USE OF BERMS, DIKES, SWALES, DITCHES, PIPES, SUMPS AND OTHER APPROVED MEANS.
9. IF PUMPS ARE USED, THE PUMP INTAKE LINE SHOULD ONLY BE ALLOWED TO SETTLE TO THE BOTTOM OF THE EXCAVATION OR DEWATERING SUMP.
10. PROVIDE HOSE WITH FLOATS AND STRAINER OR SUITABLE FILTER OF VEGETATIVE MATERIAL OR STONE AT THE END OF THE DISCHARGE HOSE OR PIPE WITHIN THE EXCAVATION. DO NOT PUMP WATER DIRECTLY INTO ANY WETLAND RESOURCE AREA OR STORMWATER SYSTEM. DISCHARGE WATER ONTO A STABLE AREA AT LEAST 50 FEET AWAY FROM ANY WETLAND RESOURCE AREA OR STORMWATER SYSTEM. INSTALL HAY BALE OR SILT FENCE BARRIER BETWEEN THE DISCHARGE POINT AND THE NEAREST WETLAND RESOURCE AREA OR STORMWATER SYSTEM. INSTALL HAY BALE OR SILT FENCE BARRIER AROUND THE PERIMETER OF THE CONSTRUCTION AREA.
11. DEWATERING METHODS IN ACCORDANCE WITH THE COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION (DEP) STORMWATER MANUAL AND METHODS SUBMITTED AND APPROVED BY THE CONSERVATION COMMISSION AS PART OF THE NOTICE OF INTENT (NOI) PROCESS SHALL BE USED. THE FOLLOWING METHODS ARE ACCEPTABLE FOR USE ON THIS PROJECT, SUBJECT TO FIELD CONDITIONS AND APPROVAL BY THE ENGINEER. THE CONTRACTOR SHALL INSTALL, MAINTAIN, AND REMOVE DEWATERING SYSTEMS AS NECESSARY TO ENSURE THAT ALL WORK AREAS ARE KEPT DRY DURING CONSTRUCTION ACTIVITIES. SEE THE FOLLOWING INFORMATION FOR ADDITIONAL DETAILS ON THE INSTALLED SYSTEM.
    a. FLOW DIVERTING OVER FLOW OR FLOW DIVERSION LEVEES IN EXCAVATIONS IS REQUIRED TO PROVIDE A STABLE DRY SUBGRADE FOR THE PROTECTION OF THE PROPOSED WORK.
    b. WATER DIVERTED OVER LEVEES SHALL BE IN A MANNER THAT PREVENTS BUILDUP OF EXCESS HYDROSTATIC PRESSURE WHICH CAN LEAD TO STRUCTURE UNDERMINING.
    c. DEVICE FLOW WATER TO ADEQUATELY RECEIVING AREAS TO PREVENT DAMAGE TO ADJACENT PROPERTIES. DO NOT DISPOSE OF PROPERLY ALL WATER TAKE PRECAUTIONS AND MAKE ACCESS TO ADJACENT PROPERTIES AND TO DISPOSE OF PROPERLY ALL WATER EXISTING EXCAVATIONS AND TO KEEP THEM DRY UNTIL THE PROPOSED WORK IS COMPLETED.
    d. DEWATERING WATER SHALL BE DISCHARGED TO A STABILIZED AREA AND/OR A DEWATERING BAG AS NECESSARY TO REMOVE SUSPENDED SOILS AND SEDIMENTS TO MEET THE WATER QUALITY REQUIREMENTS FREE FROM COLOR AND TURBIDITY OR CONCENTRATIONS OF CHEMICALS THAT ARE IN EXCESS OF THE WATER QUALITY STANDARDS FOR CLASS A WATERS.
    e. DISCHARGE WATER FROM DEWATERING OPERATIONS TO A SEDIMENTATION BASIN OR SEDIMENT CONTROL DEVICE AS NEEDED TO REMOVE SEDIMENT AND OTHER POLLUTANTS. PLACE BARRIERS, SUCH AS SILT FENCE, AROUND ANY DISCHARGE POINTS TO PREVENT THE POSSIBILITY OF ILLICIT FLOW OF FINE SEDIMENTS INTO WETLANDS.



PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
40 0 20 40 80 160
(in feet)
1 INCH = 40 FEET

Revisions

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
90 Route 6A
Sandwich, MA 02563
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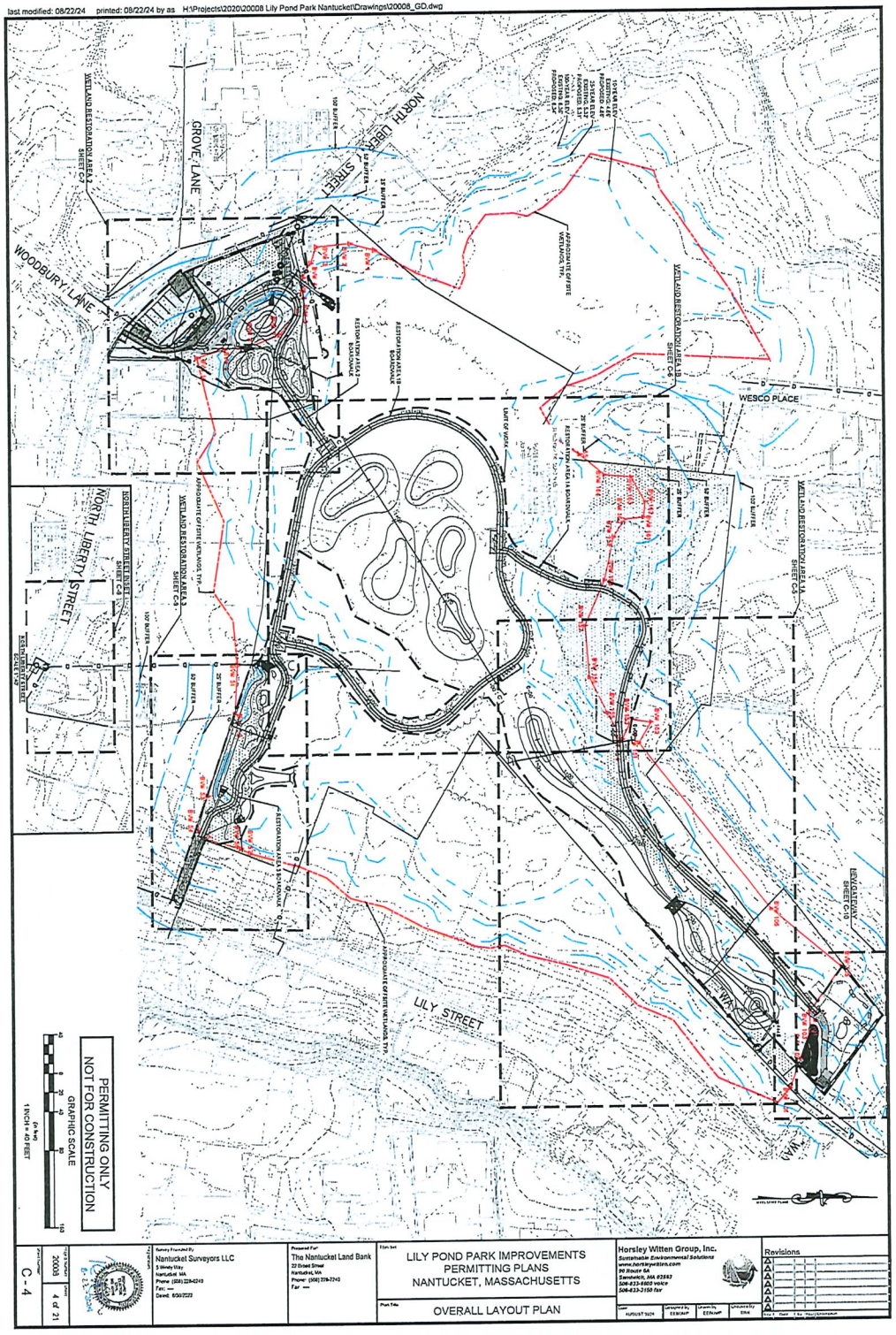
LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

DEMOLITION & EROSION CONTROL PLAN

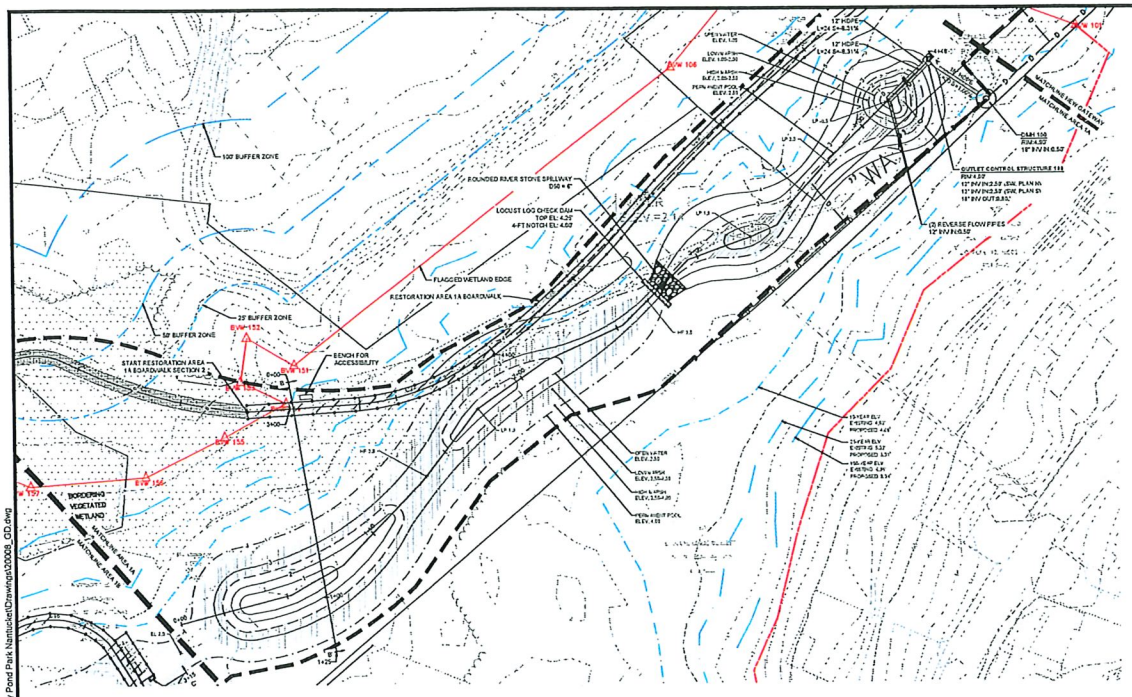
Prepared for:
The Nantucket Land Bank
2 Bathing Beach Rd
Nantucket, MA
Contact: Leslie Snyder
Tel: --

Prepared by:
Nantucket Surveyors LLC
Nantucket, MA
Phone: 1 (508)228-0404
Email: 9/20/2022

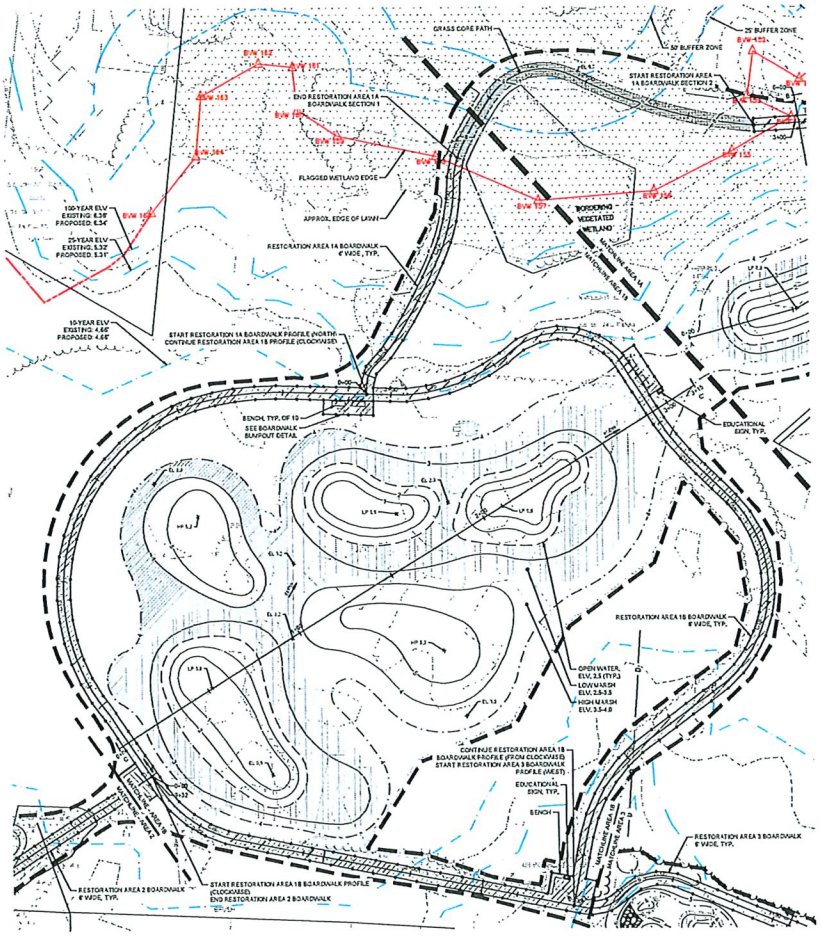
Project Number: 20008
Sheet: 3 of 21
Drawing Number: C-3


last modified: 08/22/24 printed: 08/22/24 by as H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008_GD.dwg
GROVE LANE
WOODBURY LANE
NORTH LIBERTY STREET
WESCO PLACE
LILY STREET
WETLAND RESTORATION AREA 1 SHEET C-3
WETLAND RESTORATION AREA 2 SHEET C-3
WETLAND RESTORATION AREA 3 SHEET C-4
NORTH LIBERTY STREET SHEET C-4
WETLAND RESTORATION AREA 4 SHEET C-3
WETLAND RESTORATION AREA 5 SHEET C-3
WETLAND RESTORATION AREA 6 SHEET C-3
WETLAND RESTORATION AREA 7 SHEET C-3
WETLAND RESTORATION AREA 8 SHEET C-3
WETLAND RESTORATION AREA 9 SHEET C-3
WETLAND RESTORATION AREA

Last Modified: 06/24/2026 at 9:48AM EDT



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last modified: 06/22/24 printed: 06/22/24 by as H:\Projects\20\20008\08 Lily Pond Park Nantucket\Drawings\20008_GD.dwg



RESTORATION AREA 1A

Number	Radius	Length	STARTING STATION	END STATION
C21	12.51	8.81	0+04.1	0+14.0
C22	50.49	11.57	0+14.0	0+25.6
C23	86.61	34.64	0+72.3	1+07.0
C24	36.53	18.77	1+07.0	1+25.8
C25	30.22	43.81	1+43.1	1+82.9
C26	330.83	87.84	1+93.8	2+80.8
C27	112.47	58.72	3+29.3	3+88.1
C28	371.11	103.88	3+89.1	4+93.0
C29	633.52	130.06	4+93.0	6+23.1
C30	571.51	40.54	6+23.1	6+63.7

RESTORATION AREA 1B BOARDWALK

Number	Radius	Length	STARTING STATION	END STATION
C13	89.36	187.68	0+34.8	2+04.8
C14	129.56	42.63	2+04.8	2+47.2
C15	85.33	50.00	3+04.7	3+54.7
C16	35.44	57.03	3+56.7	4+13.7
C17	113.29	25.48	4+48.8	4+74.8
C18	56.30	102.33	4+93.8	5+96.2
C19	71.48	50.49	6+34.1	6+83.5
C20	57.23	41.87	6+82.0	8+23.8

PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
20 0 10 20 40 80
(in feet)
1 INCH = 20 FEET

Revisions

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
90 Route 6A, Sandwich, MA 02563
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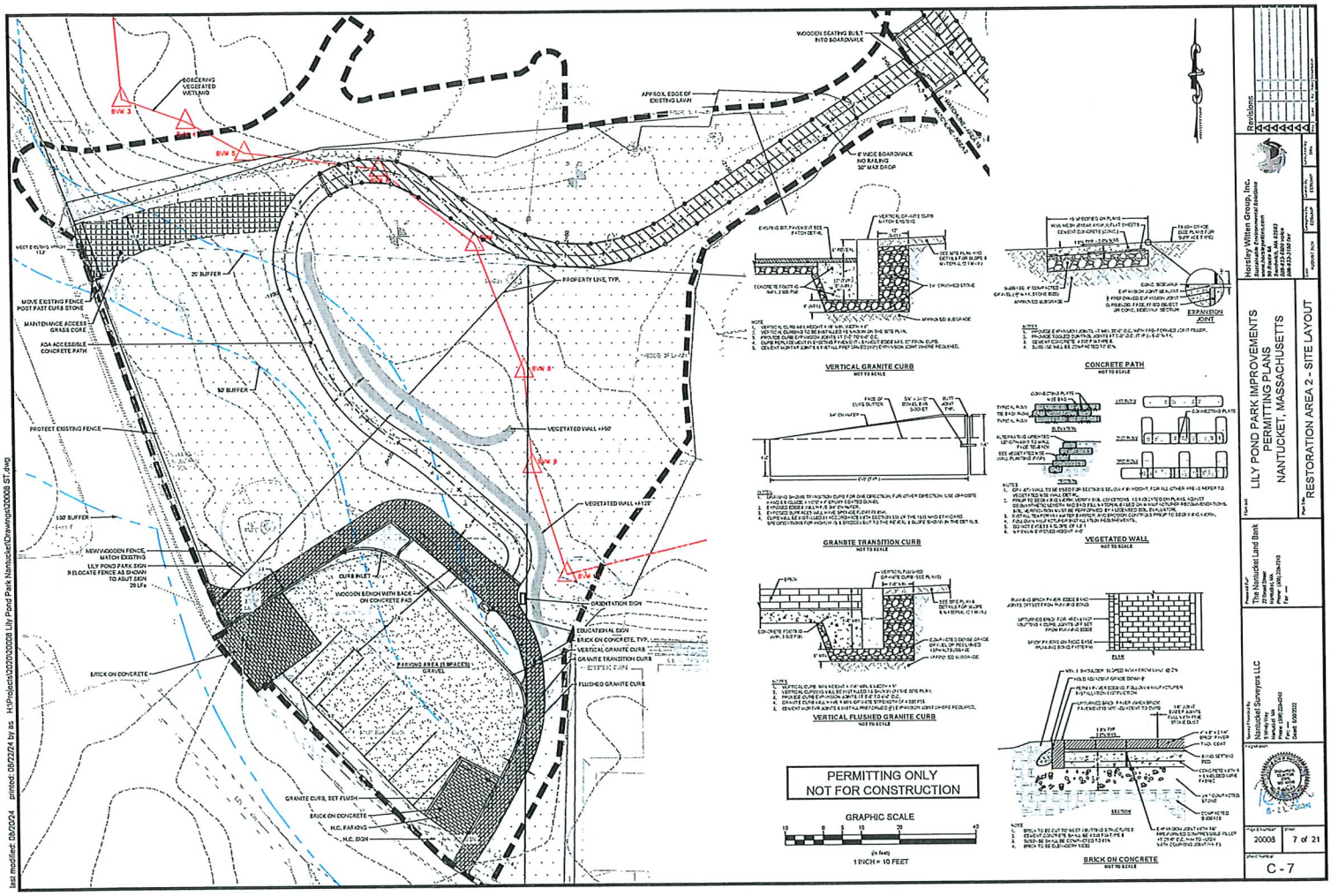
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PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

Plan Title: RESTORATION AREA 1B - LAYOUT & GRADING

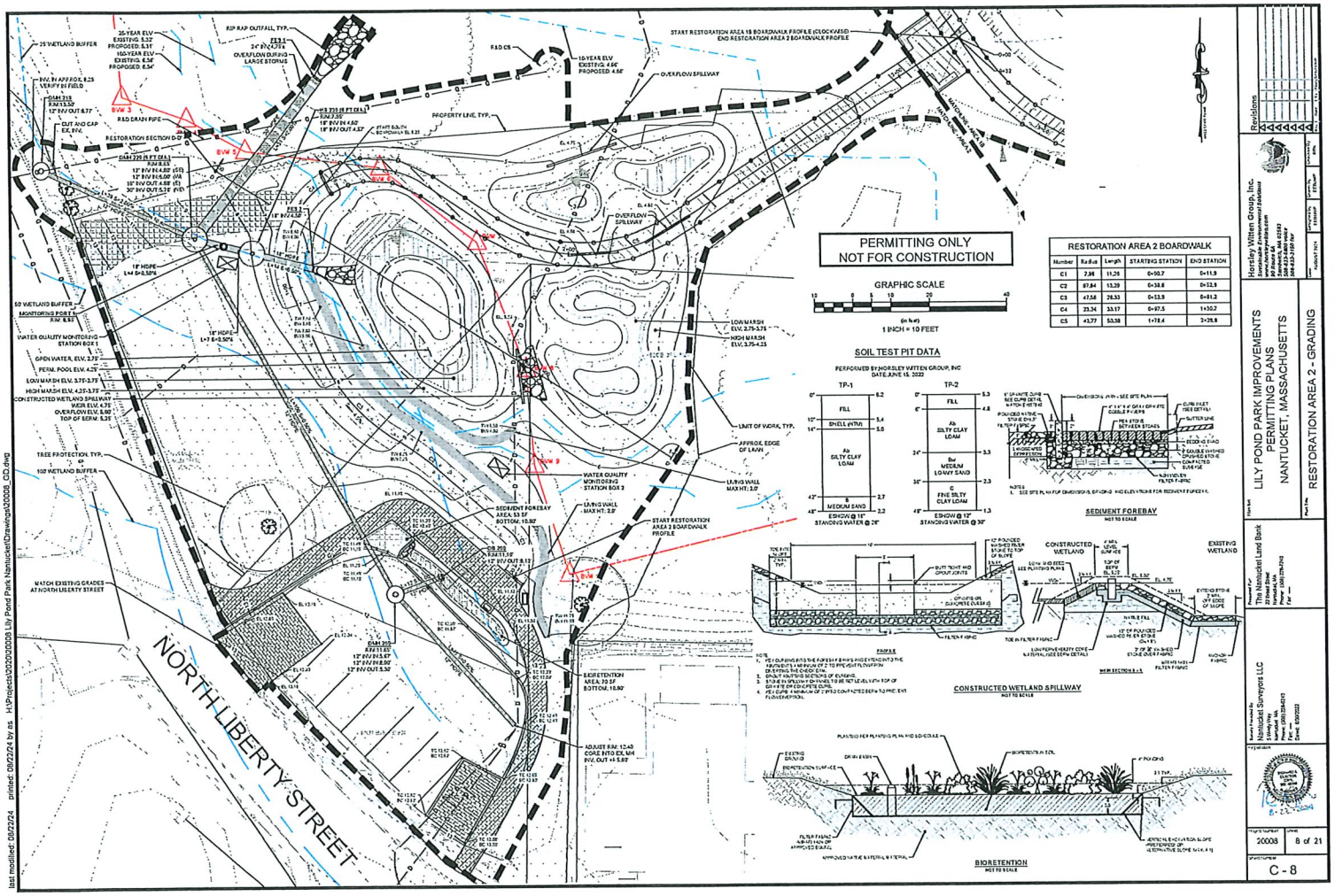
Prepared For: The Nantucket Land Bank
22 Broad St.
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Phone: (508)228-7233
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Survey Provided by: Nantucket Surveyors LLC
PO Box 1334
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Phone: (508) 228-2410
Email: 6307227

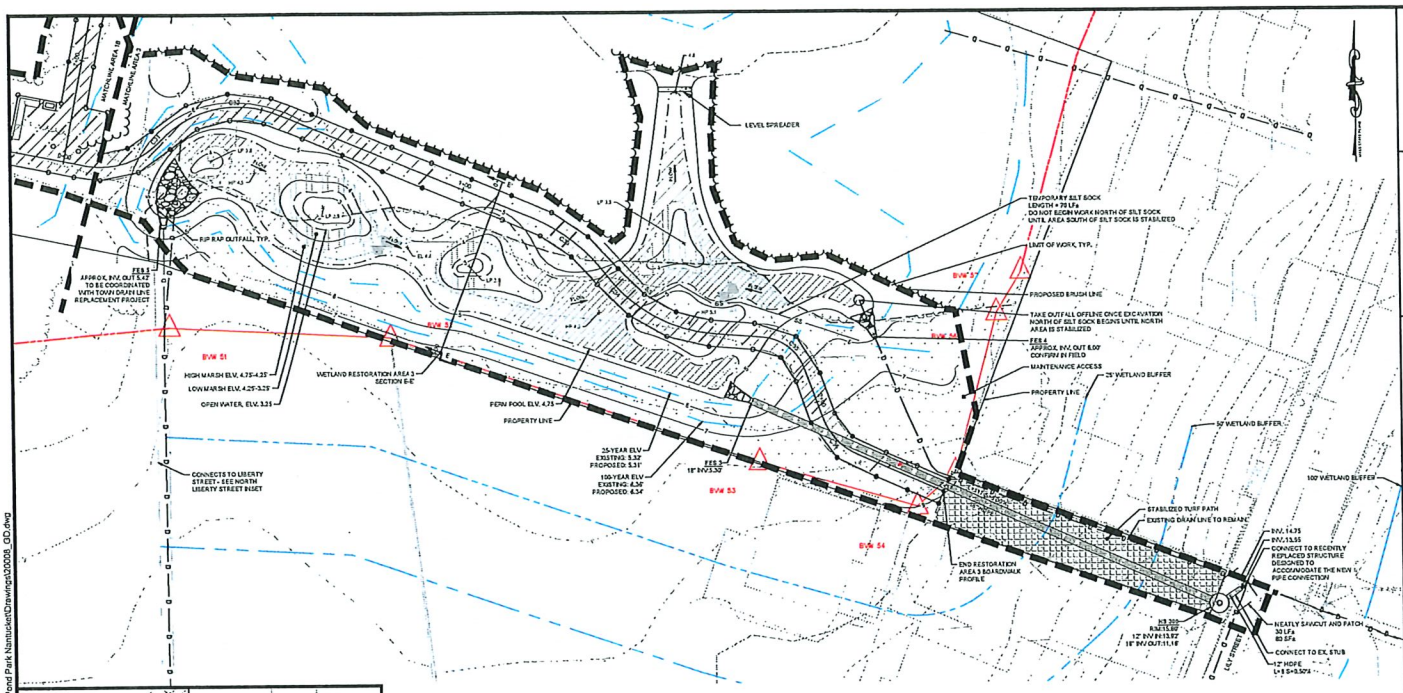
Project No. 20008
Sheet No. 6 of 21
Drawing No. C - 6

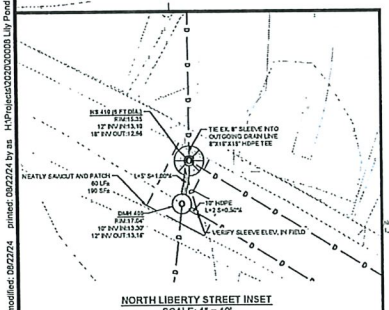


Last Modified: 06/24/2026 at 9:48AM EDT
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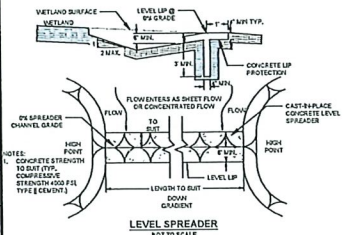

PERMITTING ONLY
NOT FOR CONSTRUCTION
GRAPHIC SCALE
1 INCH = 10 FEET
SOIL TEST PIT DATA
PERFORMED BY HORSLEY WITTEN GROUP, INC
DATE JUNE 15, 2022
TP-1
TP-2
FILL
SHELL (MTH)
MEDIUM SAND
SILTY CLAY LOAM
MEDIUM LOAMY SAND
FINE SILTY CLAY LOAM
ESHGW @ 15"
STANDING WATER @ 24"
ESHGW @ 12"
STANDING WATER @ 30"
RESTORATION AREA 2 BOARDWALK
Number
Radius
Length
STARTING STATION
END STATION
C1
7.98
11.29
0+00.7
0+11.9
C2
87.84
13.29
0+38.8
0+52.9
C3
47.58
26.33
0+52.9
0+81.2
C4
23.34
33.17
0+97.5
1+30.7
C5
43.77
53.38
1+78.4
2+26.8
SEDIMENT FOREBAY
NOT TO SCALE
CONSTRUCTED WETLAND &SPILLWAY
NOT TO SCALE
BIORETENTION
NOT TO SCALE
NORTH LIBERTY STREET
START RESTORATION AREA 1B BOARDWALK PROFILE (CLOCKWISE)
END RESTORATION AREA 2 BOARDWALK PROFILE
START RESTORATION AREA 2 BOARDWALK PROFILE
LIMIT OF WORK, TYP.
PROPERTY LINE, TYP.
OVERFLOW SPILLWAY
WATER QUALITY MONITORING STATION BOX 2
SEDIMENT FOREBAY AREA: 53 SF BOTTOM: 10.92
BIORETENTION AREA: 70 SF BOTTOM: 10.92
ADJUST RIM: 12.43 CORE INTO EXISTING MH INV. OUT +/- 5.87
MATCH EXISTING GRADES AT NORTH LIBERTY STREET
TREE PROTECTION, TYP.
100' WETLAND BUFFER
50' WETLAND BUFFER
25' WETLAND BUFFER
LOW MARSH ELV. 2.75-3.75
HIGH MARSH ELV. 3.75-4.25
OPEN WATER, ELV. 3.75
PERM. POOL ELV. 4.25
LOW MARSH ELV. 3.75-2.75
HIGH MARSH ELV. 4.25-3.75
CONSTRUCTED WETLAND SPILLWAY WEIR ELEV. 4.75
OVERFLOW ELEV. 5.00
TOP OF BERM: 5.25
CONSTRUCTED WETLAND
EXISTING WETLAND
LIVING WALL MAX HT: 2.0
APPROX. EDGE OF LAWN
RIP RAP OUTFALL, TYP.
OVERFLOW DURING LARGE STORMS
25-YEAR ELV EXISTING: 5.32 PROPOSED: 5.31
100-YEAR ELV EXISTING: 6.34 PROPOSED: 6.34
10-YEAR ELV EXISTING: 4.66 PROPOSED: 4.66
OVERFLOW SPILLWAY
RESTORATION SECTION D-D
CUT AND CAP EX. RTV.
RTV. IN APPROX. ELEV. VERIFY IN FIELD
RAD DRAIN PIPE
18" HDPE L=4 @ 6.50%
18" HDPE L=7 @ 5.50%
WATER QUALITY MONITORING STATION BOX 1
RTV 1.32
RTV 1.25
RTV 2.75
RTV 2.50
RTV 3.00
RTV 3.25
RTV 3.50
RTV 4.00
RTV 4.50
RTV 5.00
RTV 5.50
RTV 6.00
RTV 6.50
RTV 7.00
RTV 7.50
RTV 8.00
RTV 8.50
RTV 9.00
RTV 9.50
RTV 10.00
RTV 10.50
RTV 11.00
RTV 11.50
RTV 12.00
RTV 12.50
RTV 13.00
RTV

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last modified: 06/22/24 printed: 06/22/24 by sa H:\Projects\20200\20008\Lily Pond Park Nantucket\Drawings\20008_GD.dwg





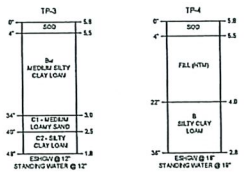
NORTH LIBERTY STREET INSET
SCALE: 1" = 10'



LEVEL SPREADER
NOT TO SCALE

SOIL TEST PIT DATA

PERFORMED BY HORSLEY WITTEN GROUP, INC
DATE JUNE 15, 2022



RESTORATION AREA 3 BOARDWALK

Number	Radius	Length	STARTING STATION	END STATION
C31	10.25	19.45	0+04.8	0+24.3
C32	24.38	30.83	0+24.3	0+54.4
C33	42.83	21.82	1+17.7	1+39.3
C34	33.26	28.83	1+39.3	1+68.0
C35	11.11	11.52	1+79.2	1+91.0
C36	13.20	12.31	2+03.8	2+15.5

PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
10 0 5 10 20 40
(in feet)
1 INCH = 10 FEET

Revisions

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LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

Sheet Title
RESTORATION AREA 3 - LAYOUT & GRADING

Prepared For
The Nantucket Land Bank
22 Broad St.
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Survey Provided by
Nantucket Surveyors LLC
PO Box 2284
Nantucket, MA
Phone: 508.228.0402
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Date: 6/2/2021

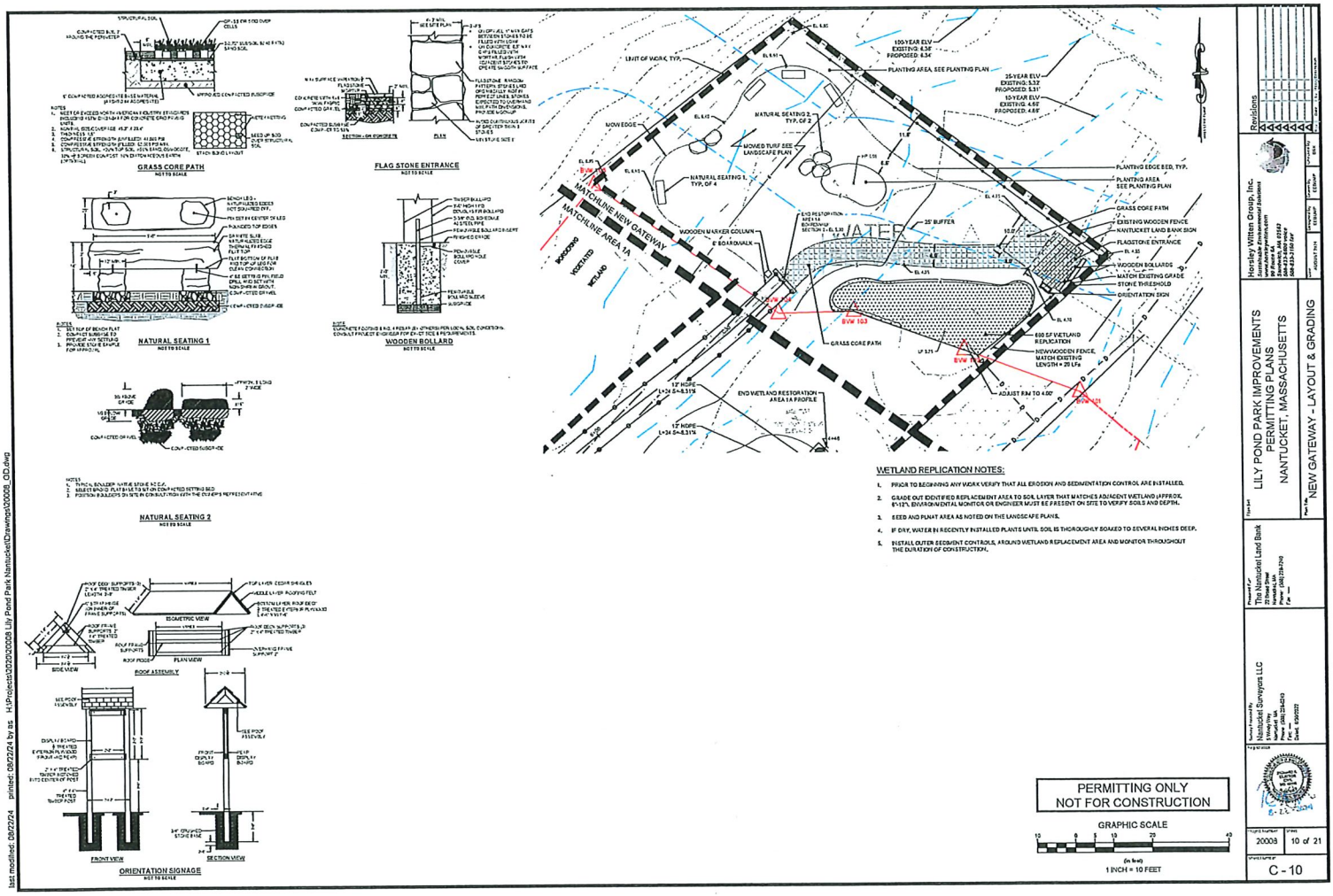
Professional Engineer
Commonwealth of Massachusetts
Kristen Tobin Andrews
No. 52,677
6-22-2024
Registered Professional Engineer

Project No.
20008

Sheet
9 of 21

Drawing No.
C - 9

Last Modified: 06/24/2026 at 9:48AM EDT



WETLAND REPLICATION NOTES:

1. PRIOR TO BEGINNING ANY WORK VERIFY THAT ALL EROSION AND SEDIMENTATION CONTROL ARE INSTALLED.
2. GRADE OUT IDENTIFIED REPLACEMENT AREA TO SOIL LAYER THAT MATCHES ADJACENT WETLAND (APPROX. 6"-12"). ENVIRONMENTAL MONITOR OR ENGINEER MUST BE PRESENT ON SITE TO VERIFY SOILS AND DEPTH.
3. SEED AND PLANT AREA AS NOTED ON THE LANDSCAPE PLANS.
4. IF DRY, WATER IN RECENTLY INSTALLED PLANTS UNTIL SOIL IS THOROUGHLY SOAKED TO SEVERAL INCHES DEEP.
5. INSTALL OUTER SEDIMENT CONTROLS, AROUND WETLAND REPLACEMENT AREA AND MONITOR THROUGHOUT THE DURATION OF CONSTRUCTION.

PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
10 0 5 10 20 40
(in feet)
1 INCH = 10 FEET

Revisions

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508-833-3150 main
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Project for: LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

Sheet title: NEW GATEWAY - LAYOUT & GRADING

Prepared for: Nantucket Land Bank
37 Broad Street
Nantucket, MA
Phone: (508) 228-7240
Fax: —

Survey prepared by: Nantucket Surveyors LLC
Nantucket, MA
Phone: (508) 228-2400
Fax: —
Date: 6/9/2022

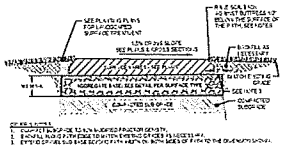
Project number: 20008
Sheet: 10 of 21
Sheet number: C - 10

last modified: 06/22/24 printed: 06/22/24 by: ss H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008_OD.dwg

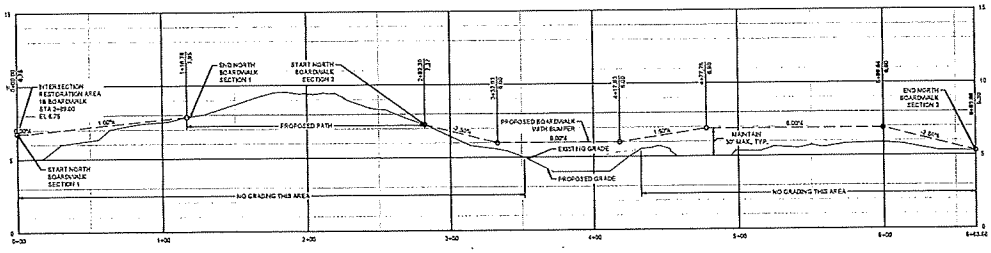
Last Modified: 06/24/2026 at 9:48AM EDT

BOARDWALK NOTES:

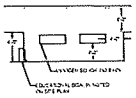
1. BOARDWALK SHALL BE NO MORE THAN 30" ABOVE FINISHED GRADE.
2. SLOPED SECTIONS OF BOARDWALK SHALL HAVE A MINIMUM GRADE OF 2.5%.



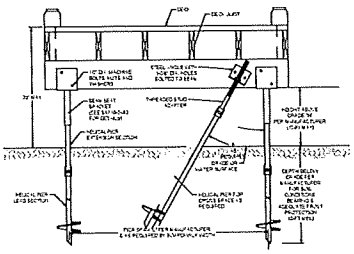
PROPOSED PATH SECTION
NOT TO SCALE



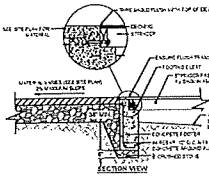
CENTERLINE PROFILE - RESTORATION AREA 1A BOARDWALK
HORIZONTAL SCALE 1" = 50'
VERTICAL SCALE 1" = 5'



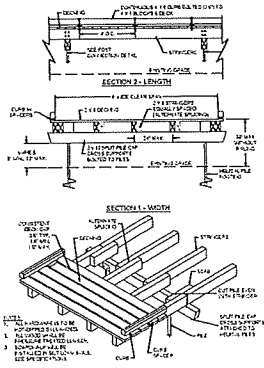
BOARDWALK BUMPOUT DETAIL
NOT TO SCALE



BOARDWALK HELICAL PILE FOUNDATION
NOT TO SCALE



BOARDWALK TRANSITION
NOT TO SCALE



BOARDWALK FRAMING
NOT TO SCALE

PERMITTING PLAN ONLY
NOT FOR CONSTRUCTION

Revisions

Horsley Witten Group, Inc.
Sandwich Environmental Institute
90 Route 6A, #2532
Sandwich, MA 02563
508-833-6600 phone
508-833-3150 fax
www.horsleywitten.com

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

BOARDWALK PROFILES AND DETAILS

Prepared for:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA 02554
Phone: (508) 228-7240
Fax: —

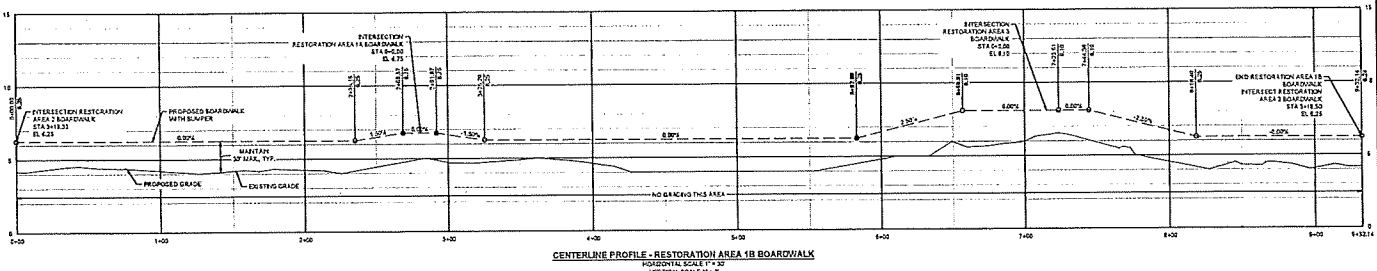
Nantucket Surveyors LLC
Surveyors
Nantucket, MA
Phone: (508) 228-0402
Fax: —
Dated: 6/6/2022

Project No. 20008
Sheet 11 of 21
Plan No. C - 11

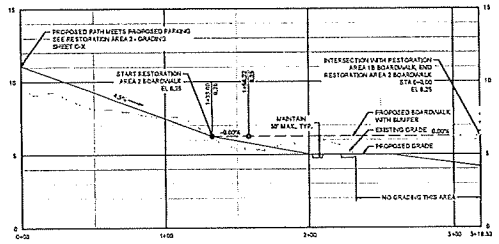
Last Modified: 06/24/2026 at 9:48AM EDT

NOTES:

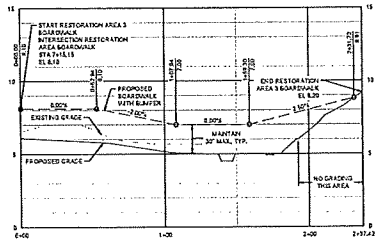
1. BOARDWALK SHALL BE NO MORE THAN 30" ABOVE FINISHED GRADE.
2. SLOPED SECTIONS OF BOARDWALK SHALL HAVE A MAXIMUM GRADE OF 2.50%.



CENTERLINE PROFILE - RESTORATION AREA 1B BOARDWALK
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 3'



CENTERLINE PROFILE - RESTORATION AREA 2 BOARDWALK
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 3'



CENTERLINE PROFILE - RESTORATION AREA 3 BOARDWALK
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 3'

PERMITTING PLAN ONLY
NOT FOR CONSTRUCTION

Revisions

Horsley Witten Group, Inc.
Sustainable Environments
Outside the Box Thinking
90 Route 6A, Unit 1
Sandwich, MA 02563
508.833.6600 phone
508.833.3150 fax
www.horsleywitten.com

Project No. LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

Sheet Title: BOARDWALK PROFILES

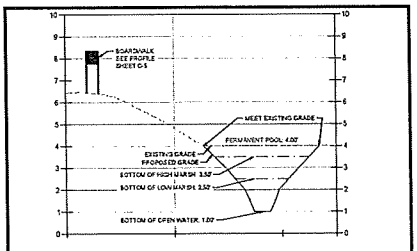
Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
Phone: (508) 228-7240
Fax: —

Survey Prepared By:
Nantucket Surveyors LLC
1 Main Street
Nantucket, MA 02554
Phone: (508) 228-2040
Fax: —
Date: 4/26/2022

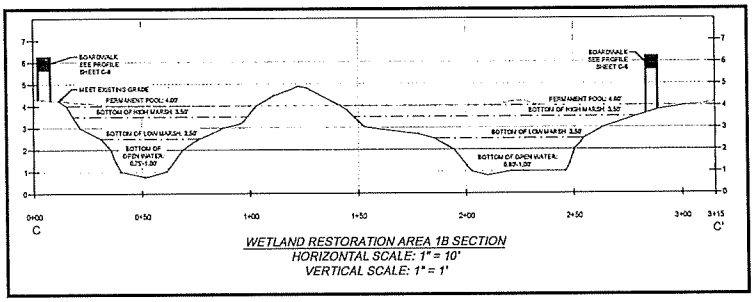
Project Number: 20008
Sheet: 12 of 21
Drawing Number: C - 12

Last Modified: 06/24/2026 at 9:48AM EDT

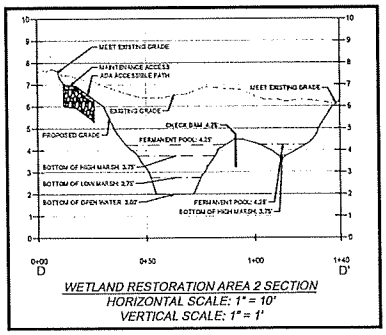
last modified: 06/22/24 printed: 06/22/24 by as H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008_GD.dwg



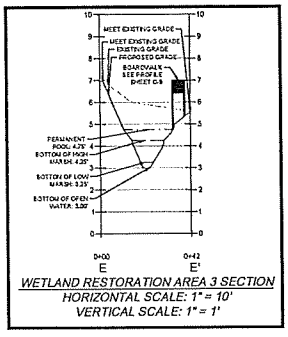
WETLAND RESTORATION AREA 1A SECTION
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 1'



WETLAND RESTORATION AREA 1B SECTION
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 1'



WETLAND RESTORATION AREA 2 SECTION
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 1'



WETLAND RESTORATION AREA 3 SECTION
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE: 1" = 1'

PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE

(in feet)
1 INCH = 20 FEET

Revisions

Hanley Wilten Group, Inc.
Sustainable Environmental Solutions
[illegible]

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

WETLAND RESTORATION SECTIONS

Prepared for:
The Nantucket Land Bank
[illegible]

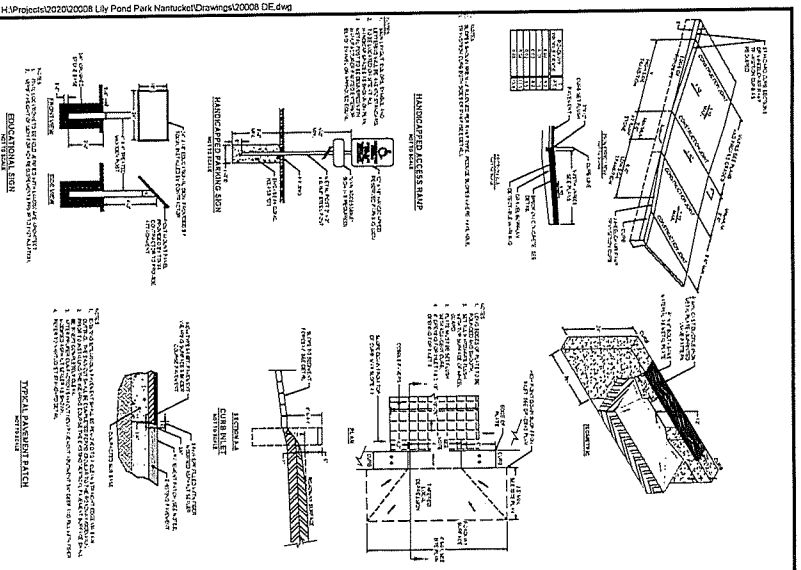
Nantucket Surveyors LLC
[illegible]

20008

13 of 21

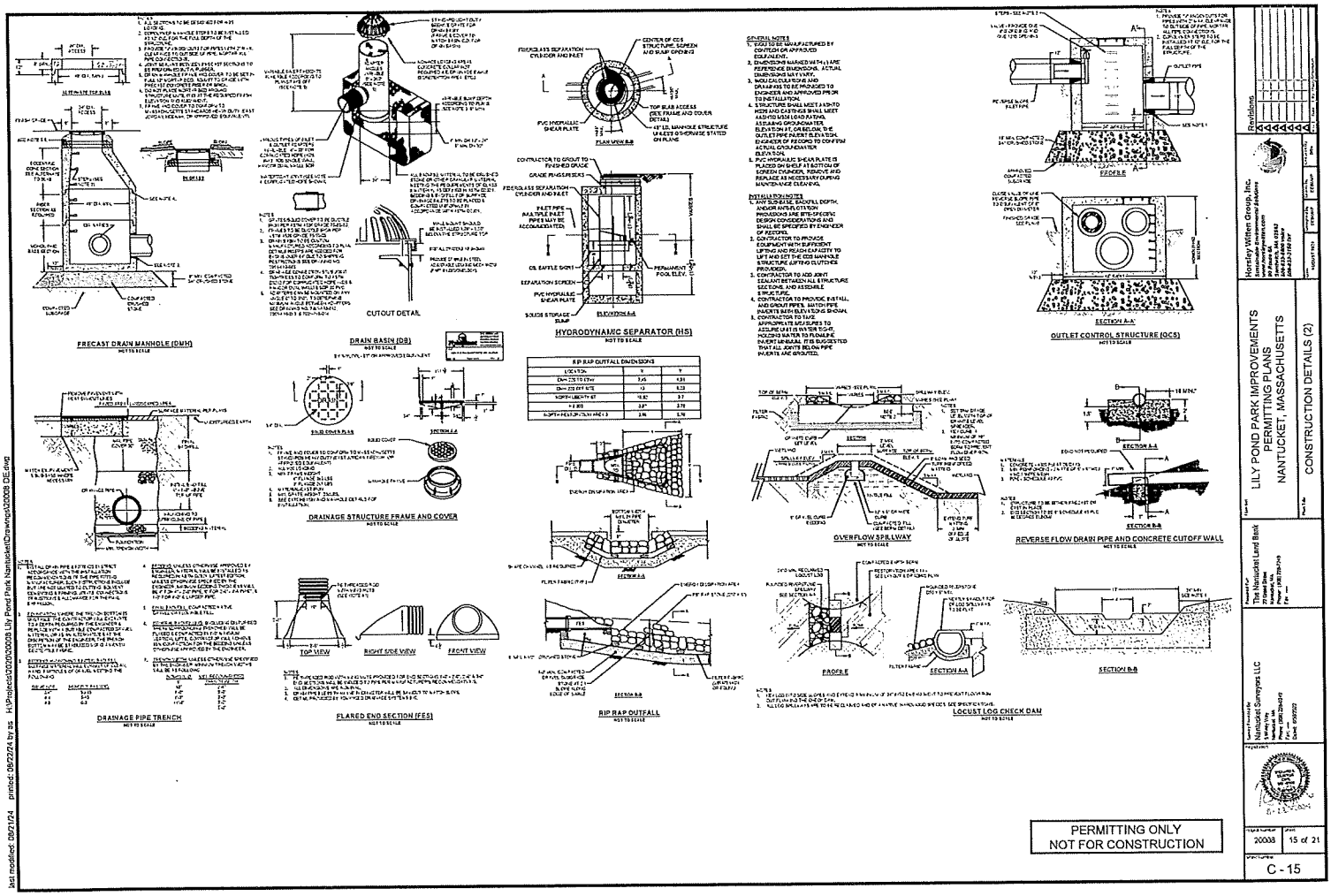
C - 13

last modified: 08/21/24 printed: 08/22/24 by as H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008 DE.dwg



PERMITTING ONLY
NOT FOR CONSTRUCTION

Project Number 20008	Sheet C - 14	Survey Provided By: Nantucket Surveyors LLC, 5 Windy Way, Nantucket MA, Phone: (508) 228-0241, Fax: —, Dated: 6/30/2021	Prepared For: The Nantucket Land Bank, 22 Broad Street, Nantucket, MA, Phone: (508) 228-7240, Fax: —	Project: LILY POND PARK IMPROVEMENTS PERMITTING PLANS NANTUCKET, MASSACHUSETTS	Horsley Witten Group, Inc. Sustainable Environmental Solutions www.horsleywitten.com 90 Route 6A Sandwich, MA 02563 508-833-6600 voice 508-833-3150 fax	Revisions
Total Sheets 14 of 21				Plan Title: CONSTRUCTION DETAILS (1)	Author: AUGUST 2024 · Checked by: TEB/MP · QA/QC by: EPR/CMP · Scale: —	



PRECAST DRAIN MANHOLE (DMH)
NOT TO SCALE

CUTOUT DETAIL

HYDRODYNAMIC SEPARATOR (HS)
NOT TO SCALE

OUTLET CONTROL STRUCTURE (OCS)
NOT TO SCALE

DRAIN BASIN (DB)
NOT TO SCALE

RIP RAP OUTFALL DIMENSIONS		
LOCATION	X	Y
DMH 2 TO DB 1	3.45	4.81
DMH 2 TO DMH 1	13	5.13
NORTH LIBERTY ST	10.82	3.7
HS 1	3.8"	3.78
NORTH POND OUTLET (WEST)	3.96	3.76

DRAINAGE STRUCTURE FRAME AND COVER
NOT TO SCALE

OVERFLOW SPILLWAY
NOT TO SCALE

REVERSE FLOW DRAIN PIPE AND CONCRETE CUTOFF WALL
NOT TO SCALE

DRAINAGE PIPE TRENCH
NOT TO SCALE

FLARED END SECTION (FES)
NOT TO SCALE

RIP RAP OUTFALL
NOT TO SCALE

LOCUST LOG CHECK DAM
NOT TO SCALE

PERMITTING ONLY
NOT FOR CONSTRUCTION

Revisions

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
90 Route 6A
Sandwich, MA 02563
508-833-6600 Main
508-833-3232 Fax
www.horsleywitten.com

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

CONSTRUCTION DETAILS (2)

Owner
Nantucket Land Bank
22 Broad Street
Nantucket, MA
02554-3844
Fax: (508)228-7619

Surveyor
Nantucket Surveyors LLC
PO Box 2894
Nantucket, MA
02584-2894
Fax: (508)228-7619

Date: 6/20/22

Project No.
20008

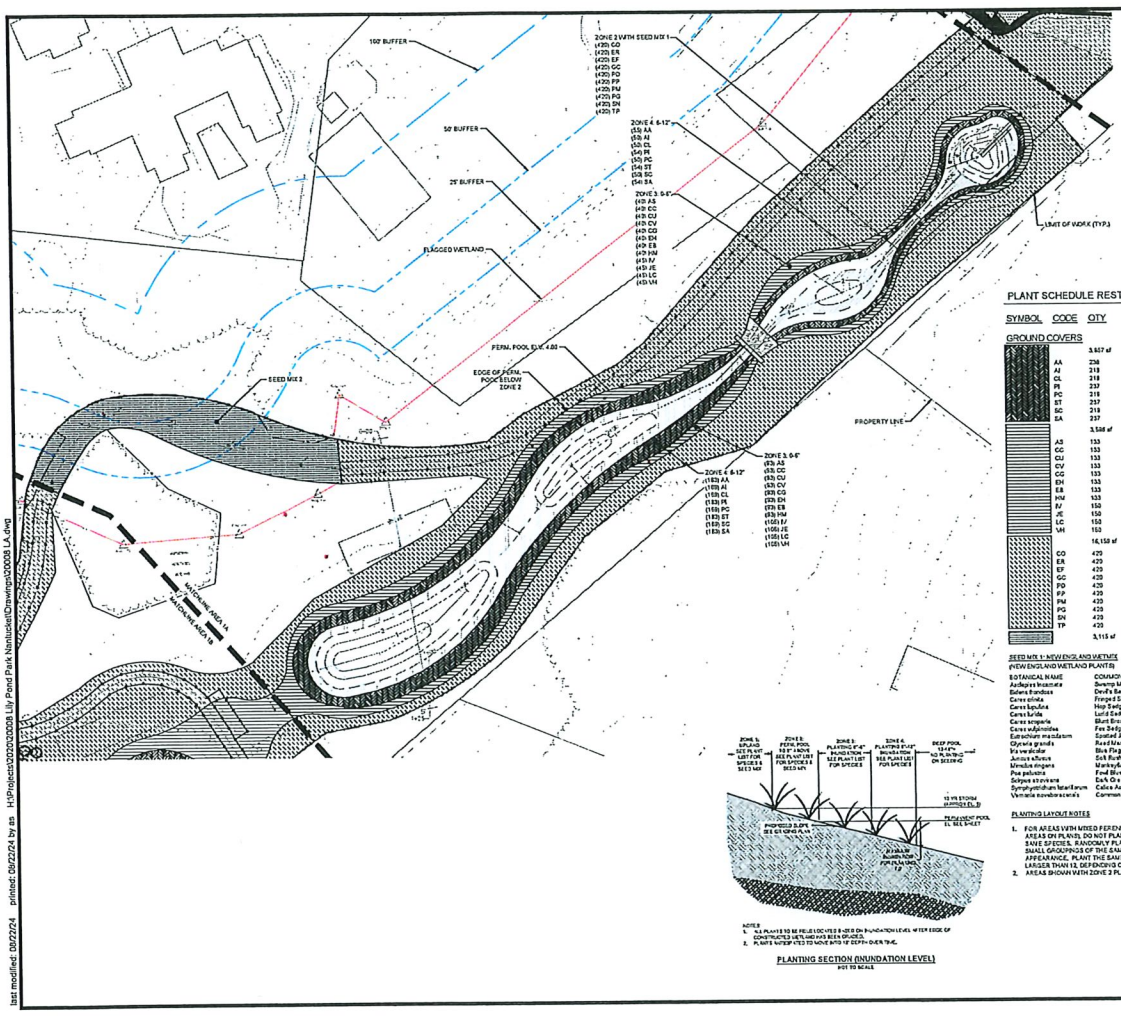
Sheet
15 of 21

Drawing No.
C - 15

Last Modified: 06/21/24 printed: 06/27/24 by as K:\Projects\20020\20008 Lily Pond Park Nantucket\Drawings\20008 DE.dwg

Last Modified: 06/24/2026 at 9:48AM EDT

Last Modified: 06/24/2026 at 9:48AM EDT



PLANT SCHEDULE RESTORATION AREA 1A

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
GROUND COVERS						
		3,937 sf	ZONE 4: 6-12"			
	AA	298	Acorus americanus	Sweet Flag	Plugs	18" o.c.
	AI	218	Asclepias incarnata	Swamp Milkweed	Plugs	18" o.c.
	CL	218	Carex lurida	Lurid Sedge	Plugs	18" o.c.
	PE	218	Peltandra virginica	Arrow Arum	Plugs	18" o.c.
	PC	218	Pontederia cordata	Pickerel Weed	Plugs	18" o.c.
	ST	218	Sotanogeton tabernaemontani	Softstem Bulrush	Plugs	18" o.c.
	SC	218	Scirpus cyperinus	Wool Grass	Plugs	18" o.c.
	SA	217	Sparganium americanum	Burreed	Plugs	18" o.c.
		3,588 sf	ZONE 3: 0-6"			
	AS	133	Alisma subcordatum	American Water Plantain	Plugs	18" o.c.
	CC	133	Carex crinita	Fringed Sedge	Plugs	18" o.c.
	CU	133	Carex lupulina	Hop Sedge	Plugs	18" o.c.
	CV	133	Carex vulpinoidea	Fox Sedge	Plugs	18" o.c.
	CG	133	Chelone glabra	White Turtlehead	Plugs	18" o.c.
	EH	133	Eupatorium hyssopifolium	Thoroughwort	Plugs	18" o.c.
	EB	133	Eupatorium perfoliatum	Common Boneset	Plugs	18" o.c.
	HM	133	Hibiscus moscheutos	Rose Mallow	Plugs	18" o.c.
	IV	150	Iris versicolor	Blue Flag	Plugs	18" o.c.
	JE	150	Juncus effusus	Soft Rush	Plugs	18" o.c.
	LC	150	Lobelia cardinalis	Cardinal Flower	Plugs	18" o.c.
	VM	150	Verbena hastata	Blue Vervain	Plugs	18" o.c.
		16,150 sf	ZONE 2 WITH SEED MIX 1			
	CO	420	Carex scoparia	Broom Sedge	Plugs	24" o.c.
	ER	420	Elymus riparius	Riverbank Rye	Plugs	24" o.c.
	EF	420	Eutrochium fistulosum	Hollow Joe Pye Weed	Plugs	24" o.c.
	GC	420	Gentiana clausa	Bottle Gentian	Plugs	24" o.c.
	PD	420	Panicum virgatum	Switchgrass	Plugs	24" o.c.
	PP	420	Poa palustris	Fowl Bluegrass	Plugs	24" o.c.
	PM	420	Pycnanthemum muticum	Blunt Mountainmint	Plugs	24" o.c.
	PG	420	Pycnanthemum virginianum	Mountain Mint	Plugs	24" o.c.
	SN	420	Symphyotrichum novae-angliae	New England Aster	Plugs	24" o.c.
	TP	420	Thelypteris palustris	Eastern Marsh Fern	Plugs	24" o.c.
		3,115 sf	SEED MIX 2			

SEED MIX 1- NEW ENGLAND WETMIX
(NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Asclepias incarnata	Swamp Milkweed
Bidens frondosa	Devil's Beggarticks
Carex stricta	Tussock Sedge
Carex lupulina	Hop Sedge
Carex lurida	Lurid Sedge
Carex scoparia	Blunt Broom Sedge
Carex vulpinoidea	Fox Sedge
Eutrochium maculatum	Spotted Joe Pye Weed
Glyceria grandis	Reed Manna Grass
Iris versicolor	Blue Flag
Juncus effusus	Soft Rush
Mimulus ringens	Monkeyflower
Poa palustris	Fowl Bluegrass
Scirpus atrovirens	Dark Green Bulrush
Symphyotrichum laterifl orum	Calico Aster
Vernonia noveboracensis	Common Ironweed

SEED MIX 2: FESCUE MIX
(LAWN HORTICULTURE)

BOTANICAL NAME	COMMON NAME
Deschampsia flexosa	Wavy Hair Grass
Festuca glauca	Blue Fescue
Festuca rubra	Shrine Fescue
Festuca rubra glauca	Blue Sheep Fescue
Festuca trachyphylla	Hard Fescue
Trifolium amoenum	Showy Indian Clover

PLANTING LAYOUT NOTES

1. FOR AREAS WITH MIXED PERENNIALS AND/OR GRASSES (SHOWN AS HATCHED AREAS ON PLANS), DO NOT PLANT IN A PATTERN OR WITH LARGE AREAS OF THE SAME SPECIES. RANDOMLY PLANT AS INDICATED ON THE PLANTING PLANS INTO SMALL GROUPINGS OF THE SAME SPECIES TO CREATE A MORE NATURALISTIC APPEARANCE. PLANT THE SAME PLANT SPECIES IN GROUPS OF 8-13 AND NOT LARGER THAN 13, DEPENDING ON THE OVERALL NUMBER OF PLANTINGS.
2. AREAS SHOWN WITH ZONE 2 PLANTS (HATCHING) TO BE SEEDED WITH SEED MIX 1.

PLANTING SECTION (INUNDATION LEVEL)
NOT TO SCALE

PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
0 10 20 40 80
(in feet)
1 INCH = 20 FEET

Revisions

Horsley Witten Group, Inc.
Environmental Scientists & Planners
90 Route 6A
Sandwich, MA 02563
508-833-6600 office
508-833-3150 fax
www.horsleywitten.com

Prepared for:
The Nantucket Land Bank
22 Broad St.
Nantucket, MA
02554-3610
For —

Project:
LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

Plan Title:
RESTORATION AREA 1A - PLANTING

Surveyed by:
Nantucket Surveyors LLC
P.O. Box 1
Nantucket, MA
Phone — (508) 228-0402
Fax —
Dated: 6/9/2022

Project Number: 20008
Date: 16 of 21
Sheet Number: L - 1

last modified: 06/22/24 printed: 06/22/24 by as H:\Projects\20200\20008 Lily Pond Park Nantucket\Drawings\20008 LA.dwg

Last Modified: 06/24/2026 at 9:48AM EDT

PLANT SCHEDULE RESTORATION AREA 1B

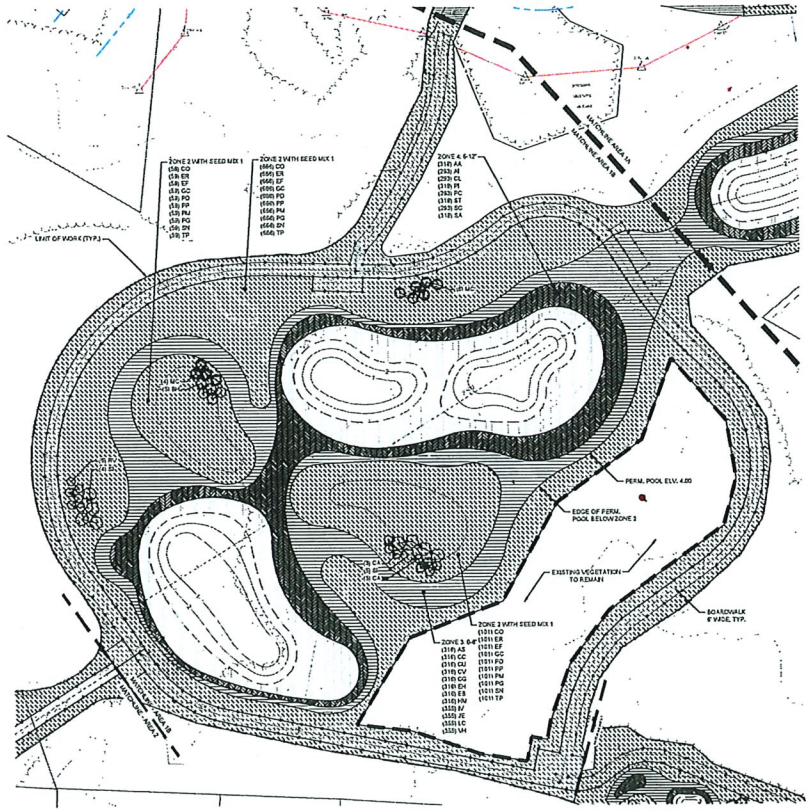
SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
SHRUBS						
	BH	5	Baccharis halimifolia	Groundsel Bush	5 gal.	60" o.c.
	CA	8	Clethra alnifolia	Summersweet	5 gal.	48" o.c.
	MC	10	Morella caroliniensis	Bayberry	5 gal.	60" o.c.
	RV	6	Rhododendron viscosum	Swamp Azalea	5 gal.	48" o.c.
	SI	9	Sambucus nigra	Black Elderberry	5 gal.	72" o.c.
GROUND COVERS		5,291 sf	ZONE 4: 6-12"			
	AA	318	Acorus americanus	Sweet Flag	Plugs	18" o.c.
	AI	263	Asclepias incarnata	Swamp Milkweed	Plugs	18" o.c.
	CL	263	Carex lurida	Lurid Sedge	Plugs	18" o.c.
	PI	318	Pabandra virginica	Arrow Arum	Plugs	18" o.c.
	PC	263	Pontederia cordata	Pickerel Weed	Plugs	18" o.c.
	ST	318	Schoenoplectus tabernaemontani	Softstem Bulrush	Plugs	18" o.c.
	SC	263	Scirpus cyperinus	Wool Grass	Plugs	18" o.c.
	SA	318	Sparganium americanum	Burr-reed	Plugs	18" o.c.
		8,548 sf	ZONE 3: 0-6"			
	AS	318	Alisma subcordatum	American Water Plantain	Plugs	18" o.c.
	CC	318	Carex crinita	Fringed Sedge	Plugs	18" o.c.
	CU	318	Carex lupulina	Hop Sedge	Plugs	18" o.c.
	CV	318	Carex vulpinoidea	Fox Sedge	Plugs	18" o.c.
	CG	318	Chelone glabra	White Turtlehead	Plugs	18" o.c.
	EH	318	Eupatorium hyssopifolium	Thoroughwort	Plugs	18" o.c.
	EB	318	Eupatorium perfoliatum	Common Boneset	Plugs	18" o.c.
	HM	318	Hibiscus moscheutos	Rose Mallow	Plugs	18" o.c.
	IV	353	Iris versicolor	Blue Flag	Plugs	18" o.c.
	JE	353	Juncus effusus	Soft Rush	Plugs	18" o.c.
	LC	353	Lobelia cardinalis	Cardinal Flower	Plugs	18" o.c.
	VH	353	Verbena hastata	Blue Vervain	Plugs	18" o.c.
		31,790 sf	ZONE 2 WITH SEED MIX 1			
	CO	826	Carex scoparia	Broom Sedge	Plugs	24" o.c.
	ER	826	Elymus riparius	Riverbank Rye	Plugs	24" o.c.
	EF	826	Eutrochium fistulosum	Hollow Joe Pye Weed	Plugs	24" o.c.
	GC	826	Gentiana clausa	Bottle Gentian	Plugs	24" o.c.
	PD	826	Panicum digitalis	Beaktop-grs	Plugs	24" o.c.
	PP	826	Poa palustris	Fowl Bluegrass	Plugs	24" o.c.
	PM	826	Pycnanthemum muticum	Blunt Mountainmint	Plugs	24" o.c.
	PS	826	Pycnanthemum virginianum	Mountain Mint	Plugs	24" o.c.
	SN	826	Symphyotrichum novae-angliae	New England Aster	Plugs	24" o.c.
	TP	826	Thelypteris palustris	Eastern Marsh Fern	Plugs	24" o.c.

SEED MIX 1: NEW ENGLAND NETWIT
(NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Asclepias incarnata	Swamp Milkweed
Bidens frondosa	Devil's Beggarticks
Carex crinita	Fringed Sedge
Carex lupulina	Hop Sedge
Carex lurida	Lurid Sedge
Carex scoparia	Blunt Broom Sedge
Carex vulpinoidea	Fox Sedge
Eutrochium maculatum	Spotted Joe Pye Weed
Glyceria grandis	Reed Manna Grass
Iris versicolor	Blue Flag
Juncus effusus	Soft Rush
Mimulus ringens	Monkeyflower
Poa palustris	Fowl Bluegrass
Scirpus atrovirens	Dark Green Bulrush
Symphyotrichum laterflorum	Calico Aster
Verbena novaeboracensis	Common Ironweed

PLANTING LAYOUT NOTES

1. FOR AREAS WITH MIXED PERENNIALS AND/OR GRASSES (SHOWN AS HATCHED AREAS ON PLANS), DO NOT PLANT IN A PATTERN OR WITH LARGE AREAS OF THE SAME SPECIES. RANDOMLY PLANT AS INDICATED ON THE PLANTING PLANS INTO SMALL GROUPINGS OF THE SAME SPECIES TO CREATE A MORE NATURALISTIC APPEARANCE. PLANT THE SAME PLANT SPECIES IN GROUPS OF 8-12 AND NOT LARGER THAN 12, DEPENDING ON THE OVERALL NUMBER OF PLANTINGS.
2. AREAS SHOWN WITH ZONE 2 PLANTS (HATCHING) TO BE SEEDED WITH SEED MIX 1.



PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
20 0 10 20 40 80
(in feet)
1 INCH = 20 FEET

Revisions

Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563
508-833-6600 main
508-833-3150 fax
www.horsleywitten.com

Project
LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

Plan Title
RESTORATION AREA 1B - PLANTING

Prepared for
Nantucket Land Bank
22 Broad Street
Nantucket, MA
Phone: (508) 228-7313
Fax: —

Survey Provided by
Nantucket Surveyors LLC
Nantucket, MA
Phone: (508) 228-2345
Fax: —
Date: 8/2022

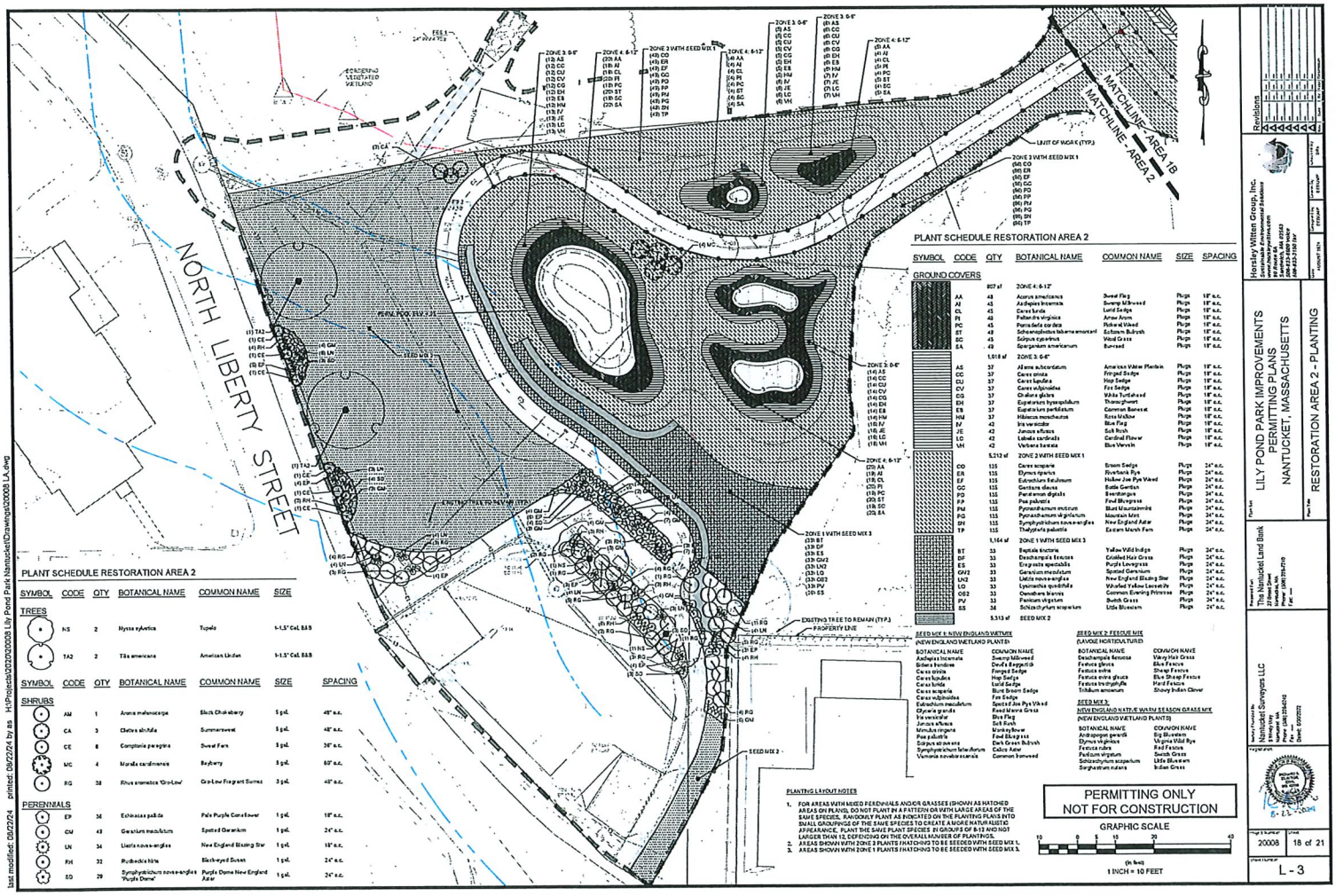
Project Number
20008

Sheet Number
17 of 21

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last modified: 08/22/24 printed: 08/22/24 by: as H:\Projects\20\20020008\Lily Pond Park Nantucket\Drawings\20008 LA.dwg

Last Modified: 06/24/2026 at 9:48AM EDT



PLANT SCHEDULE RESTORATION AREA 2

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
TREES						
	NS	2	Nyssa sylvatica	Tupelo	1-1.5" Cal. B&B	
	TA2	2	Tilia americana	American Linden	1-1.5" Cal. B&B	
SHRUBS						
	AM	1	Aronia melanocarpa	Black Chokeberry	5 gal.	48" o.c.
	CA	3	Clethra alnifolia	Summersweet	5 gal.	48" o.c.
	CE	6	Comptonia peregrina	Sweet Fern	5 gal.	36" o.c.
	MC	4	Morella caroliniensis	Bayberry	5 gal.	60" o.c.
	RG	38	Rhus aromatica 'Gro-Low'	Gro-Low Fragrant Sumac	5 gal.	48" o.c.
PERENNIALS						
	EP	34	Echinacea pallida	Pale Purple Coneflower	1 gal.	18" o.c.
	GM	49	Geranium maculatum	Spotted Geranium	1 gal.	24" o.c.
	LN	34	Liatris novae-angliae	New England Blazing Star	1 gal.	18" o.c.
	RH	32	Rudbeckia hirta	Black-eyed Susan	1 gal.	24" o.c.
	SD	29	Symphyotrichum novae-angliae 'Purple Dome'	Purple Dome New England Aster	1 gal.	24" o.c.

PLANT SCHEDULE RESTORATION AREA 2

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
GROUND COVERS						
		807 sf	ZONE 4: 6-12'			
	AA	48	Acorus americanus	Sweet Flag	Plugs	18" o.c.
	AI	45	Asclepias incarnata	Swamp Milkweed	Plugs	18" o.c.
	CL	45	Carex lurida	Lurid Sedge	Plugs	18" o.c.
	PI	48	Peltandra virginica	Arrow Arum	Plugs	18" o.c.
	PC	45	Pontederia cordata	Pickerel Weed	Plugs	18" o.c.
	ST	49	Schoenoplectus tabernaemontani	Softstem Bulrush	Plugs	18" o.c.
	SC	45	Scirpus cyperinus	Wool Grass	Plugs	18" o.c.
	SA	49	Sparganium americanum	Burreed	Plugs	18" o.c.
		1,018 sf	ZONE 3: 0-6'			
	AS	37	Alisma subcordatum	American Water Plantain	Plugs	18" o.c.
	CC	37	Carex crinita	Fringed Sedge	Plugs	18" o.c.
	CJ	37	Carex lupulina	Hop Sedge	Plugs	18" o.c.
	CV	37	Carex vulpinoidea	Fox Sedge	Plugs	18" o.c.
	CG	37	Chelone glabra	White Turtlehead	Plugs	18" o.c.
	EH	37	Eupatorium hyssopifolium	Thoroughwort	Plugs	18" o.c.
	EB	37	Eupatorium perfoliatum	Common Boneset	Plugs	18" o.c.
	HM	37	Hibiscus moscheutos	Rose Mallow	Plugs	18" o.c.
	IV	42	Iris versicolor	Blue Flag	Plugs	18" o.c.
	JE	42	Juncus effusus	Soft Rush	Plugs	18" o.c.
	LC	42	Lobelia cardinalis	Cardinal Flower	Plugs	18" o.c.
	VH	42	Verbena hastata	Blue Vervain	Plugs	18" o.c.
		5,212 sf	ZONE 2 WITH SEED MIX 1			
	CO	135	Carex scoparia	Broom Sedge	Plugs	24" o.c.
	ER	135	Elymus riparius	Riverbank Rye	Plugs	24" o.c.
	EF	135	Eutrochium fistulosum	Hollow Joe Pye Weed	Plugs	24" o.c.
	GO	135	Gentiana clausa	Bottle Gentian	Plugs	24" o.c.
	PD	135	Penstemon digitalis	Beardtongue	Plugs	24" o.c.
	PP	135	Poa palustris	Fowl Bluegrass	Plugs	24" o.c.
	PM	135	Pycnanthemum muticum	Blunt Mountainmint	Plugs	24" o.c.
	PG	135	Pycnanthemum virginianum	Mountain Mint	Plugs	24" o.c.
	SN	135	Symphyotrichum novae-angliae	New England Aster	Plugs	24" o.c.
	TP	135	Thelypteris palustris	Eastern Marsh Fern	Plugs	24" o.c.
		1,164 sf	ZONE 1 WITH SEED MIX 3			
	BT	33	Baptisia tinctoria	Yellow Wild Indigo	Plugs	24" o.c.
	DF	33	Deschampsia flexuosa	Crinkled Hair Grass	Plugs	24" o.c.
	ES	33	Eragrostis spectabilis	Purple Lovegrass	Plugs	24" o.c.
	GN2	33	Geranium maculatum	Spotted Geranium	Plugs	24" o.c.
	LN2	33	Liatris novae-angliae	New England Blazing Star	Plugs	24" o.c.
	LO	33	Oenothera fruticosa	Marshall Yellow Loosestrife	Plugs	24" o.c.
	OB2	33	Oenothera biennis	Common Evening Primrose	Plugs	24" o.c.
	PV	33	Panicum virgatum	Switch Grass	Plugs	24" o.c.
	SS	34	Schizachyrium scoparium	Little Bluestem	Plugs	24" o.c.
		5,313 sf	SEED MIX 2			

SEED MIX 1: NEW ENGLAND WETWAY (NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Asclepias incarnata	Swamp Milkweed
Bidens frondosa	Devil's Beggarstick
Carex crinita	Fringed Sedge
Carex lupulina	Hop Sedge
Carex lurida	Lurid Sedge
Carex scoparia	Blunt Broom Sedge
Carex vulpinoidea	Fox Sedge
Eutrochium maculatum	Spotted Joe Pye Weed
Glyceria grandis	Reed Manna Grass
Iris versicolor	Blue Flag
Juncus effusus	Soft Rush
Mimulus ringens	Monkey flower
Poa palustris	Fowl Bluegrass
Scirpus atrovirens	Dark Green Bulrush
Symphyotrichum lateriflorum	Calico Aster
Verbena hastata	Common Ironweed

SEED MIX 2: FESCUE MIX (LAVOIE HORTICULTURE)

BOTANICAL NAME	COMMON NAME
Deschampsia flexuosa	Wavy Hair Grass
Festuca glauca	Blue Fescue
Festuca ovina	Sheep Fescue
Festuca ovina glauca	Blue Sheep Fescue
Festuca trachyphylla	Hard Fescue
Trifolium virginicum	Shawy Indian Clover

SEED MIX 3: NEW ENGLAND NATIVE WARM SEASON GRASS MIX (NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Andropogon gerardii	Big Bluestem
Elymus virginicus	Virginia Wild Rye
Festuca rubra	Red Fescue
Panicum virgatum	Switch Grass
Schizachyrium scoparium	Little Bluestem
Sorghastrum nutans	Indian Grass

Revisions

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
90 Route 6A
Sandwich, MA 02563
508-833-6600 voice
508-833-3150 fax

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

RESTORATION AREA 2 - PLANTING

Prepared for:
The Nantucket Land Bank
2 Fairgrounds Rd.
Nantucket, MA
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Fax: —

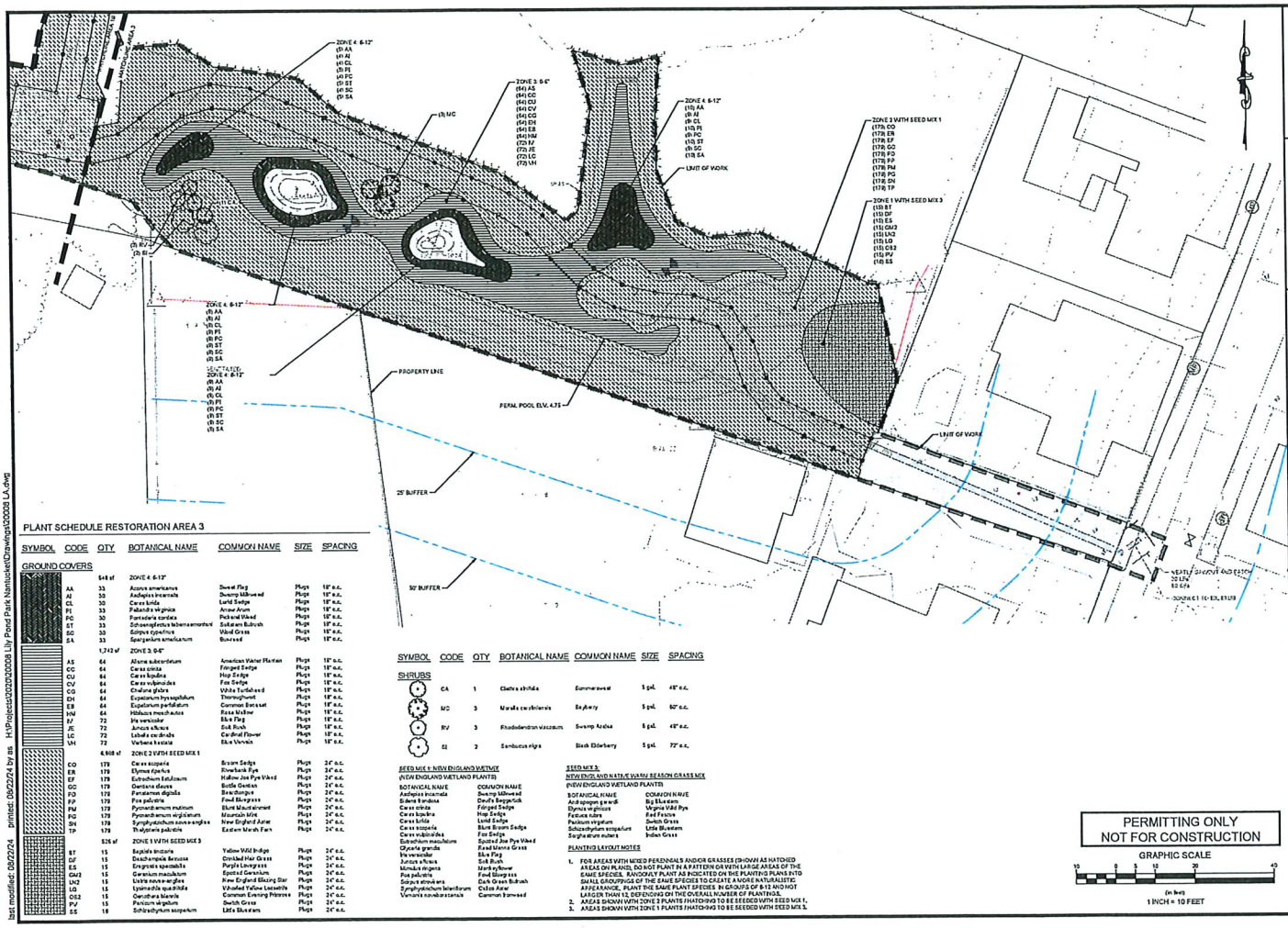
Nantucket Surveyors LLC
Surveyor
Nantucket, MA
Phone: (508) 228-0419
Email: —

Date: 6/27/22

Project No.: 20008
Sheet: 18 of 21
Sheet Number: L - 3

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PLANT SCHEDULE RESTORATION AREA 3

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
GROUND COVERS						
		648 sf	ZONE 4: 6-12"			
	AA	33	Acorus americanus	Sweet Flag	Plugs	18" o.c.
	AI	33	Asclepias incarnata	Swamp Milkweed	Plugs	18" o.c.
	CL	33	Carex lurida	Lurid Sedge	Plugs	18" o.c.
	FI	33	Peltandra virginica	Arrow Arum	Plugs	18" o.c.
	PC	30	Pontederia cordata	Pickerel Weed	Plugs	18" o.c.
	ST	33	Schoenoplectus tabernaemontani	Soft-stem Bulrush	Plugs	18" o.c.
	SC	30	Scirpus cyperinus	Wool Grass	Plugs	18" o.c.
	SA	33	Sparganium americanum	Bur-reed	Plugs	18" o.c.
		1,742 sf	ZONE 3: 0-6"			
	AS	64	Alisma subcordatum	American Water Plantain	Plugs	18" o.c.
	CC	64	Carex crinita	Fringed Sedge	Plugs	18" o.c.
	CU	64	Carex lupulina	Hop Sedge	Plugs	18" o.c.
	CV	64	Carex vulpinoidea	Fox Sedge	Plugs	18" o.c.
	CG	64	Chelone glabra	White Turtlehead	Plugs	18" o.c.
	EH	64	Eupatorium hyssopifolium	Thoroughwort	Plugs	18" o.c.
	EB	64	Eupatorium perfoliatum	Common Boneset	Plugs	18" o.c.
	HM	64	Hibiscus moscheutos	Rose Mallow	Plugs	18" o.c.
	IV	72	Iris versicolor	Blue Flag	Plugs	18" o.c.
	JE	72	Juncus effusus	Soft Rush	Plugs	18" o.c.
	LC	72	Lobelia cardinalis	Cardinal Flower	Plugs	18" o.c.
	VH	72	Verbena hastata	Blue Vervain	Plugs	18" o.c.
		6,968 sf	ZONE 2 WITH SEED MIX 1			
	CG	178	Carex scoparia	Broom Sedge	Plugs	24" o.c.
	EB	178	Elymus riparius	Riverbank Rye	Plugs	24" o.c.
	EF	178	Eutrochium fistulosum	Hollow Joe Pye Weed	Plugs	24" o.c.
	GC	178	Gentiana clausa	Bottle Gentian	Plugs	24" o.c.
	FD	178	Panicum digitalis	Beaubergion	Plugs	24" o.c.
	FP	178	Poa palustris	Fowl Bluegrass	Plugs	24" o.c.
	PM	178	Pycnanthemum muticum	Blunt Mountainmint	Plugs	24" o.c.
	PG	178	Pycnanthemum virginianum	Mountain Mint	Plugs	24" o.c.
	SN	178	Symphyotrichum novae-angliae	New England Aster	Plugs	24" o.c.
	TP	178	Thelypteris palustris	Eastern Marsh Fern	Plugs	24" o.c.
		526 sf	ZONE 1 WITH SEED MIX 3			
	BT	15	Baptisia tinctoria	Yellow Wild Indigo	Plugs	24" o.c.
	DF	15	Deschampsia flexuosa	Crinkled Hair Grass	Plugs	24" o.c.
	ES	15	Eragrostis spectabilis	Purple Lovegrass	Plugs	24" o.c.
	GM2	15	Geranium maculatum	Spotted Geranium	Plugs	24" o.c.
	LH2	15	Liatris novae-angliae	New England Blazing Star	Plugs	24" o.c.
	LG	15	Lysimachia quadrifolia	Whorled Yellow Loosestrife	Plugs	24" o.c.
	OS2	15	Oenothera biennis	Common Evening Primrose	Plugs	24" o.c.
	PV	15	Panicum virgatum	Switch Grass	Plugs	24" o.c.
	SS	18	Schizachyrium scoparium	Little Bluestem	Plugs	24" o.c.

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
SHRUBS						
	CA	1	Clethra alnifolia	Summersweet	5 gal.	48" o.c.
	MC	3	Morella cerifera	Bayberry	5 gal.	60" o.c.
	RV	3	Rhododendron viscosum	Swamp Azalea	5 gal.	48" o.c.
	SI	3	Sambucus nigra	Black Elderberry	5 gal.	72" o.c.

SEED MIX 1: NEW ENGLAND WETMIX
(NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Asclepias incarnata	Swamp Milkweed
Bidens frondosa	Devil's Beggartick
Carex crinita	Fringed Sedge
Carex lupulina	Hop Sedge
Carex lurida	Lurid Sedge
Carex scoparia	Blunt Broom Sedge
Carex vulpinoidea	Fox Sedge
Eutrochium maculatum	Spotted Joe Pye Weed
Glyceria grandis	Reed Manna Grass
Iris versicolor	Blue Flag
Juncus effusus	Soft Rush
Mimulus ringens	Monkeyflower
Poa palustris	Fowl Bluegrass
Scirpus atrovirens	Dark Green Bulrush
Symphyotrichum lateriflorum	Calico Aster
Verbena hastata	Common Blue Vervain

SEED MIX 3:
NEW ENGLAND NATIVE WARM SEASON GRASS MIX
(NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Andropogon gerardii	Big Bluestem
Elymus virginicus	Virginia Wild Rye
Festuca rubra	Red Fescue
Panicum virgatum	Switch Grass
Schizachyrium scoparium	Little Bluestem
Sorghastrum nutans	Indian Grass

PLANTING LAYOUT NOTES

1. FOR AREAS WITH MIXED PERENNIALS AND/OR GRASSES (SHOWN AS HATCHED AREAS ON PLANS), DO NOT PLANT IN A PATTERN OR WITH LARGE AREAS OF THE SAME SPECIES. RANDOMLY PLANT AS INDICATED ON THE PLANTING PLANS INTO SMALL GROUPINGS OF THE SAME SPECIES TO CREATE A MORE NATURALISTIC APPEARANCE. PLANT THE SAME PLANT SPECIES IN GROUPS OF 5-12 AND NOT LARGER THAN 12, DEPENDING ON THE OVERALL NUMBER OF PLANTINGS.
2. AREAS SHOWN WITH ZONE 2 PLANTS (HATCHING TO BE SEEDED WITH SEED MIX 1.
3. AREAS SHOWN WITH ZONE 1 PLANTS (HATCHING TO BE SEEDED WITH SEED MIX 3.

PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
10 5 0 10 20 40
(in feet)
1 INCH = 10 FEET

Revisions

Horsley Witten Group, Inc.
Environmental Scientists & Planners
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LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

RESTORATION AREA 3 - PLANTING

Owner
The Nantucket Land Bank
23 Broad Street
Nantucket, MA 02554
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Fax: —

Prepared by
Nantucket Surveyors LLC
2 Fairgrounds Rd
Nantucket, MA 02554
Tel: —
Email: —

Registered Professional Engineer
Commonwealth of Massachusetts
Kevin J. Kelley
No. 49,722
8-22-2024

Project Number: 20008
Sheet: 19 of 21
Sheet Number: L - 4

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last modified: 06/22/24 printed: 06/22/24 by: as H:\Projects\20200\20008 Lily Pond Park Nantucket\Drawings\20008 LA.dwg

PLANT SCHEDULE GATEWAY

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE
TREES					
	AR	3	Acer rubrum	Red Maple	1-1.5" Cal. B&B
	NS	3	Nyssa sylvatica	Tupelo	1-1.5" Cal. B&B

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
SHRUBS						
	AM	5	Aronia melanocarpa	Black Chokeberry	5 gal.	48" o.c.
	BH	2	Betchenia hallii/hida	Groundsel Bush	5 gal.	60" o.c.
	CA	6	Clethra alnifolia	Summersweet	5 gal.	48" o.c.
	IG	6	Ilex glabra	Inkberry Holly	5 gal.	48" o.c.

GROUND COVERS

		1,818 sf	ZONE 2 WITH SEED MIX 1			
	CO	47	Carex scoparia	Broom Sedge	Plugs	24" o.c.
	ER	47	Elymus riparius	Riverbank Rye	Plugs	24" o.c.
	EF	47	Eutrochium fistulosum	Hollow Joe Pye Weed	Plugs	24" o.c.
	GC	47	Gentiana clausa	Bottle Gentian	Plugs	24" o.c.
	PD	47	Penstemon digitalis	Beardtongue	Plugs	24" o.c.
	PP	47	Poa palustris	Fowl Bluegrass	Plugs	24" o.c.
	PU	47	Pycnanthemum incanum	Blunt Mountainmint	Plugs	24" o.c.
	PI	47	Pycnanthemum virginianum	Mountain Mint	Plugs	24" o.c.
	SN	47	Symphyotrichum novae-angliae	New England Aster	Plugs	24" o.c.
	TP	47	Thelypteris palustris	Eastern Marsh Fern	Plugs	24" o.c.
		1,459 sf	ZONE 1 WITH SEED MIX 3			
	BT	47	Baptisia tinctoria	Yellow Wild Indigo	Plugs	24" o.c.
	DF	47	Deschampsia flexuosa	Crinkled Hair Grass	Plugs	24" o.c.
	ES	47	Eragrostis spectabilis	Purple Lovegrass	Plugs	24" o.c.
	GM2	47	Geranium maculatum	Spotted Geranium	Plugs	24" o.c.
	LN2	47	Liatris novae-angliae	New England Blazing Star	Plugs	24" o.c.
	LQ	47	Lysimachia quadrifolia	Whorled Yellow Loosestrife	Plugs	24" o.c.
	OB2	47	Oenothera biennis	Common Evening Primrose	Plugs	24" o.c.
	PV	47	Panicum virgatum	Switch Grass	Plugs	24" o.c.
	SS	51	Schizachyrium scoparium	Little Bluestem	Plugs	24" o.c.
		3,337 sf	SEED MIX 2			

SEED MIX 1: NEW ENGLAND WETMIX
(NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Andropogon hirsutus	Swamp Milkweed
Bidens frondosa	Devil's Beggartick
Carex crinita	Fringed Sedge
Carex lupulina	Hop Sedge
Carex lurida	Lurid Sedge
Carex scoparia	Blunt Broom Sedge
Carex vulpinoidea	Fox Sedge
Eutrochium maculatum	Spotted Joe Pye Weed
Glyceria grandis	Reed Manna Grass
Iris versicolor	Blue Flag
Juncus effusus	Soft Rush
Mimulus ringens	Monkeyflower
Poa palustris	Fowl Bluegrass
Solgus stricta	Dark Green Bulrush
Symphyotrichum lateriflorum	Calico Aster
Vernonia noveboracensis	Common Ironweed

SEED MIX 2: FESCUE MIX
(LAVOIE HORTICULTURE)

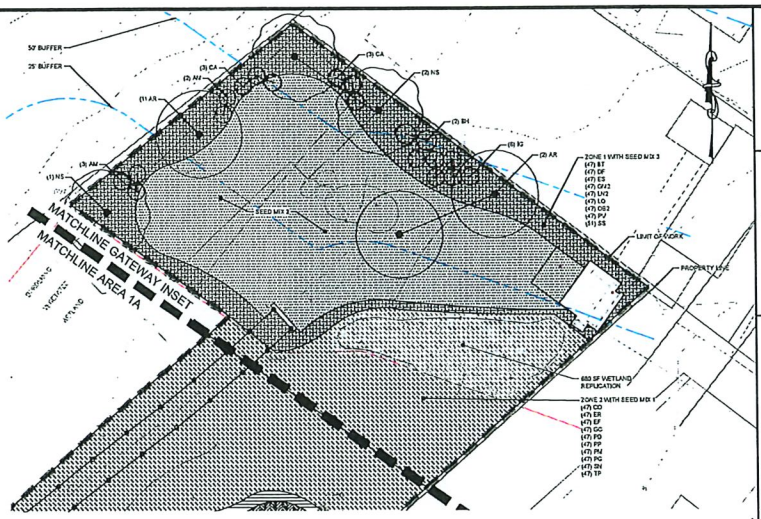
BOTANICAL NAME	COMMON NAME
Deschampsia flexuosa	Wavy Hair Grass
Festuca glauca	Blue Fescue
Festuca ovina	Sheep Fescue
Festuca ovina glauca	Blue Sheep Fescue
Festuca trachyphylla	Hard Fescue
Trifolium amoenum	Showy Indian Clover

SEED MIX 3:
NEW ENGLAND NATIVE WARM SEASON GRASS MIX
(NEW ENGLAND WETLAND PLANTS)

BOTANICAL NAME	COMMON NAME
Andropogon gerardii	Big Bluestem
Elymus virginicus	Virginia Wild Rye
Festuca rubra	Red Fescue
Panicum virgatum	Switch Grass
Schizachyrium scoparium	Little Bluestem
Sorghastrum nutans	Indian Grass

PLANTING LAYOUT NOTES

1. FOR AREAS WITH MIXED PERENNIALS AND/OR GRASSES (SHOWN AS HATCHED AREAS ON PLAN), DO NOT PLANT IN A PATTERN OR WITH LARGE AREAS OF THE SAME SPECIES. RANDOMLY PLANT AS INDICATED ON THE PLANTING PLANS INTO SMALL GROUPINGS OF THE SAME SPECIES TO CREATE A MORE NATURALISTIC APPEARANCE. PLANT THE SAME PLANT SPECIES IN GROUPS OF 6-12 AND NOT LARGER THAN 12, DEPENDING ON THE OVERALL NUMBER OF PLANTINGS.



PERMITTING ONLY
NOT FOR CONSTRUCTION

GRAPHIC SCALE
10 0 5 10 20 40
(in feet)
1 INCH = 10 FEET

Revisions

Horsley Witten Group, Inc.
Environmental Scientists & Planners
90 Route 6A
Sandwich, MA 02563
508-833-6600 Fax: 508-833-3150 http
www.horsleywitten.com

Project
LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

Plan Title
NEW GATEWAY - PLANTING

Prepared for
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
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Prepared by
Nantucket Surveyors LLC
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Nantucket MA
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Project Number: 20008
Sheet: 20 of 21
Sheet Number: L - 5

Last Modified: 06/24/2026 at 9:48AM EDT

GENERAL PLANTING NOTES:

1. THE FOLLOWING NOTES ARE PROVIDED AS GENERAL PLANTING GUIDELINES ONLY. THOROUGHLY REVIEW THE PROJECT SPECIFICATIONS FOR ALL LANDSCAPE REQUIREMENTS PRIOR TO THE COMMENCEMENT OF ANY LANDSCAPE WORK. SUBMIT IN WRITING TO THE LANDSCAPE ARCHITECT ANY QUESTIONS OR CLARIFICATIONS REQUIRED AT A MINIMUM OF 30 DAYS PRIOR TO ORDERING ANY MATERIALS OR BEGINNING ANY LANDSCAPE CONSTRUCTION.
2. SUBMIT TO THE LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL ALL REQUIRED LANDSCAPE SUBMITTALS AS DESCRIBED IN THE SPECIFICATIONS INCLUDING A PLANT LIST WITH PLANT SIZE AND QUANTITIES TO BE ORDERED PRIOR TO DELIVERY TO THE PROJECT SITE.
3. FURNISH AND INSTALL ALL PLANTS AS SHOWN ON THE DRAWINGS AND IN THE SIZE AND QUANTITIES SPECIFIED ON THE PLANTING SCHEDULE. PLANT SUBSTITUTION/SELECTION MUST BE APPROVED BY ERLOGIST OR LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
4. ALL PLANTS TO COMPLY WITH APPLICABLE REQUIREMENTS OF ANSI Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK" LATEST EDITION, PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION INC.
5. PLANTS TO BE GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT FOR AT LEAST TWO (2) YEARS. USE HEALTHY NURSERY GROWN PLANTS THAT HAVE A WELL DEVELOPED ROOT SYSTEM. PLANTS MUST BE FREE OF DISEASE, INSECTS, EGGS OR LARVAE.
6. INSTALL PLANTS WITHIN ONE (1) WEEK OF PURCHASE. IF PLANTS ARE TO BE STORED AT THE SITE PRIOR TO PLANTING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THEY ARE PROPERLY MAINTAINED, WATERED, AND REMAIN HEALTHY.
7. PROCEED WITH PLANTING ONLY WHEN EXISTING AND FORECASTED WEATHER CONDITIONS PERMIT. SUBMIT TO THE LANDSCAPE ARCHITECT IN WRITING THE PROPOSED PLANTING SCHEDULE. OBTAIN APPROVAL OF PLANTING SCHEDULE FROM THE LANDSCAPE ARCHITECT PRIOR TO PERFORMING ANY WORK.
8. SEASONS FOR PLANTING:

SPRING:	DECIDUOUS:	APRIL 1 TO JUNE 15
	EVERGREEN:	APRIL 1 TO JUNE 15
	PERENNIALS:	APRIL 15 TO JUNE 1
	GROUNDCOVERS:	APRIL 15 TO JUNE 1
FALL:	DECIDUOUS:	SEPTEMBER 15 TO NOVEMBER 15
	EVERGREEN:	SEPTEMBER 15 TO NOVEMBER 15
	PERENNIALS:	SEPTEMBER 15 TO NOVEMBER 15
	GROUNDCOVERS:	SEPTEMBER 15 TO NOVEMBER 15
LIVE STAKES:	PLANTS WHILE DORMANT FROM DECEMBER 1ST THROUGH MARCH 31ST	

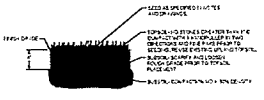
9. PLANTING UNDER FROZEN CONDITIONS WILL NOT BE PERMITTED. PLANTING BEFORE OR AFTER THE ABOVE RECOMMENDED PLANTING DATES WILL INCREASE THE LIKELIHOOD OF PLANT ESTABLISHMENT FAILURE. ANY DEVIATION FROM THE ABOVE RECOMMENDED PLANTING DATES IS UNDERTAKEN AT SOLE RISK OF THE CONTRACTOR AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ANY ADDITIONAL MAINTENANCE AND WATERING WHICH MAY BE REQUIRED TO ENSURE SATISFACTORY PLANT ESTABLISHMENT.
10. FURNISH ONE YEAR MANUFACTURER WARRANTY FOR TREES, PLANTS, AND GROUND COVER AGAINST DEFECTS INCLUDING DEATH AND UNSATISFACTORY GROWTH, EXCEPTIONS ARE DEFECTS RESULTING FROM LACK OF ADEQUATE MAINTENANCE, NEGLECT OR ABUSE BY OWNER, OR ABNORMAL WEATHER CONDITIONS UNUSUAL FOR WARRANTY PERIOD. THE DATE OF FINAL ACCEPTANCE OF ALL COMPLETED PLANTING WORK ESTABLISHES THE END OF INSTALLATION AND INITIAL MAINTENANCE PERIODS AND THE COMMENCEMENT OF THE GUARANTEE PERIOD.
11. ALL TREES WITHIN 8'-0" OF WALKWAYS AND SIDEWALKS TO HAVE A 6'-0" STAND OF BRANCHING HEIGHT.
12. INSPECT ALL AREAS TO BE PLANTED OR SEEDED PRIOR TO STARTING ANY LANDSCAPE WORK. REPORT ANY DEFECTS SUCH AS INCORRECT GRADING, INCORRECT SUBGRADE ELEVATIONS OR DRAINAGE PROBLEMS, ETC. TO THE LANDSCAPE ARCHITECT AND ENGINEER PRIOR TO BEGINNING WORK. COMMENCEMENT OF WORK INDICATES ACCEPTANCE OF SUBGRADE AREAS TO BE PLANTED, AND THE LANDSCAPE CONTRACTOR ASSUMES RESPONSIBILITY FOR ALL LANDSCAPE WORK.
13. PROVIDE PROPER PREPARATION OF ALL PROPOSED PLANTED AND SEEDED AREAS PER THE NOTES AND SPECIFICATIONS.
14. ALL PLANT LAYOUT AND ACTUAL PLANTING LOCATIONS ARE TO BE FIELD VERIFIED BY LANDSCAPE ARCHITECT PRIOR TO PLANTING. NOTIFY THE LANDSCAPE ARCHITECT AT A MINIMUM OF 48 HOURS IN ADVANCE PRIOR TO SCHEDULING ANY FIELD INSPECTIONS.
15. BALL AND BURLAP: REMOVE BURLAP AND WIRE BASKETS FROM TOP 8 OF BALLS AND FROM TOP HALF OF ROOTBALL AS INDICATED ON DRAWINGS. REMOVE PALLETS, IF ANY, BEFORE SETTING.
16. POTTED PLANTS: REMOVE THE PLANT FROM THE POT AND LOOSEN OR SCORE THE ROOTS BEFORE PLANTING TO PROMOTE OUTWARDS ROOT GROWTH INTO THE SOIL.
17. PLUGS: PLANT UPRIGHT AND NOT AT AN ANGLE. DIG PLANTING HOLES LARGE ENOUGH AND DEEP ENOUGH TO ACCOMMODATE THE ENTIRE ROOT MASS. PLANT PLUGS WITH NO TWISTED OR BALLED ROOTS AND WITH NO ROOTS EXPOSED ABOVE THE GRADE LINE. HAND PACK THE SOIL AROUND THE ENTIRE PLUG ROOT MASS.
18. DIG THE TREE PLANTING HOLE TO THE SAME DEPTH AS THE ROOT BALL AND TWO TO THREE TIMES WIDER. SCORE ALL SIDES OF THE HOLE. PLACE THE PLANT IN THE HOLE SO THE TOP OF ROOT BALL IS EVEN WITH SOIL SURFACE. FILL THE HOLE HALFWAY AND THEN ADD WATER ALLOWING IT TO SEEP INTO BACK FILLED MATERIAL. BE SURE TO REMOVE ALL AIR POCKETS FROM BACK FILLED SOIL. DO NOT SPREAD SOIL ON TOP OF THE ROOTBALL. IF SOIL IS EXTREMELY POOR, REPLACE BACK FILL WITH GOOD QUALITY TOP SOIL. AMEND THE SOIL AS NECESSARY.
19. CREATE A 3" TO 6" BERM AROUND THE EDGE OF PLANTING HOLE WITH REMAINING SOIL TO RETAIN WATER.
20. REMOVE ALL PLANT TAGS AND FLAGS FROM THE PLANTS.
21. MULCH ALL PLANTING BEDS AS INDICATED ON DRAWINGS. UNLESS NOTED OTHERWISE, ALL PLANTS TO RECEIVE 2-3 INCHES OF MULCH. DO NOT PILE OR MOUND MULCH AROUND THE PLANT STEMS OR TRUNK.
22. TRIM BROKEN AND DEAD BRANCHES FROM TREES AND SHRUBS AFTER PLANTING. NEVER CUT A LEADER.
23. DO NOT USE NITROGEN CONTAINING FERTILIZERS, PESTICIDES OR CHEMICALS DURING PLANTING AND MAINTENANCE OF THE LANDSCAPING OR LAWN AREAS.

GENERAL SEEDING NOTES:

1. SEND A REPRESENTATIVE SAMPLE OF THE TOPSOIL TO A TESTING LABORATORY FOR STANDARD SOIL ANALYSIS AS DESCRIBED IN THE SPECIFICATIONS. SUBMIT TO THE LANDSCAPE ARCHITECT AND ENGINEER TEST RESULTS WITH RECOMMENDED SOIL TREATMENTS TO PROMOTE PLANT AND GRASS GROWTH. CORRECT DEFICIENCIES IN THE LOAM AND STOCKPILED TOPSOIL AS DIRECTED BY THE TESTING AGENCY.
2. ALL AREAS THAT ARE DISTURBED AND/OR GRADED DURING CONSTRUCTION ARE TO BE BROUGHT TO FINISHED GRADE WITH AT LEAST 4" MINIMUM DEPTH OF GOOD QUALITY LOAM AND SEEDED WITH A QUICK GERMINATING GRASS SEED SUCH AS NEW ENGLAND EROSION CONTROL RESTORATION MIX OR AS SPECIFIED ON THE PLANS.
3. PRIOR TO THE PLACEMENT OF TOP SOIL, LOOSEN THE SUBGRADE OF ALL PROPOSED SEEDED AREAS TO A DEPTH OF 8" AND RAKE TO REMOVE STONES LARGER THAN 1 INCH, STICKS, ROOTS, RUBBISH AND OTHER EXTRANEOUS MATTER AND LEGALLY DISPOSE TO AN OFF SITE LOCATION.
4. DO NOT SPREAD TOPSOIL IF THE SUBGRADE IS FROZEN, EXCESSIVELY WET, COMPACTED OR NOT PROPERLY PREPARED PER THE NOTES AND SPECIFICATIONS.
5. SEE SPECIFICATIONS FOR SEASONAL REQUIREMENTS FOR SEEDING.

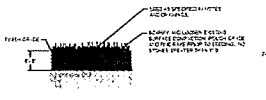
WATERING NOTES:

1. PROVIDE PROPER PLANT CARE, MAINTENANCE AND WATERING ON SITE UNTIL SUCH TIME AS THE LANDSCAPING IS ACCEPTED BY THE PROPERTY OWNER AS SATISFACTORY PER THE SPECIFICATIONS OR AS DETERMINED BY ANY WRITTEN AGREEMENTS BETWEEN THE CONTRACTOR AND PROPERTY OWNER.
2. ESTABLISH AN APPROPRIATE WATERING SCHEDULE FOR ALL PLANT MATERIAL BASED UPON PLANT SPECIES REQUIREMENTS AND SITE CONDITIONS. PROVIDE SCHEDULE IN WRITING TO THE LANDSCAPE ARCHITECT AND OWNER FOR REVIEW AND APPROVAL. ADHERE TO THE APPROVED SCHEDULE UNTIL PLANTS ARE FULLY ESTABLISHED.
3. AT A MINIMUM THE NEWLY SEEDED AND/OR HYDROSEEDED LAWNS SHOULD BE WATERED DAILY. SPECIAL CARE SHOULD BE TAKEN TO ENSURE THAT THE LAWN IS NOT SATURATED DURING WATERING. IF AN IRRIGATION SYSTEM IS NOT PROVIDED, USE A TEMPORARY IRRIGATION SYSTEM OR HAND HELD GARDEN HOSE FOR WATERING SEEDED AREAS. THE AREA MUST BE MAINTAINED CONSISTENTLY MOIST FOR THE BEST GERMINATION RESULTS. ADDITIONAL WATERING MAY BE REQUIRED IF PLANTING AND SEEDING OCCUR OUTSIDE OF THE RECOMMENDED PLANTING SEASONS.



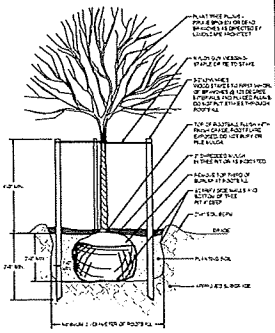
NOTES:
1. SEE LANDSCAPE SPECIFICATIONS FOR TOPSOIL REQUIREMENTS.
2. CONFIRM SUBGRADES ARE CORRECT AND POSITIVE DRAINAGE IS MAINTAINED PRIOR TO PLACEMENT OF TOPSOIL.
3. NOTIFY LANDSCAPE ARCHITECT FOR REVIEW OF SUBGRADE PRIOR TO PLACEMENT OF TOPSOIL.
4. 12 LBS/1,000 SQ FT MIN.

LOAM AND SEED - SEED MIX 2
NOT TO SCALE

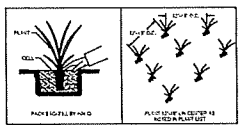


NOTES:
1. NOTIFY LANDSCAPE ARCHITECT FOR REVIEW PRIOR TO SEEDING.
2. 6 LBS/1,000 SQ FT MIN.

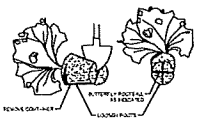
RESTORATION SEEDING - SEED MIXES 1 AND 3
NOT TO SCALE



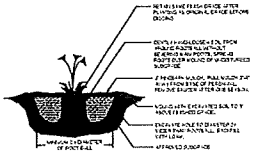
DECIDUOUS TREE PLANTING
NOT TO SCALE



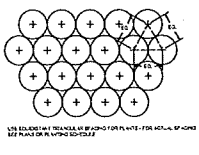
PERENNIAL PLUG PLANTING
NOT TO SCALE



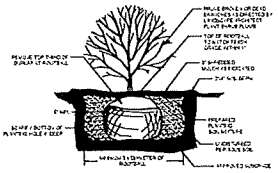
CONTAINER PLANT ROOTBALL TREATMENT
NOT TO SCALE



PERENNIAL CONTAINER PLANTING
NOT TO SCALE



PLANTING SPACING
NOT TO SCALE



SHRUB PLANTING
NOT TO SCALE

PERMITTING ONLY
NOT FOR CONSTRUCTION

Revisions			

Horsley Witten Group, Inc.
Sandwich, MA 02563
508-833-6600

LILY POND PARK IMPROVEMENTS
PERMITTING PLANS
NANTUCKET, MASSACHUSETTS

PLANTING DETAILS

Prepared for:
Trustees of the Nantucket Land Bank
2 Fairgrounds Road
Nantucket, MA
Phone: (508) 228-7240
Fax: —

Surveyor:
Bradley Surveyors LLC
5 Main Street
Harwich, MA
Phone: (508) 432-2400
Fax: —
Dated: 3/5/2025

Project No. 20008
Sheet 21 of 21
Drawing No. L - 6

last modified: 09/15/24 printed: 06/23/24 by as H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008 LA DE.dwg

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 5 – Order of Conditions

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40
And the Town of Nantucket Wetlands Bylaw Chapter 136

Provided by MassDEP:
SE48- 3827
MassDEP File #

eDEP Transaction #

Nantucket
City/Town

E. Signatures

This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the date of issuance.

11/22/24
1. Date of Issuance

Please indicate the number of members who will sign this form.
This Order must be signed by a majority of the Conservation Commission.

7
2. Number of Signers

The Order must be mailed by certified mail (return receipt requested) or hand delivered to the applicant. A copy also must be mailed or hand delivered at the same time to the appropriate Department of Environmental Protection Regional Office, if not filing electronically, and the property owner, if different from applicant.

Signatures:

Seth Engelbourg(C)

Linda Williams(VC)

Joe Plandowski

Mike Misurelli

Tim Braine

John Schafer

RJ Turcotte

☒ by hand delivery on

Date

☐ by certified mail, return receipt requested, on

Date

F. Appeals

The applicant, the owner, any person aggrieved by this Order, any owner of land abutting the land subject to this Order, or any ten residents of the city or town in which such land is located, are hereby notified of their right to request the appropriate MassDEP Regional Office to issue a Superseding Order of Conditions. The request must be made by certified mail or hand delivery to the Department, with the appropriate filing fee and a completed Request of Departmental Action Fee Transmittal Form, as provided in 310 CMR 10.03(7) within ten business days from the date of issuance of this Order. A copy of the request shall at the same time be sent by certified mail or hand delivery to the Conservation Commission and to the applicant, if he/she is not the appellant.

Any appellants seeking to appeal the Department's Superseding Order associated with this appeal will be required to demonstrate prior participation in the review of this project. Previous participation in the permit proceeding means the submission of written information to the Conservation Commission prior to the close of the public hearing, requesting a Superseding Order, or providing written information to the Department prior to issuance of a Superseding Order.

The request shall state clearly and concisely the objections to the Order which is being appealed and how the Order does not contribute to the protection of the interests identified in the Massachusetts Wetlands Protection Act (M.G.L. c. 131, § 40), and is inconsistent with the wetlands regulations (310 CMR 10.00). To the extent that the Order is based on a municipal ordinance or bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.

Last Modified: 06/24/2026 at 9:48AM EDT

G. Recording Information

Prior to commencement of work, this Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

Conservation Commission

Please be advised that the Order of Conditions for the Project at:

Project Location | MassDEP File Number

Has been recorded at the Registry of Deeds of:

County | Book | Page

for: Property Owner

and has been noted in the chain of title of the affected property in:

Book | Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

Last Modified: 06/24/2026 at 9:48AM EDT

G. Recording Information

Prior to commencement of work, this Order of Conditions must be recorded in the Registry of Deeds or the Land Court for the district in which the land is located, within the chain of title of the affected property. In the case of recorded land, the Final Order shall also be noted in the Registry's Grantor Index under the name of the owner of the land subject to the Order. In the case of registered land, this Order shall also be noted on the Land Court Certificate of Title of the owner of the land subject to the Order of Conditions. The recording information on this page shall be submitted to the Conservation Commission listed below.

Conservation Commission

Detach on dotted line, have stamped by the Registry of Deeds and submit to the Conservation Commission.

To:

Conservation Commission

Please be advised that the Order of Conditions for the Project at:

Project Location | MassDEP File Number

Has been recorded at the Registry of Deeds of:

County | Book | Page

for: Property Owner

and has been noted in the chain of title of the affected property in:

Book | Page

In accordance with the Order of Conditions issued on:

Date

If recorded land, the instrument number identifying this transaction is:

Instrument Number

If registered land, the document number identifying this transaction is:

Document Number

Signature of Applicant

Last Modified: 06/24/2026 at 9:48AM EDT

Last Modified: 06/24/2026 at 9:48AM EDT

APPENDIX C – Permit – Army Corp. of Engineers

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

March 10, 2026

Regulatory Division
File Number: NAE-2025-00390

Rachael Freeman
Nantucket Land Bank
22 Broad Street,
Nantucket, Massachusetts 02554
Sent by email: rfreeman@nantucketlandbank.org

Dear Rachael Freeman:

The U.S. Army Corps of Engineers (USACE) has reviewed your application to restore a 4.9-acre freshwater wetland complex site. The wetlands will be crossed by about 2,000 linear feet of six-foot-wide boardwalks elevated at least 14 inches above the ground. About 16 cubic yards of riprap will be placed within a 389 square foot area of wetlands near existing outfalls for outfall protection and riprap. Approximately 122,710 square feet of the wetland system will be restored, including 23,200 square feet of restoration to wetlands that have been maintained as turf grass. Additionally, about 754 square feet of wetlands will be created through the conversion of 680 square feet of existing turf grass and the removal of existing boardwalk footings located in 74 square feet of wetlands. An approximately 190-foot section of an existing drainage pipe will be removed to daylight water flow. Daylighting will result in approximately 1,900 square feet of impacts to an existing wetland. A total of 1,055 cubic yards of cofferdams will be placed within a 9,500 square foot area to dewater a total 76,000 square foot area of wetlands, allowing work to be completed in the dry. The project is located in wetlands associated with the Nantucket Harbor at the approximately 6.5-acre Lily Pond Park owned by the Nantucket Land Bank in Nantucket, Massachusetts. The coordinates for the project site are 41.28570 N, -70.10493 W. The work is described on the enclosed plans titled “LILY POND PARK IMPROVEMENTS PERMITTING PLANS,” on 22 sheets, and dated “NOVEMBER 2025.”

Based on the information that you have provided, we verify that the activity is authorized under General Permit # 10 of the June 2, 2023, federal permit known as the Massachusetts General Permits (GPs). The GPs are available at https://www.nae.usace.army.mil/Missions/Regulatory/State-General-Permits/Massachusetts-General-Permit.

Please review the enclosed GPs carefully, in particular the general conditions beginning on page 35, and ensure that you and all personnel performing work authorized by the GPs are fully aware of and comply with its terms and conditions. A copy of the GPs and this verification letter shall be available at the work site as required by General

Last Modified: 06/24/2026 at 9:48AM EDT

Condition 17. You must perform this work in compliance with the following special conditions:

1. You shall include the following Best Management Plans in the project to protect the American Burying Beetle under Section 7 of the Endangered Species Act:

    1. Minimize soil disturbance and clearing of vegetation at work areas. Use smaller equipment or hand cutting techniques that leave the root zone intact and reduce soil compaction relative to heavy equipment.
    2. Minimize the use of artificial lighting. In situations where night construction work is necessary, shield direct light down to the work area and prevent light from projecting upwards, thus minimizing the potential to attract insects, including ABBs. LED lights are recommended because they generate less heat.
    3. In heavily disturbed areas, return surface soils to approximate pre-construction conditions. Prior to the topsoil replacement, rip (i.e., mechanically turn soil with a plow or ripping device) the impacted area. Rip and disk at a time when the soil is dry enough for normal tillage operations to occur on undisturbed farmlands adjacent to the areas to be ripped. This soil de-compaction treatment should reduce soil compaction.
    4. Install appropriate erosion controls, including such items as straw bales, biologs, silt fence, and similar materials.
    5. Implement Pollution Prevention Requirements as required for Storm Water Discharge Permits. Additionally, fuel all equipment outside of ABB habitat (that is, outside of undisturbed native vegetation) and store all fuel and chemicals outside of ABB habitat.
    6. Restore disturbed areas using approved native seed mixes appropriate for the site.
    7. Educate all workers operating in the project areas about ABB habitat and the responsibility of all workers to avoid and minimize impacts. Require all workers to report any ABB sightings to the project manager or environmental inspector and remove all food wastes or dead animals from the project site each day. Provide each worker a full color picture of the ABB and post signs at all project access points with reminders to follow special restrictions in the area.

2. If the American Burying Beetle is observed at any point during project activities, the beetle will not be disturbed, and construction will not proceed until beetles have left the action area of their own volition. If this species is observed, the applicant will contact USACE (cenae-r-ma@usace.army.mil and

Last Modified: 06/24/2026 at 9:48AM EDT

abigail.e.thrall@usace.army.mil) and the U.S. Fish and Wildlife Service (newengland@fws.gov).

3. The monarch butterfly (*Danaus plexippus*) is currently proposed for listing under the federal Endangered Species Act. If the authorized work is not completed before the monarch butterfly is uplisted from proposed to threatened, you are required to contact us so that we can initiate Section 7 consultation with the U.S. Fish and Wildlife Service as needed. We will post information regarding the monarch butterfly uplisting and final rule on our website: https://www.nae.usace.army.mil/Missions/Regulatory. You can also find monarch butterfly information at https://www.fws.gov/species/monarch-danaus-plexippus.

This authorization expires on June 1, 2028. You must commence or have under contract to commence the work authorized herein by June 1, 2028, and complete the work by June 1, 2029. If not, you must contact this office to determine the need for further authorization and we recommend you contact us *before* the work authorized herein expires. Please contact us immediately if you change the plans or construction methods for work within our jurisdiction as we must approve any changes before you undertake them. Performing work within our jurisdiction that is not specifically authorized by this determination or failing to comply with the special condition(s) provided above or all the terms and conditions of the GPs may subject you to the enforcement provisions of our regulations.

This authorization does not obviate the need to obtain other federal, state, or local authorizations required by law. Applicants are responsible for applying for and obtaining any other approvals.

Your project is located within, or may affect resources within, the coastal zone. The Massachusetts Office of Coastal Zone Management (CZM) has already determined that no further Federal Consistency Review is required.

We continually strive to improve our customer service. To better serve you, we would appreciate your completing our Customer Service Survey located at https://regulatory.ops.usace.army.mil/customer-service-survey.

Last Modified: 06/24/2026 at 9:48AM EDT

Please contact Abigail Thrall of my staff at abigail.e.thrall@usace.army.mil or (978) 318-8029 if you have any questions.

Sincerely,

Craig Jarnot
Chief, Massachusetts Branch
Regulatory Division

cc:
Jamie McCarthy, Horsley Witten Group, Inc.; jmccarthy@horsleywitten.com
U.S. EPA Region 1, R1_CWA404_REG@epa.gov
Alexa Cacacie, NMFS, Gloucester, MA; alexa.cacacie@noaa.gov
David Simmons, USFWS, New England Field Office, Concord, NH; david_simmons@fws.gov
Sean Duffey, Coastal Zone Management, Boston, MA, sean.duffey@mass.gov
Patrice Bordonaro, Coastal Zone Management, Boston, MA, patrice.bordonaro@mass.gov
Maissoun Reda, Chief, DEP SERO, Wetlands and Waterways, Lakeville, MA; maissoun.reda@mass.gov
David Robinson, MA Board of Underwater Archaeological Resources (BUAR); david.s.robinson@mass.gov
Nantucket Conservation Commission, jcarlson@nantucket-ma.gov

Last Modified: 06/24/2026 at 9:48AM EDT

US Army Corps of Engineers ®
New England District

COMPLIANCE CERTIFICATION FORM

(Minimum Notice: Permittee must sign and return notification within one month of the completion of work.)

Permit Number: NAE-2025-00390

Project Manager: Abigail Thrall

Name of Permittee: Rachael Freeman, Nantucket Land Bank

Permit Issuance Date: 3/10/2026

Note: Choose one of the following. Choose the 2nd when mitigation required.
Please sign this certification and return it to our office upon completion of the activity.

Please sign this certification and return it to our office upon completion of the activity and any mitigation required by the permit. You must submit this after the mitigation is complete, but not after the mitigation monitoring, which requires separate submittals.

E-MAIL TO: cenae-r-ma@usace.army.mil; or

MAIL TO: Massachusetts Section
Regulatory Division
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, MA 01742-2751

Please note that your permitted activity is subject to a compliance inspection by an U.S. Army Corps of Engineers representative. If you fail to comply with this permit you are subject to permit suspension, modification, or revocation.

I hereby certify that the work authorized by the above referenced permit was completed in accordance with the terms and conditions of the above referenced permit, and any required mitigation was completed in accordance with the permit conditions.

Signature of Permittee _____ Date _____

Printed Name _____ Date of Work Completion _____

( ) _____ ( ) _____

Telephone Number Telephone Number

Last Modified: 06/24/2026 at 9:48AM EDT

Last Modified: 06/24/2026 at 9:48AM EDT

APPENDIX D – Water Quality Certification

Commonwealth of Massachusetts | Executive Office of Energy and Environmental Affairs

Department of Environmental Protection

Southeast Regional Office

Address: 20 Riverside Drive, Lakeville, MA 02347 | **Phone:** 508-946-2700

Maura T. Healey	Kim Driscoll	Rebecca Tepper	Bonnie Heiple
Governor	Lieutenant Governor	Secretary	Commissioner

Rachael Freeman
22 Broad Street
Nantucket, MA 02554

FEB 02 2026

RE: WATER QUALITY CERTIFICATION
APPLICATION FOR: BRP WW 10
MAJOR PROJECT CERTIFICATION

AT: Lily Pond Park - Wetland Restoration & Park Improvements Project

Application ID Number 25-WW10-0030-APP
Wetlands Protection Act File Numbers SE 48-3826 and SE 48-3827
401 WQC Application Complete: 1/13/2025

Dear Ms. Freeman:

The Massachusetts Department of Environmental Protection has reviewed your application for Water Quality Certification, as referenced above. In accordance with the provisions of MGL c.21, §§ 26-53, Section 401 of the Federal Clean Water Act as amended (33 U.S.C. §1251 et seq.), MassDEP certifies in accordance with 314 CMR 9.00 that there is reasonable assurance the project or activity will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other applicable requirements of state law.

The proposed work consists of restoring 4.9 acres of recreational area by restoring the existing wetlands on site and improving the stormwater infrastructure. The project proposes restoration of wetlands, adding stormwater management infrastructure to capture and treat runoff, adding pedestrian trails and boardwalks, and parking lot improvements. Wetland restoration is planned to occur in four areas of the site, and there is wetland replacement planned by converting existing maintained turf grass and boardwalks within the 25-foot buffer zone. Work will occur in Bordering Vegetated Wetlands (BVW). BVW will be crossed by about 2,000 linear feet of six-foot-wide boardwalks elevated at least 14 inches above the ground. The boardwalk will require 413 helical piles to be driven in about 324 square feet of wetlands. About 16 cubic yards of riprap will be placed within a 389 square foot area of BVW near existing outfalls for outfall protection and riprap. Approximately 122,710 square feet of the wetland system will be restored, including 23,200 square feet of restoration to wetlands that have been maintained as turf grass. Additionally, about 754 square feet of wetlands will be created through the conversion of 680 square feet of existing turf grass and the removal of existing boardwalk footings located in

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74 square feet of wetlands. An approximately 190-foot section of an existing drainage pipe will be removed to daylight water flow. Daylighting will result in approximately 1,900 square feet of impacts to an existing wetland. A total of 1,055 cubic yards of cofferdams will be placed within a 9,500 square foot area to temporary dewater a total of 76,000 square foot area of wetlands, allowing work to be completed in the dry. Erosion and sedimentation measures are proposed in worked areas during construction. This area is considered in the wetland system to be restored.

The Department is satisfied that adequate measures will be taken to avoid, minimize and mitigate for the wetland impacts.

The 401 WQC application public notice was published in the Inquirer and Mirror online, September 4, 2025 and the Department received no comments during the 21-day public comment period, which ended on September 25, 2025.

The project was issued a Certificate of the Secretary of Energy and Environmental Affairs on the Single Environmental Impact Report on January 17, 2025, MEPA File Number 16874, determining that it adequately and properly complies with the Massachusetts Environmental Policy Act (MEPA; M.G.L. c. 30, ss. 61- 62L) Section 11.06 of the MEPA regulations (301 CMR 11.00).

Therefore, based on information currently in the record, the Department grants a Water Quality Certification for this project subject to certain conditions to maintain water quality, to minimize impacts on waters and wetlands, and to ensure compliance with appropriate state law. 314 CMR 9.00 is promulgated by the Department to carry out its statutory obligations to certify that proposed discharges of dredged or fill material, dredging, and dredged material disposal in Waters of the United States within the Commonwealth will comply with the Surface Water Quality Standards and other appropriate requirements of state law. 314 CMR 9.00 implements and supplements 314 CMR 4.00: Massachusetts Surface Water Quality Standards, and is a requirement of state law under 33 U.S.C. 1251. 314 CMR 9.00 implements and supplements 314 CMR 4.00: Massachusetts Surface Water Quality Standards by, without limitation: protecting the public health and restoring and maintaining the chemical, physical, and biological integrity of the water resources of the Commonwealth by establishing requirements, standards, and procedures for the following:

1. monitoring and control of activities involving discharges of dredged or fill material, dredging, and dredged material disposal or placement;
2. the evaluation of alternatives for dredging, discharges of dredged or fill material, and dredged material disposal or placement; and
3. public involvement regarding dredging, discharges of dredged or fill material, and dredged material placement, reuse or disposal.

314 CMR 9.00 applies to the discharge of dredged or fill material, dredging, and dredged material disposal activities in Waters of the United States within the Commonwealth which require federal licenses or permits, and which are subject to state water quality certification under 33 U.S.C. 1251.

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In accordance with 314 CMR 9.06(2) *no discharge of dredged or fill material shall be permitted unless appropriate and practicable steps have been taken which will avoid and minimize potential adverse impacts to the bordering or isolated vegetated wetlands, land under water or ocean, or the intertidal zone. However, no such project may be permitted which will have any adverse effect on specified habitat sites of Rare Species.*

The Department is satisfied that the project has taken appropriate measures to avoid and minimize impacts and mitigate and restore the affected areas. The alternatives analysis and project description adequately demonstrate appropriate steps and care to avoid and minimize potential adverse impacts. Permanent impacts are replicated at over a 1:1 ratio.

No work is proposed within estimated habitat which is indicated on the most recent Estimated Habitat Map of State-listed Rare Wetlands Wildlife published by the Natural Heritage and Endangered Species Program.

In accordance with 314 CMR 9.06(6) *stormwater discharges shall be provided with stormwater best management practices to attenuate pollutants and to provide a setback from the receiving water or wetlands in accordance with the Stormwater Management Standards.*

The project is subject to the Stormwater Management Regulations as to the maximum extent practicable. The applicant's stormwater report details the stormwater management plan in accordance with the Stormwater Management Standards 1 through 10. The project design includes stormwater management that incorporate and combine pretreatment, storage, filtration, and infiltration.

In accordance with 314 CMR 9.06(7) *no discharge of dredged or fill material shall be permitted in the rare circumstances where the activity meets the criteria for evaluation but will result in substantial adverse impacts to the physical, chemical, or biological integrity of surface Waters of the Commonwealth.*

The proposed project shall not result in any significant or permanent impacts to the physical, chemical, or biological integrity of surface waters. The project is designed to improve surface water quality. Temporary and permanent BVW impacts shall be restored and mitigated in accordance with the conditions of this Certification.

As noted above, the Department is authorized to impose the following conditions necessary to assure that the proposed project will comply with water quality requirements and will be conducted in a manner which will not violate applicable water quality standards (314 CMR 4.00) and other applicable requirements of state law.

1 The work shall conform to the following plans entitled:
- *Lily Pond Park 401 Water Quality Certification Application, Dated September 2025, Revisions November 2025, Prepared by Horsley Witten Group. Pages 1-47 and Attachments A—I*

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2 Any change to the plans and documents identified in Condition 1, or changes in methodologies approved in this Water Quality Certification shall require the applicant to notify MassDEP of the proposed change and receive written approval prior to undertaking any work not authorized by this permit.

3 A copy of this Certification and referenced plans and other documents shall be kept available on the work site during all phases of work.

4 Staff of MassDEP shall have the right to enter and inspect the area subject to this Certification at reasonable hours to evaluate compliance with the conditions stated in this Certification and may require the submittal of any data deemed necessary by MassDEP for that evaluation.

5 Wetland restoration and stabilization shall be conducted and replanted in accordance with the referenced plans. Should the restoration areas fail to thrive, the Department may require additional measures necessary to achieve compliance.

6 Any tears, rips, breaks, or collapse of the erosion control barrier shall be repaired immediately (i.e., in no more than 24 hours).

7 Upon completion of the project and after the areas disturbed by construction activities have been stabilized, any erosion control measures shall be removed and disposed of in accordance with all applicable laws, regulations or ordinances.

8 This Certification remains in effect for the same duration as the federal permit that requires it or five years from the date of issuance of this Certification whichever comes first.

9 The applicant may request an amendment or extension of this Certification in accordance with 314 CMR 9.09(2) and (3), respectively.

Based upon its review, MassDEP is satisfied that with implementation by the proponent of the requirements of this Water Quality Certification, all practicable and feasible means and measures will be taken to avoid or minimize adverse impacts to wetland areas and related impacts to the environment associated with this project.

This certification does not relieve the applicant of the obligation to comply with other appropriate state or federal statutes or regulations. Any changes made to the project as described in the 401 Water Quality Certification application, or supplemental documents will require further notification to the Department.

No activity may begin prior to the expiration of the appeal period or until a final decision is issued by the Department if an appeal is filed.

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Notice of Appeal Rights:

A) Appeal Rights and Time Limits

Certain persons shall have a right to request an adjudicatory hearing concerning certifications by the Department when an application is required: (a) the applicant or property owner; (b) any person aggrieved by the decision who has submitted written comments during the public comment period; any ten (10) persons of the Commonwealth pursuant to M.G.L. c.30A where a group member has submitted written comments during the public comment period; or (d) any governmental body or private organization with a mandate to protect the environment which has submitted written comments during the public comment period. Any person aggrieved, any ten (10) persons of the Commonwealth, or a governmental body or private organization with a mandate to protect the environment may appeal without having submitted written comments during the public comment period only when the claim is based on new substantive issues arising from material changes to the scope or impact of the activity and not apparent at the time of public notice. To request an adjudicatory hearing pursuant to M.G.L. c.30A, § 10, a Notice of Claim must be made in writing, provided that the request is made by certified mail or hand delivery to the Department, with the appropriate filing fee specified within 310 CMR 4.10 along with a DEP Fee Transmittal Form within twenty-one (21) days from the date of issuance of this Certificate, and addressed to:

Docket Clerk
Office of Administrative Appeals
Department of Environmental Protection
100 Cambridge Street, Suite 900
Boston, MA 02114

A copy of the request shall at the same time be sent by certified mail or hand delivery to the issuing office of the Wetlands and Waterways Program at:

Department of Environmental Protection
Southeast Regional Office
20 Riverside Drive
Lakeville, Massachusetts 02347

B) Contents of Hearing Request

A Notice of Claim for Adjudicatory Hearing shall comply with the Department's Rules for Adjudicatory Proceedings, 310 CMR 1.01(6), and shall contain the following information pursuant to 310 CMR 9.10(3):

(a) the 401 Certification Transmittal Number and DEP Wetlands Protection Act File Number;
(b) the complete name of the applicant and address of the project;
(c) the complete name, address, and fax and telephone numbers of the party filing the request, and, if represented by counsel or other representative, the name, fax and telephone numbers, and address of the attorney;

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(d) if claiming to be a party aggrieved, the specific facts that demonstrate that the party satisfies the definition of "aggrieved person" found at 314 CMR 9.02;
(e) a clear and concise statement that an adjudicatory hearing is being requested;
(f) a clear and concise statement of (1) the facts which are grounds for the proceedings, (2) the objections to this Certificate, including specifically the manner in which it is alleged to be inconsistent with the Department's Water Quality Regulations, 314 CMR 9.00, and (3) the relief sought through the adjudicatory hearing, including specifically the changes desired in the final written Certification; and
(g) a statement that a copy of the request has been sent by certified mail or hand delivery to the applicant, the owner (if different from the applicant), the conservation commission of the city or town where the activity will occur, the Department of Environmental Management (when the certificate concerns projects in Areas of Critical Environmental Concern), the public or private water supplier where the project is located (when the certificate concerns projects in Outstanding Resource Waters), and any other entity with responsibility for the resource where the project is located.

C) Filing Fee and Address

The hearing request along with a DEP Fee Transmittal Form and a valid check or money order payable to the Commonwealth of Massachusetts in the amount of one hundred dollars ($100) must be mailed to:

Commonwealth of Massachusetts
Department of Environmental Protection
Commonwealth Master Lockbox
P.O. Box 4062
Boston, Massachusetts 02211

The request will be dismissed if the filing fee is not paid, unless the appellant is exempt or granted a waiver. The filing fee is not required if the appellant is a city or town (or municipal agency), county, or district of the Commonwealth of Massachusetts, or a municipal housing authority. The Department may waive the adjudicatory hearing filing fee pursuant to 310 CMR 4.06(2) for a person who shows that paying the fee will create an undue financial hardship.

A person seeking a waiver must file an affidavit setting forth the facts believed to support the claim of undue financial hardship together with the hearing request as provided above.

Failure to comply with this certification is grounds for enforcement, including civil and criminal penalties, under MGL c.21 §42, MGL c.21A §16, 314 CMR 9.00, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

If you have further questions on this decision, please contact Jaclyn Sidman at (857) 208-6910, or by e-mail at Jaclyn.Sidman@mass.gov.

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Sincerely,

Maissoun Reda

Maissoun E. Reda, Chief
Wetlands Program
Bureau of Water Resources

MER/jgs

cc: Nantucket Conservation Commission

USACE

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Adjudicatory Hearing Fee Transmittal Form

IMPORTANT! This form is intended for fee transmittal only. The contents of a request for an adjudicatory appeal (Notice of Claim) are established at 310 CMR 1.01(6) and the substantive statutes and regulations governing the Department's action.

A. Person/Party Making Request

1. Name and address of person or party making request:

Name - If appropriate, name group representative

Street Address

City | State | Zip Code

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.





2. Project Information:

Street Address

City | State | Zip Code

DEP File or ID Number | $ Amount of filing fee attached

Email Address

B. Applicant (if applicable)

1. Name and address of applicant:

Name - If appropriate, name group representative

Street Address

City | State | Zip Code

Email Address

C. Instructions

1. Send this form and check or money order of $100.00 payable to the Commonwealth of Massachusetts to the MassDEP Lockbox at:

   Department of Environmental Protection
   P.O. Box 4062
   Boston, MA 02211

2. Send a **copy** of this form and a **copy** of the check or money order with the Request for Adjudicatory Appeal (Notice of Claim) to:

   MassDEP Office of Appeals and Dispute Resolution
   Case Administrator
   100 Cambridge Street, Suite 900
   Boston, MA 02114

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Communication for Non-English-Speaking Parties

This document is important and should be translated immediately.

If you need this document translated, please contact MassDEP's Director of Environmental Justice at the telephone number listed below.

Español Spanish

Este documento es importante y debe ser traducido inmediatamente. Si necesita traducir este documento, póngase en contacto con el Director de Justicia Ambiental de MassDEP (*MassDEP's Director of Environmental Justice*) en el número de teléfono que figura más abajo.

Português Portuguese

Este documento é importante e deve ser traduzido imediatamente. Se você precisar traduzir este documento, entre em contato com o Diretor de Justiça Ambiental do MassDEP no número de telefone listado abaixo.

繁體中文 Chinese Traditional

本文檔很重要，需要即刻進行翻譯。
如需對本文檔進行翻譯，請透過如下列示電話號碼與 MassDEP 的環境司法總監聯絡。

简体中文 Chinese Simplified

这份文件非常重要，需要立即翻译。
如果您需要翻译这份文件，请通过下方电话与 MassDEP 环境司法主任联系。

Ayisyen Kreyòl Haitian Creole

Dokiman sa a enpòtan epi yo ta dwe tradui l imedyatman. Si w bezwen tradui dokiman sa a, tanpri kontakte Direktè. Jistis Anviwònmantal MassDEP a nan nimewo telefòn ki endike anba a.

Việt Vietnamese

Tài liệu này và quan trọng và phải được dịch ngay. Nếu quý vị cần bản dịch của tài liệu này, vui lòng liên hệ với Giám Đốc Phòng Công Lý Môi Trường của MassDEP theo số điện thoại được liệt kê bên dưới.

ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះមានសារៈសំខាន់
ហើយគប្បីតួរត្រូវបានបកប្រែភ្លាមៗ។
ប្រសិនបើអ្នកត្រូវការអោយឯកសារនេះបកប្រែ
សូមទាក់ទងនាយកផ្នែកយុត្តិធម៌បរិស្ថានរបស់
MassDEPតាមរយៈលេខទូរស័ព្ទដែលបានរាយដូចខាងក្រោម។

Kriolu Kabuverdianu Cape Verdean

Es dokumentu sta important i tenki ser tradusidu immediatamenti. Se nho ta presisa ke es dokumentu sta tradisidu, por favor kontata O Diretor di Justisia di Environman di DEP ku es numero di telifoni menxionadu di baixo.

Contact Deneen Simpson 857-406-0738
Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114
TTY# MassRelay Service 1-800-439-2370 • https://www.mass.gov/environmental-justice
(Version revised 8.2.2023) 310 CMR 1.03(5)(a)

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Русский Russian

Это чрезвычайно важный документ, и он должен быть немедленно переведен. Если вам нужен перевод этого документа, обратитесь к директору Департамента экологического правосудия MassDEP (MassDEP's Director of Environmental Justice) по телефону, указанному ниже.

العربية Arabic

هذه الوثيقة مهمة وتجب ترجمتها على الفور.

إذا كنت بحاجة إلى ترجمة هذه الوثيقة، فيرجى الاتصال بمدير العدالة البيئية في MassDEP على رقم الهاتف المذكور أدناه.

한국어 Korean

이 문서는 중대하므로 즉시 번역되어야 합니다.
본 문서 번역이 필요하신 경우, 매사추세츠 환경보호부의 "환경정의" 담당자 분께 문의하십시오. 전화번호는 아래와 같습니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է, և պետք է անհապաղ թարգմանել այն:
Եթե Ձեզ անհրաժեշտ է թարգմանել այս փաստաթուղթը, դիմեք Մասաչուսեթսի շրջակա միջավայրի պահպանության նախարարության (MassDEP) Բնապահպանական հարցերով արդարադատության ղեկավարին (Director of Environmental Justice)՝ ստորև նշված հեռախոսահամարով

فارسی Farsi Persian

این نوشتار بسیار مهمی است و باید فوراً ترجمه شود.
اگر نیاز به ترجمه این نوشتار دارید لطفاً با مدیر عدالت محیط زیستی MassDEP در شماره تلفن ذکر شده زیر تماس بگیرید.

Français French

Ce document est important et doit être traduit immédiatement. Si vous avez besoin d'une traduction de ce document, veuillez contacter le directeur de la justice environnementale du MassDEP au numéro de téléphone indiqué ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und muss sofort übersetzt werden. Wenn Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an MassDEP's Director of Environmental Justice *(Direktor für Umweltgerechtigkeit in Massachusetts)* unter der unten angegebenen Telefonnummer.

Ελληνική Greek

Το έγγραφο αυτό είναι πολύ σημαντικό και πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του εγγράφου αυτού, παρακαλώ επικοινωνήστε με τον Διευθυντή του Τμήματος Περιβαλλοντικής Δικαιοσύνης της Μασαχουσέτης στον αριθμό τηλεφώνου που αναγράφεται παρακάτω

Italiano Italian

Questo documento è importante e deve essere tradotto immediatamente. Se hai bisogno di tradurre questo documento, contatta il Direttore della Giustizia Ambientale di MassDEP al numero di telefono sotto indicato.

Język Polski Polish

Ten dokument jest ważny i powinien zostać niezwłocznie przetłumaczony. Jeśli potrzebne jest tłumaczenie tego dokumentu, należy skontaktować się z dyrektorem ds. sprawiedliwości środowiskowej MassDEP pod numerem telefonu podanym poniżej.

हिन्दी Hindi

यह दस्तावेज महत्वपूर्ण है और इसका अनुवाद तुरंत किया जाना चाहिए। यदि आपको इस दस्तावेज का अनुवाद कराने की जरूरत है, तो कृपया नीचे दिए गए टेलीफोन नंबर पर MassDEP के पर्यावरणीय न्याय निदेशक से संपर्क करें।

Contact Deneen Simpson 857-406-0738
Massachusetts Department of Environmental Protection
100 Cambridge Street 9th Floor Boston, MA 02114
TTY# MassRelay Service 1-800-439-2370 • https://www.mass.gov/environmental-justice
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APPENDIX E – Soil and Groundwater Management Plan

SOIL & GROUNDWATER MANAGEMENT PLAN

Lily Pond Park
Lily Pond Park Restoration
Nantucket, MA

Prepared for:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA 02554

Last Modified: 06/24/2026 at 9:48AM EDT

Prepared by:

Horsley Witten Group
Sustainable Environmental Solutions
112 Water Street • 6th Floor • Boston, MA 02109
857-263-8193 • horsleywitten.com

June 2026

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1.0 INTRODUCTION

The Horsley Witten Group, Inc. (HW) has been contracted by the Nantucket Land Bank to prepare this Soil and Groundwater Management Plan (SGMP) summarizing procedures for the management of excess soil/sediment and groundwater during construction activities planned at Lily Pond Park, located off North Liberty Street in Nantucket, MA (the Site). The entire parcel consists of approximately 6.15 acres and is utilized by residents for passive recreation and bird-watching along a wooden boardwalk. Portions of the Park are improved by actively maintained turf areas and parking areas.

A pre-characterization program was completed within Lily Pond Park wetlands to evaluate soil/sediment and groundwater conditions and potential management options, as outlined in this SGMP. Soil and sediment contamination at the Site is associated with anthropogenic sources (i.e. historic disposal of coal ash and discharge of untreated stormwater runoff). Based on the analytical data collected through the pre-characterization program, this SGMP identifies management options for sediment/soil and groundwater during the construction phase of the proposed project. The Lily Pond Park Restoration Plan includes improvements to on-site stormwater management, reconstruction of existing wetlands and wetland restoration, and construction of a perimeter pathway and boardwalk. The proposed activities will include excavation and re-grading of areas within the Site to facilitate stormwater retention and treatment, while removing areas of invasive vegetation.

Regional location and aerial site plans depicting the parcel boundaries and sampling locations are included as Figures 1 through 3, attached. Analytical results associated with the pre-characterization program are included as Tables 1 through 5.

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2.0 SITE BACKGROUND

The Site consists of approximately 6.15-acres owned by the Town of Nantucket. Lily Pond Park is primarily wetlands and wooded areas located within a residential area of Nantucket between North Liberty, West Chester, and Lily Streets. The Subject Property currently receives stormwater discharge from the surrounding residential neighborhoods, through a series of conveyances and outfalls. There are no buildings at the Subject Property, but there is a gravel parking lot located on North Liberty Street and three additional entrance trails.

2.1 Historical Site Description

In support of preliminary project design and permitting, HW conducted a desktop evaluation and site reconnaissance in 2022 and again in 2025. The purpose of these activities was to identify readily identifiable environmental concerns that would potentially impact construction period activities (i.e. soil/sediment and groundwater management). According to the Nantucket Historical Association, while Lily Pond Park is currently comprised of vegetated wetlands, it was previously a pond with an outlet that ran north toward Nantucket Harbor. An earthen dam was built in the late 1600's at the outlet to power a water mill. The pond was reportedly drained circa 1720 after a small gutter was dug allowing the water to spill over the dam.

Based on historical aerials and topographic maps reviewed during the desktop evaluation, the Site and surrounding areas were historically utilized for primarily residential purposes. Sanborn fire insurance maps from 1887 through 1962, historic aerials from 1938 through 2018, and topographic maps from 1889 through 2021 are included in Appendix A and depict historic use and development patterns of the Site and surrounding areas.

The desktop evaluation did not reveal any reported releases of oil or hazardous materials with the potential to impact the Site.

3.0 PRE-CHARACTERIZATION SAMPLING

To support final project permitting and design, a pre-characterization program was initiated in March 2025. The program also served to inform future soil/sediment and groundwater management activities and identify potential disposal facilities for excess material anticipated to be generated during construction. The pre-characterization program included the following activities:

- Collection of 11 composite samples, comprised of 33 discrete soil and sediment borings within the proposed wetland and park redesign areas;
- Classification of soils and sediment encountered throughout soil borings;
- Field screening of soil and sediment samples via photoionization detector (PID);
- Collection of a groundwater sample from the wetland area;
- Laboratory analysis for key parameters to support project permitting, excess soil/sediment management alternatives, and dewatering management

In support of the Project, HW has submitted soil/sediment reuse/disposal packages to Marilyn's Landing Commercial Reuse Area (MLCRA) and Bourne Intergrated Solid Waste Management (ISWM) facilities. Facility review is ongoing at the time of this SGMP, and an addendum will be issued once facility approvals have been issued.

3.1 Soil/Sediment Pre-Characterization Sampling

3.1.1 March 2025 Limited Subsurface Investigation

On March 5, 2025, HW conducted soil/sediment sampling at Lily Pond within the proposed wetland and park redesign areas. Based on the current conceptual design, approximately 3,110 cubic yards of excess material will be generated during construction, and a total of eleven (11) composite samples were collected. Each sample was a composite of three discrete grab samples that were collected with a hand auger, for a total of thirty-three (33) discrete grab samples. Sample depths were determined based on proposed excavation depths and ranged from 1 to 3 feet below ground surface (bgs). Sampling locations targeted existing stormwater discharge locations on site, as well as areas that are proposed for excavation. The proposed redesign of Lily Pond Park includes both areas of excavation and areas of filling to produce sufficient grading for stormwater flow and wetland maintenance. As such, HW's sampling plan prioritized areas and depths to be cut/excavated to characterize materials that may be removed during construction.

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Consistent with MassDEP Disposal policies, each composite sample was created from three grab samples. Leaf litter, roots, rocks, and phragmite rhizomes were removed from samples to the best of HW's ability. Many sampling locations were located in areas of dense phragmite growth.

Discrete samples were field screened for Total Organic Volatiles (TOV) with a Photoionization Detector (PID). TOV readings ranged from <0.01 parts per million (ppm) to 0.4 ppm. To ensure representative samples were collected, field sampling equipment was decontaminated between samples/quadrants by scrubbing/scraping all loose materials before washing the equipment in a solution of Alconox and water. The equipment was then rinsed with potable water followed by a final rinse with deionized water.

The number and location of samples collected during the limited subsurface investigation (LSI) were consistent with off-site (i.e. Landfill and MassDEP) sampling requirements, which require a minimum sample to volume frequency of one sample per 500 cubic yards. Based on the proposed design, approximately 3,110 cubic yards of excess soil is anticipated to be generated.

To determine if sediment at the Subject Property is appropriate for landfill disposal in Massachusetts, samples were collected consistent with the document titled *Dredged Sediment Reuse or Disposal - February 15, 1995 (COMM-94-007*) and *Reuse and Disposal of Contaminated Soil at Massachusetts Landfills (COMM-97-001)*, prepared by MassDEP. Additionally, sediments were also collected consistent with the 314 CMR 9.07(2)(b)(6) 401 Water Quality Certification (WQC). Sediment samples were analyzed for the COMM-94 and 401 WQC requirements by a Massachusetts certified laboratory under chain of custody protocols for the following:

- MCP 14 Metals (antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, nickel, selenium, silver, thallium, vanadium, and zinc);
- 401 WQC Metals (arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc);
- Polychlorinated biphenyls congeners (PCBs);
- Semi-volatile organic compounds (SVOCs);
- Polycyclic aromatic hydrocarbons (PAHs);
- Total petroleum hydrocarbons (TPH);
- Extractable petroleum hydrocarbons (EPH);
- Volatile Organic Compounds (VOCs);
- Pesticides;
- Herbicides;
- pH;
- Conductivity;
- Flash Point;
- Reactivity;
- Grain Size (Sieve);
- Total Organic Carbon (TOC); and
- Percent Water.

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3.1.2 March 2025 Soil/Sediment Sampling Results

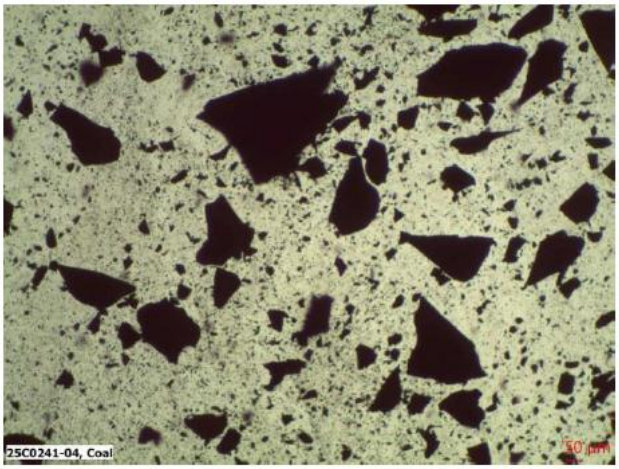
Laboratory analytical results from the March 2025 sampling event are summarized below. Results are tabulated in Tables 1 and 2, along with a complete laboratory analytical report. Figure 2 depicts sampling locations, stormwater outfall locations, and wetland resource area delineation. Laboratory analytical results are compared to MassDEP 401 WQC criteria and Massachusetts Contingency Plan (MCP) Reportable Concentrations (RCS-1) to identify limiting constraints on re-use and/or disposal.

SVOCs

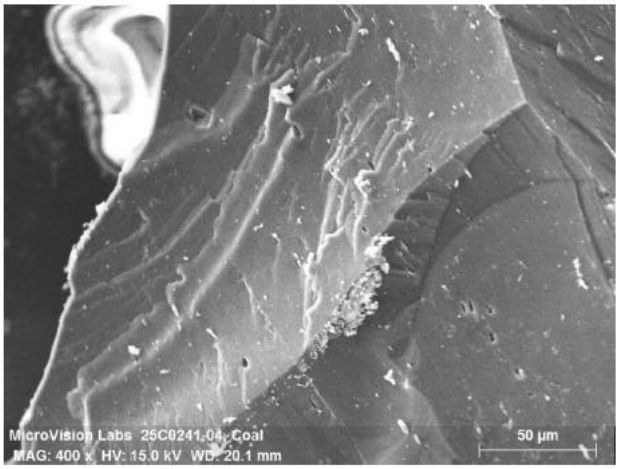
Various SVOCs, including 2-methylnaphthalene, acenaphthene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, dibenz(a,h)anthracene, indeno(1,2,3-cd)pyrene, and phenanthrene) were detected above the MCP RCS-1 standards in sample 2025-SS-4, which was collected in the central wetland portion of the Site. Select SVOCs that fall under the classification of polycyclic aromatic hydrocarbons (PAHs) were also detected above RCS-1 values in sample 2025-SS-5 and are discussed in further detail below. SVOC concentrations in the remaining samples were either below laboratory reporting limits or below the RCS-1 values. Tabulated analytical data is included in the attached Table 1 along with a complete laboratory analytical report.

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Based on the presence of SVOCs and PAHs, select samples were analyzed for Microscopic Analysis for coal and coal ash via microscopy techniques including Scanning Electron Microscopy (SEM), Energy Dispersive X-Ray Spectroscopy (EDS), and Polarized Light Microscopy (PLM) (Polarized Light Microscopy). These techniques provide high-resolution elemental analysis and evaluation of samples. Below are images from the microsropy analysis of sample 2025-SS-04, identifying the presence of coal fragments.



PLM Image



SEM Image

Sample 2025-SS-4 also was determined by the laboratory to have high levels of organics and percent water, contributing to elevated reporting limits/high bias for SVOCs. In contrast, the remaining 10 samples featured relatively low concentrations of SVOCs, indicating that the elevated concentrations of SVOCs in sample 2025-SS-4 are anomalous and can be attributed to the presence of coal fragments in the sample.

EPH/PAHs

PAHs are a group of SVOCs that are persistent in the environment and are formed during the incomplete burning of organic materials like coal, oil, gas and other materials. Automotive emissions and industrial emissions are common sources of PAHs, and PAHs are commonly found in areas that receive stormwater runoff, as PAHs that settle on impervious surfaces then migrate with stormwater and subsequently bind to organic material in the environment. The organic sediment present in vegetated wetlands will work as a filter, leading to areas of concentrated PAHs. Benzo(a)pyrene and dibenzo(a,h)anthracene were detected at concentrations above the MCP RCS-1 value in two samples, 2025-SS-4 and 2025-SS-5. These samples are located in the centralized area of wetlands at the Subject Property, east/northeast of the current boardwalk. The total PAHs in these two samples was below the COMM-94 landfill disposal value of 100 milligrams per kilogram (mg/kg), however, the total SVOCs in sample 2025-SS-4 were above the COMM-97 criteria of 100 mg/kg. As discussed above, the presence of coal fragments in sample 2025-SS-4 is identified as the contributing factor to the different analytical results, where the EPH/PAHs analysis, conducted on a discrete aliquot of the composite sample, indicated much lower concentrations of PAHs. Tabulated sediment analytical data is included in the attached Table 1.

Metals

Various MCP 14 metals, including arsenic, barium, chromium, lead, mercury, nickel, vanadium, and zinc were detected in the samples above the laboratory reporting limits. Concentrations of lead in six of the eleven sediment samples (2025-SS-2, 2025-SS-4, 2025-SS -5, 2025-SS -6, 2025-SS -7) exceeded the RCS-1 value of 200 mg/kg, with a maximum concentration of 358 mg/kg. The presence of lead above the RCS-1 value is mainly associated with sediment in the central and southeastern portions of the Site. Elevated concentrations of lead in select sediment samples are consistent with what would be expected in an area receiving untreated stormwater runoff from impervious areas.

Seven of the eleven samples indicated a theoretical toxicity characteristic leaching procedure (TCLP) value at or above the 20x rule for lead (100 mg/kg or greater). The samples containing the highest concentrations of lead (2025-SS-5 at 344 mg/kg and 2025-SS-6 at 358 mg/kg) were analyzed for TCLP lead. TCLP analysis indicated results of 0.45 mg/L and 0.18 mg/L respectively, below the 5.0 mg/L TCLP limit.

For 401 WQC permitting purposes, samples were oven-dried prior to analysis to achieve lower detection limits for seven metals (arsenic, cadmium, chromium, lead, mercury, nickel, and zinc). In addition to the lead exceedances described above, zinc was detected above the RCS-1 value in sample 2025-SS-2, located in the central portion of the Site, west of the current boardwalk. All detections of metals were below the COMM-94 / COMM-97 landfill disposal values. Tabulated sediment analytical data is included in the attached Table 1.

TPH

TPH was detected in seven of the sediment samples above the laboratory reporting limit. Elevated TPH is consistent with an area receiving stormwater runoff from impervious areas, due

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to emissions and leaks from vehicles, and from the constituents of asphalt pavement. All detections were below RCS-1 values and the COMM-94 / COMM-97 landfill disposal values.

PCB Congeners

PCB congeners are a group of 209 distinct chemical compounds within the PCB family, with the most common commercial mixtures of the congeners often referred to as Aroclors. PCB congeners were detected above laboratory reporting limit in three samples, 2025-SS-2, 2025-SS-3, and 2025-SS-6. All detections were below the RCS-1 value and the COMM-94 / COMM-97 acceptance criteria for total PCBs (2 mg/kg).

Pesticides and Herbicides

Low levels of pesticides and herbicides were detected in all eleven of the sediment samples. Low levels of pesticides and herbicides are common in areas that receive stormwater runoff from impervious surfaces in areas where commercially available products are applied. All detections were below the RCS-1 values and COMM-94 / COMM-97 landfill acceptance criteria.

VOCs

Acetone was detected at concentrations above laboratory reporting limits in eight sediment samples. Acetone is a naturally occurring chemical found in the environment, plants, trees, and as a result of forest fires / burning of organic materials. 2-Butanone was also detected in one sediment sample and can also be present in the environment from natural sources. The reported detections of VOCs were all at levels below the applicable RCS-1 values, and the total VOCs were below the COMM-94 / COMM-97 landfill acceptance criteria. Tabulated VOC analytical data is included in Table 2.

Grain Size and Total Organic Carbon (TOC)

Sediment across the project area primarily consisted of smaller percentages of mineral deposits intermixed with muck-like material composed of decaying organic materials. Wetland vegetation, primarily consisting of phragmites, has established a dense and extensive layer of rhizomes. In general, materials observed during the sample event consisted of organic silt and silty sand with varying amounts of leaf litter and stumps and roots. A small amount of rubble fill and/or ash was observed in sediment collected in the southwestern portion of the Subject Property. According to the grain size analysis, sediments were primarily organic silty sand. Grain size analysis is included in the laboratory analytical report in Appendix B. Total organic carbon ranged from 1.4% to 12.4% which is anticipated due to the high observed organics in the wetland and ponded areas of the Subject Property.

3.1.3 May 2026 Supplemental Sediment Sampling

To satisfy MLCRA facility requirements, HW conducted supplemental sampling on May 27, 2026. A total of 10 composite samples were collected to replicate the March 2025 sampling locations. Each sample was a composite of three discrete grab samples that were collected with a hand auger, for a total of thirty (30) discrete grab samples.

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The samples were submitted to a Massachusetts certified laboratory for analysis of fecal coliform, and in three locations, lead analysis.

3.1.4 May 2026 Soil/Sediment Sampling Results

Laboratory analytical results from the May 2026 sampling event are summarized below. Results are tabulated in Tables 1 and 3, along with a complete laboratory analytical report. Figure 2 depicts sampling locations.

Fecal coliform

Fecal coliform was detected in nine out of the ten composite samples collected during the May sampling event. In three locations (SS-2, SS-3, and SS-5), the most probably number of colonies per gram (MPN/gram) exceeded the 1,000 MPN/g facility acceptance criteria at MLCRA. The highest detections were observed in locations where the sediment was submerged under standing water. Lily Pond Park is primarily occupied with various wildlife including geese/waterfowl and receives untreated stormwater discharge from the surrounding watershed. Tabulated fecal coliform analytical data is included in Table 3.

Lead

Lead was identified in the three composite samples collected in May 2026. Two of these detections remained below the RCS-1 standard of 200. The remaining sample, collected immediately west of the boardwalk at location SS-2, contained lead concentrations at 3,830 mg/kg. HW has requested additional PLM analysis to evaluate the anomalous lead concentration, which will be issued in an addendum to this SGMP. Tabulated lead analytical data is included in Table 2.

3.2 Groundwater Sampling

3.2.1 May 2026 Groundwater Sampling

Groundwater is present at shallow depths in the existing wetland area, with lower lying portions of the Site permanently inundated/submerged. During construction, dewatering of the project site is anticipated to be necessary. To determine if COCs identified in soil/sediment at the Site have impacted groundwater and inform construction period groundwater management activities, HW completed a groundwater sampling program in May 2026.

HW collected a groundwater sample from a temporary well point installed in the central portion of the project area on May 26, 2026. Groundwater samples were submitted for laboratory analysis of parameters established in Table 1 of the *National Pollutant Discharge Elimination System (NPDES) General Permit for Dewatering and Remediation Activity Discharges* (DRGP) in Massachusetts (MAG910000). The DRGP is applicable to dewatering discharges where site conditions indicate the potential for COCs to be present in groundwater, and where the receiving water body is a water of the United States[1]. For Lily Pond, it is anticipated that

[1] HW had provided the previously collected soil/sediment quality data to EPA Region 1 for review, and EPA indicated that construction period dewatering discharges would be subject to the DRGP.

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dewatered groundwater will be discharged to Nantucket Harbor via the municipal stormwater system, as discussed in Section 3.3.2.

The groundwater sample was analyzed for the following parameters:

- 1,4-Dioxane
- Ammonia
- Chloride
- TRC
- Hexavalent Chromium
- Trivalent Chromium
- Cyanide
- Ethylene Dibromide (EDB)
- Ethanol
- Hardness
- Polychlorinated Biphenyls (PCB)
- Phenol
- RGP Total Metals (Ag, As, Cd, Cu, Fe, Hg, Pb, Ni, Sb, Se, Zn)
- RGP Dissolved Metals (Ag, As, Cd, Cu, Fe, Hg, Pb, Ni, Sb, Se, Zn)
- RGP Semi-Volatile Organic Compounds (SVOCs)
- RGP Volatile Organics
- Total Petroleum Hydrocarbon (TPH)
- Total Suspended Solids (TSS)
- Total Nitrogen[2]

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3.2.2 Groundwater Sampling Results

Laboratory analytical results are summarized in Table 5. There were no detections of VOCs, SVOCs, Phenols, TPH, or PCBs in the groundwater sample. Elevated concentrations of total iron and dissolved iron were identified at 18,700 ug/L and 18,900 ug/L, respectively. Total Suspended Solids were detected at 33 mg/L exceeding the NPDES limitation of 30 mg/L. The laboratory analytical report is included in Appendix B.

3.3 Pre-Characterization Sampling Conclusions

3.3.1 Soil/Sediment

The 2025 and 2026 sediment sampling activities confirmed the presence of several metals, petroleum related constituents (i.e. TPH and PAHs), PCB congeners, herbicides, and pesticides at relatively low concentrations. In select sampling locations, the concentrations of lead and PAHs exceeded the MCP RCS-1 values. The presence of lead and PAHs is attributed to non-point source anthropogenic sources associated with discharge of untreated stormwater to the Site, and the presence of coal ash fragments in discrete portions of the Site. It is HW's opinion

[2] Nantucket Harbor has a Total Maximum Daily Load (TMDL) for nitrogen.

that the number of samples collected was sufficient to effectively characterize the Site, and support a determination of excess material management alternatives.

In support of the Project, HW prepared and submitted reuse/disposal packages to MLCRA and Bourne ISWM facilities. Facility review is ongoing at the time of this SGMP, and an addendum will be issued once facility approvals have been issued. Excess materials transported from the Project site must be tracked under a Material Shipping Record (MSR).

Due to the presence of lead and PAHs in soil/sediment, the contractor is responsible for implementing a Health and Safety Plan (HASP), as discussed in Section 4.3.1, and dust monitoring, as discussed in Section 4.3.3. Additional field screening requirements for off-site disposal are contained with the reuse/disposal packages, and in Section 4.3

3.3.2 Groundwater

Groundwater is present at shallow depths in the existing wetland area, with lower lying portions of the Site permanently inundated/submerged. During construction, dewatering of the project site is anticipated to be necessary to allow for efficient materials management and equipment access. As site constraints limit opportunities for on-site management of groundwater dewatered from the project site (i.e. recharge), it is anticipated that dewatered groundwater will be discharged to the Town of Nantucket municipal stormwater system at the northern end of the Site. The municipal stormwater system ultimately discharges to the Children's Beach outfall (Outfall Number OF-055), located on Nantucket Inner Harbor. Figure 4, attached, includes an overview prepared by Fuss & O'Neil of Nantucket watershed that run from Lily Pond Park towards the harbor via Children's Beach.

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4.0 MATERIAL MANAGEMENT PROCEDURES

The results of the pre-characterization sampling activities were evaluated to classify materials and identify management options during construction. The classifications are based on information contained in the MCP 310 CMR 40.0000, the Massachusetts Hazardous Waste Management Regulations 310 CMR 30.0000, MassDEP's *Similar Soils Provision Guidance* WSC-13-500, and MassDEP policies COMM-94 / COMM-97.

4.1 Soil/Sediment Management

4.1.1 Soil/Sediment Type

In accordance with the pre-characterization sampling results, soil/sediment from the Site is designated as non-hazardous <RCS-1 and non-hazardous >RCS-1 soil that may be disposed of at Massachusetts Unlined/Lined Landfills, and Massachusetts Reclamation Reuse facilities, subject to facility specific acceptance criteria and facility approval. Soil/sediment categories and potential management options for the Site are presented below.

The Nantucket Land Bank has submitted soil reuse/disposal packages to MLCRA and Bourne ISWM. In the event that alternative/additional locations for excess soil/sediment are identified, the Land Bank must approve of any recycling/disposal facilities proposed by the contractor before materials are transported there. Multiple disposal/reuse options are provided as facility

operations, soil transportation logistics, facility tipping fees, and contractor preference are expected to factor in contractor selection of facility(ies).

- **Massachusetts Unlined Landfills:** Soil that contains OHM concentration above MCP RCS-1 levels but below the criteria for Massachusetts Unlined landfills per MassDEP Policy COMM-97-001.
- **Massachusetts Lined Landfills:** Soil that contains OHM concentrations above MCP RCS-1 levels and Massachusetts Unlined landfills but below the criteria for Massachusetts Lined landfills per MassDEP Policy COMM-97-001.
- **MassDEP approved "Reclamation Soils" Sites:** Soils that contains OHM concentrations below soil reclamation and soil re-use acceptance criteria.

4.1.2 Soil Management Procedures

In support of soil excavation activities, HW or the Nantucket Land Bank field staff, under the supervision of the Licensed Site Professional (LSP), will complete the following on-site tasks:

- Periodically monitor compliance of the on-site excavation activities with the requirements of the SGMP.
- Prepare soil disposal/reuse approval requests for facilities identified by the Contractor.
- Coordinate management of environmental media generated during on-site excavation activities to verify materials are being handled in accordance with this SGMP.
- Monitor the day-to-day progress of work, document work completed, and meet with representatives as required.

Excavated material will be transported under a Material Shipping Record (MSR) based on soil origin to an approved receiving facility. Excavated material shall be adequately dewatered prior to transportation to intermediate storage/transfer locations and the receiving facility to prevent the liquid from spilling from trucks onto roadways. Material dewatering areas shall be depicted on the contractor provided Dewatering Plan. The contractor will coordinate the off-site management of soil with facility personnel and the Nantucket Land Bank. Confirmation of all soil shipments associated with the project will consist of certified weight tickets from the selected facility and the completed MSRs.

4.2 Groundwater Management

4.2.1 Groundwater

Groundwater elevations vary on the Site, and the majority of excavation activities will occur within wetland areas where groundwater management is anticipated to be necessary to facilitate excavation. Groundwater elevations are anticipated to fluctuate seasonally, and in response to precipitation events due to stormwater discharge onto the Site. As specified in the drawings and plans, erosion controls and Best Management Practices (BMPs) will be implemented during construction to minimize stormwater entering the excavations and off-site migration from the construction area. Excavated material shall be adequately dewatered prior to transportation to intermediate storage/transfer locations and the receiving facility to prevent the liquid from spilling from trucks onto roadways. The contractor shall also implement BMPs to minimize potential inadvertent releases of OHM (i.e. spills or leaks from refueling of construction vehicles

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or storage of fuel, oil and other fluids during construction) that could potentially contaminate soil/sediment or groundwater. Spill reporting requirements will be conducted in accordance with the applicable federal, state and local regulations.

4.2.2 Groundwater Management Procedures

Based on project needs and subsurface conditions encountered during construction, groundwater management options that may be implemented include on-site recharge or discharge of groundwater to the municipal stormwater drainage system, which subsequently discharges to Nantucket Harbor. Off-site treatment and disposal of groundwater is not anticipated to occur based on the nature of site conditions and feasibility considerations.

Construction Dewatering: The Contractor is responsible for developing and executing all construction dewatering means and methods, and complying with all applicable federal, state, and local regulations. A summary of potentially applicable regulations is provided below:

- Recharge of groundwater on site, where feasible, is to be conducted as close as practicable to the dewatering activities origination point.
- A Non-Consumptive Use Exemption in accordance with 310 CMR 36.05(1) in accordance with Massachusetts Water Resource Management Program.
- No discharge shall enter a catch basin, recharge vessel or surface water body without prior permitting efforts which may include, but are not limited to, coverage under a National Pollutant Discharge Elimination System (NPDES) Dewatering and Remediation General Permit (DRGP) and/or Construction General Permit (CGP). A DRGP is anticipated to be necessary for the Lily Pond Park project.
- Prior to any discharges to a stormwater system an Approval from the stormwater system Owner must be obtained for discharges to the catch basin location.
- Groundwater that is either disposed or recycled off-site must be at a permitted and licensed facility.

On-Site Recharge: If feasible based on site-specific conditions, the least costly method of dewatering is to recharge groundwater back into the subsurface. This can either be completed by discharging back within the open excavation areas associated with construction/remediation activities, discharging to a specified groundwater recharge/infiltration area or trench, or discharge to the ground surface. Groundwater should be discharged within 100 feet of the original excavation and upgradient (if possible). If large volumes of groundwater that exceed direct recharge limitations require management, a fractionation tank may be used to temporarily store groundwater. The groundwater can then be allowed to discharge back into the excavation area, infiltration trench, or ground surface in a controlled manner.

Uncontaminated/Treated Groundwater: If large amounts of groundwater are anticipated/encountered rendering on-site recharge infeasible, discharge of groundwater to surface water via stormwater conveyances may be necessary. This activity must not occur without written consent from the local municipality or stormwater/sewer authority. Due to the presence of naturally occurring and anthropogenic contaminants in soil/sediment within the project area, treatment of the discharge and coverage under a DRGP is necessary. The contractor or designated subcontractor shall be responsible for all DRGP required activities,

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including, but not limited to: filing of Notice of Intent (NOI); design, operation and maintenance of all dewatering equipment and effluent treatment equipment; DRGP required effluent monitoring including collection of effluent samples for laboratory analysis of DRGP required parameters; Notice of Termination (NOT); and removal / disposal of all groundwater treatment residuals / waste. Discharge of groundwater from construction projects to surface water (either directly or via a catch basin) may potentially require permits from other agencies including the local Conservation Commission.

4.2.3 Groundwater Disposal

A priority "from first to last option" of potential groundwater disposal facilities is provided below.

Type A Groundwater: **Non-Hazardous Beneficial Reuse:** Groundwater and wastewaters that are characterized as non-hazardous waste and non-TSCA regulated (PCBs<3 parts per billions [ppb] or limit allowed by receiving facility permit) and are acceptable for beneficial reuse/recycle at a properly licensed facility.

Type B Groundwater: **Non-Hazardous Wastewater Treatment facility:** Groundwater and wastewaters that are characterized as non-hazardous waste and non-TSCA regulated (PCBs< 3 ppb or limit allowed by receiving facility permit) and are acceptable for treatment and disposal at a properly licensed wastewater treatment facility.

Type C Groundwater: **Non-Hazardous Groundwater Treatment and Discharge:** Groundwater and wastewaters that are characterized as non-hazardous waste and non-TSCA regulated (PCBs< 3 ppb or limit allowed by receiving facility permit) and are acceptable for on-site or off-site discharge under U.S. EPA DRGP or CGP.

Type D Groundwater: **U.S. EPA Hazardous Waste:** Groundwater and wastewaters that are characterized as a hazardous waste and are shipped to a Treatment, Storage, or Disposal Facility (TSDF).

Due to the presence of naturally occurring and anthropogenic contaminants in soil/sediment within the project area, groundwater at the Site is anticipated to be categorized as **Type C**, and coverage under a DRGP is necessary to discharge to an off-site receiving water. The contractor or designated subcontractor shall be responsible for determining the methods and means for groundwater treatment, and all permit required influent and effluent monitoring necessary to comply with applicable permits.

4.3 Management of Other Project Materials

During excavation activities, there is the potential for other materials to be encountered which may be removed from the subsurface, as described below.

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4.3.1 Health and Safety Plan (HASP)

Consistent with the requirements of the Occupational Safety and Health Administration (OSHA) 29 CRF 1910.120 and 310 CMR 40.0018, the selected contractor shall prepare a site-specific health and safety plan (HASP). The HASP will be utilized by staff involved with soil and groundwater management procedures. The selected contractor shall be responsible for training and administering the HASP to project personnel.

4.3.2 Construction and Demolition Materials

Abandoned construction and demolition (C&D) materials may be encountered during soil excavation work. C&D waste includes building materials such as plastic or steel piping, drywall, scrap metal, carpet, wood, glass, etc. Should C&D waste be encountered during excavation activities, these wastes shall be segregated and disposed of separately at a recycling facility permitted to accept C&D waste.

4.3.3 Dust Control

Fugitive dust emissions during construction activities will be implemented and managed by the contractor to ensure no visible dust is generated. Dust monitoring and control procedures will be the responsibility of the contractor and will ensure ambient air standards are met during construction and to protect the public from air-borne particles. At a minimum, a dust action level of 150 micrograms per cubic meter (ug/m3) (National Ambient Air Quality Standard) will be utilized during intrusive activities within the project Site. This level may be lowered by the contractor based on a Site-specific action level developed as part of the HASP (Section 4.3.1).

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4.3.4 Soil Stockpiling

Stockpiling of soil during construction shall be conducted in areas designated in the Drawings. To minimize dust and erosion from stockpiled material, stockpiles shall be covered with polyethylene sheeting when the contractor is not actively working.

4.3.5 Asphalt, Brick and Concrete

Waste asphalt, brick and/or concrete (ABC) removed from the subsurface shall be managed separately for disposal. This material shall not be combined with C&D waste as this material is regulated and recycled differently. The ABC wastes must be segregated from soil and sized appropriately (generally six-inch minus) to gain acceptance at a permitted recycling facility.

4.3.6 Management of Solid Waste

Other solid waste that may be encountered during excavation includes plastic, cardboard, newspaper, and other solid wastes. During excavation activities, solid wastes shall be segregated and disposed of separately at a suitable recycling or disposal facility, permitted to accept solid waste.

4.3.7 Management of Invasive Species

Invasive species exist throughout the Site. Some areas are more densely covered with invasive vegetation than others. Invasive species management should be conducted as noted in the

construction drawings and specifications and in accordance with the Nantucket Conservation Commission.

4.3.8 Management of Unexpected Soil or Groundwater Conditions

If unexpected soil and/or groundwater conditions are encountered during construction (e.g. non-aqueous phase liquid or NAPL), the contractor will notify the Nantucket Land Bank or their Representative immediately, who will provide appropriate guidance relative to the management, characterization, staging and recycling/disposal of such materials. If encountered, soil/sediment and/or groundwater suspected to be impacted by OHM at reportable levels will be segregated from other materials pending sampling and analysis as appropriate. Such soil and/or groundwater shall remain segregated until the impacted media has been sampled, and the contractor has obtained approval for disposal of this material at an appropriate receiving facility. Upon receipt of analytical results, the soil and/or groundwater will be characterized for disposal by the LSP and transported by licensed contractors to an appropriate disposal facility under MSR, BOL, or Hazardous Waste Manifest.

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Figure 1 – Locus Map
Figure 2 – Aerial Map
Figure 3 – Sampling Location Plan
Figure 4 – Children's Beach Overview – Watershed Overview

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Horsley Witten Group
Sustainable Environmental Solutions

Path: \\hw-file2\HW-Server\Projects\2020\20008 Lily Pond Park Nantucket\GIS\Maps\USGS_Locus.aprx



Service Layer Credits: USGSTopo: USGS The National Map: National Boundaries Dataset, 3DEP Elevation Program, Geographic Names Information System, National Hydrography Dataset, National Land Cover Database, National Structures Dataset, and National Transportation Dataset; USGS Global

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Date: 8/13/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

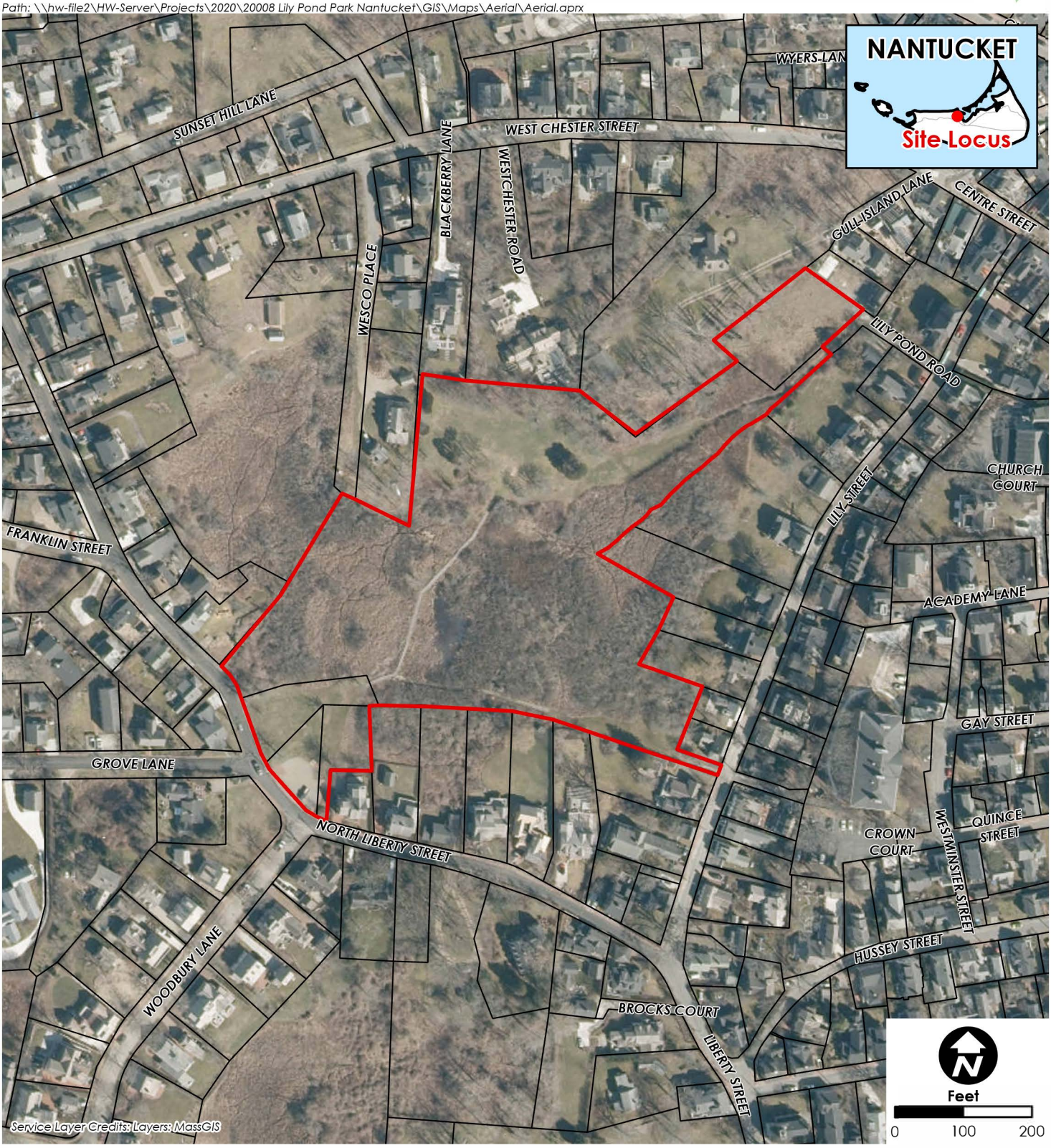
Project Boundary

Lily Pond Park
Nantucket, MA

Figure 1
USGS Topographic

Horsley Witten Group
Sustainable Environmental Solutions

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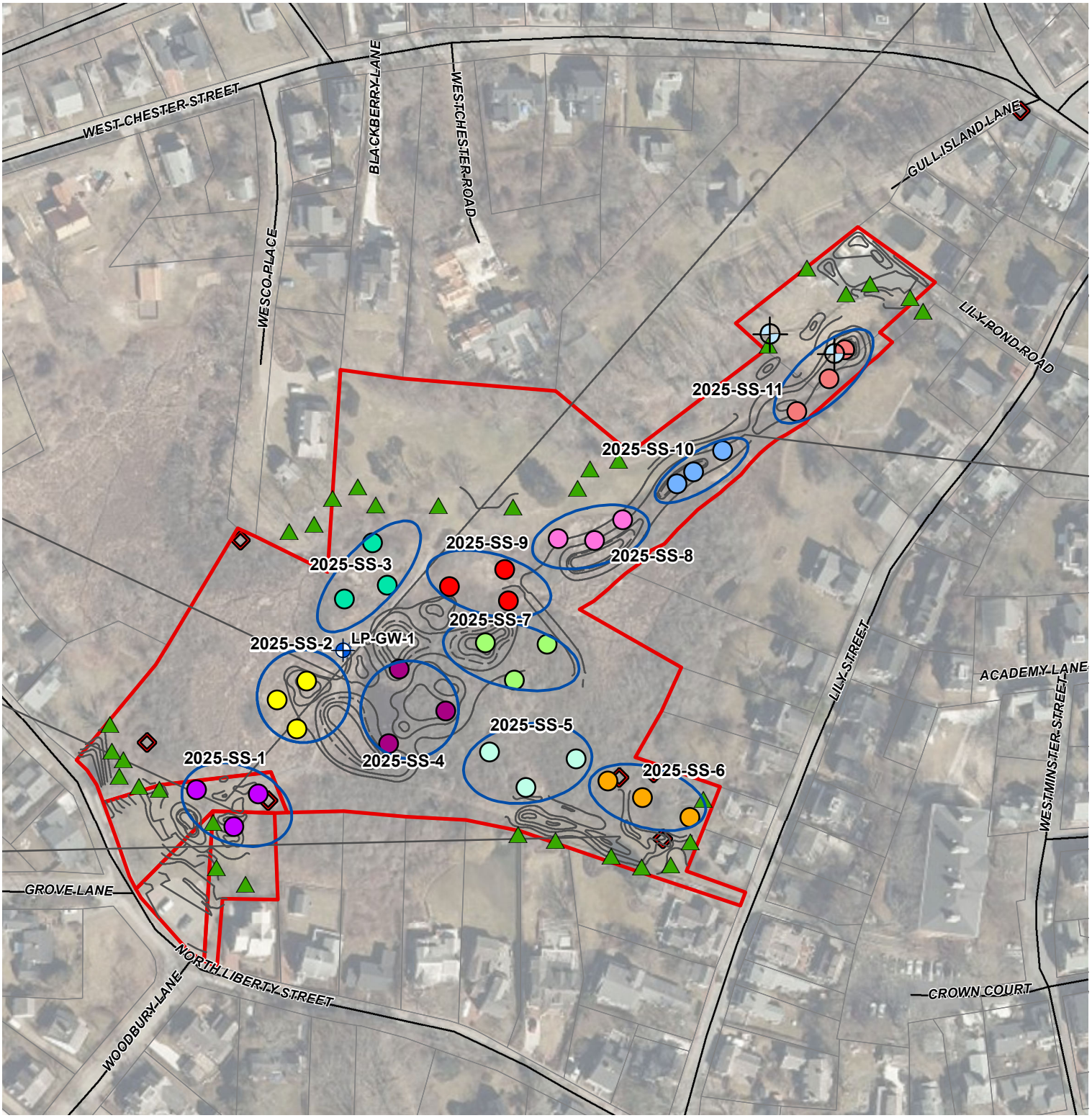
Date: 8/13/2024
Data Sources: Bureau of Geographic Information (MassGIS), ESRI

This map is for informational purposes and may not be suitable for legal, engineering, or surveying purposes.

Project Boundary
Parcels

Lily Pond Park
Nantucket, MA

Figure 2
Aerial Photograph



Document Path: H:\Projects\2020\20008 Lily Pond Park Nantucket\GIS\Maps\Sediment_Sampling_2026.mxd

Legend

- Subject Property
- Sediment Grab Locations
- Composited Sediment Samples
- Proposed Grading Contours
- Temporary Well Point
- Groundwater Monitoring Well (Installed by Others)
- Approximate Outfall/Inlet Locations
- Wetland Flags (Approx.)

*2021 NAIP imagery service

N

0 150 feet

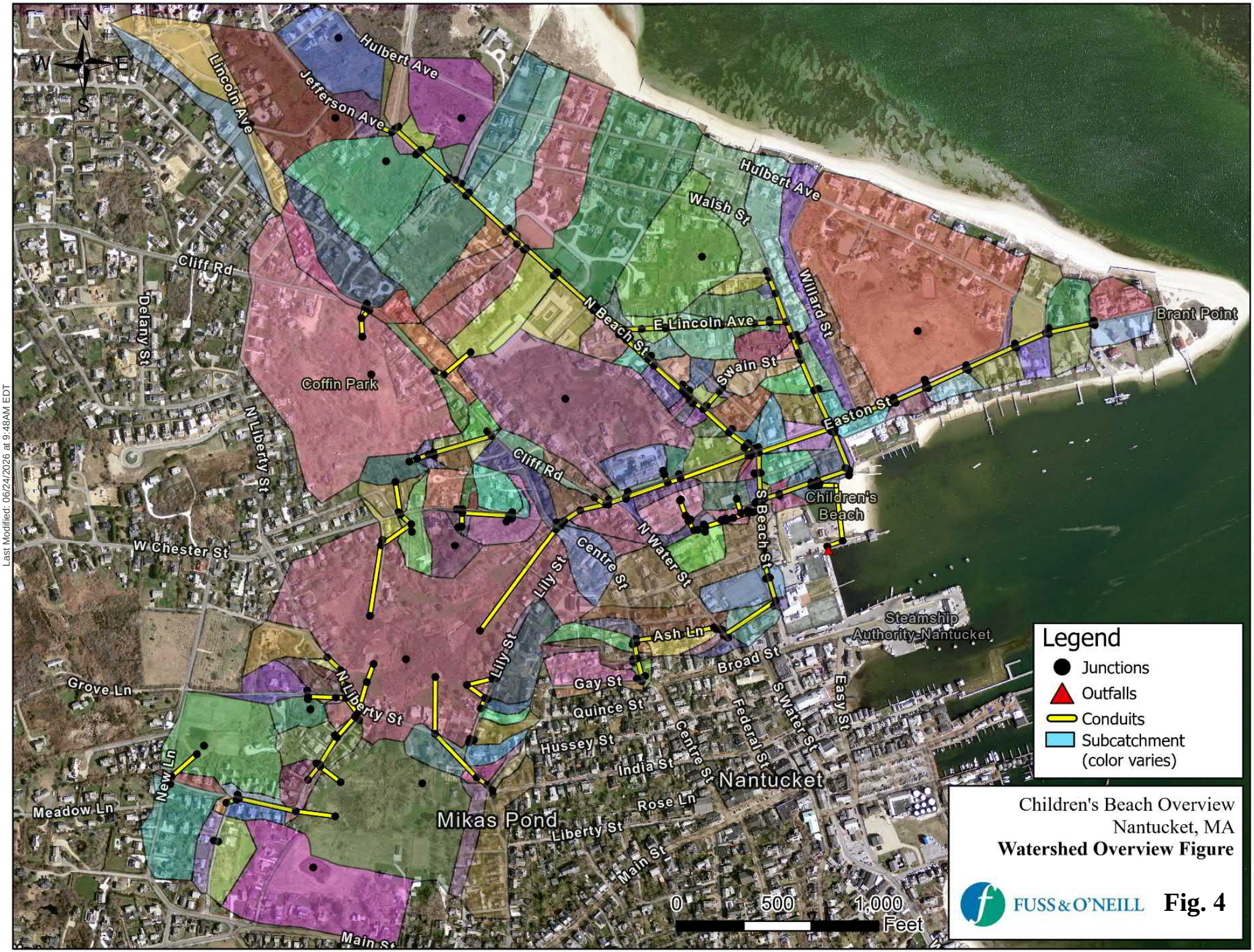
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Sampling Locations
Lily Pond Park
Nantucket, MA

Date: 6/15/2026

Figure 3

*Bureau of Geographic Information (MassGIS), Commonwealth of Massachusetts, Executive Office of Technology and Security Services



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Table 1 – Sediment Sample Data
Table 2 – Sediment VOC Sample Data
Table 3 – Fecal Coliform Sediment Sample Data
Table 4 – Surface Water Sample Data
Table 5 – DRGP Sample Data

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Table 1 - Sediment Sample Data
Lily Pond, Nantucket, MA

Sample Location							2025-SS-1			2025-SS-2			2025-SS-3		2025-SS-4		2025-SS-5		2025-SS-6		2025-SS-7			2025-SS-8			2025-SS-9		2025-SS-10		2025-SS-11	
Sample Depth							0-2'			0-1'		-	0-3'		0-1'		0-1'		0-2'		0-2'		-	0-3'		-	0-3'		0-2'		0-3'	
Sample Date							3/5/2025			3/5/2025		5/27/2026	3/5/2025		3/5/2025		3/5/2025		3/5/2025		3/5/2025		5/27/2026	3/5/2025		5/27/2026	3/5/2025		3/5/2025		3/5/2025	
Soil Standards		COMM-94 for Dredged Sediment for Reuse or Disposal at MA Landfill	COMM-97-001 Lined Landfill	Marylin's Landing Soil Acceptance Criteria (SAC)	401 WQC Reporting Limit	MCP RCS-1	Sample Results																									
Semivolatile Organic Compounds (SVOCs)																															
1,2,4-Trichlorobenzene	mg/kg	NA	NA	6	0.1	2	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
1,2-Dichlorobenzene	mg/kg	NA	NA	100	0.1	9	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
1,3-Dichlorobenzene	mg/kg	NA	NA	200	0.1	3	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
1,4-Dichlorobenzene	mg/kg	NA	NA	1	0.1	0.7	0.2	U	0.461	U	---	---	0.252	U	0.305	U	0.211	U	0.282	U	0.24	U	---	---	0.243	U	---	---	0.167	U	0.152	U	0.343	U
2,4,5-Trichlorophenol	mg/kg	NA	NA	600	NA	4	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
2,4,6-Trichlorophenol	mg/kg	NA	NA	20	NA	0.7	0.2	U	0.461	U	---	---	0.252	U	0.305	U	0.211	U	0.282	U	0.24	U	---	---	0.243	U	---	---	0.167	U	0.152	U	0.343	U
2,4-Dichlorophenol	mg/kg	NA	NA	40	NA	0.7	0.2	U	0.461	U	---	---	0.252	U	0.305	U	0.211	U	0.282	U	0.24	U	---	---	0.243	U	---	---	0.167	U	0.152	U	0.343	U
2,4-Dimethylphenol	mg/kg	NA	NA	100	NA	0.7	0.28	U	0.646	U	---	---	0.353	U	0.426	U	0.295	U	0.395	U	0.336	U	---	---	0.34	U	---	---	0.233	U	0.212	U	0.343	U
2,4-Dinitrophenol	mg/kg	NA	NA	50	NA	3	0.8	U	1.85	U	---	---	1.01	U	1.22	U	0.844	U	1.13	U	0.96	U	---	---	0.97	U	---	---	0.667	U	0.607	U	1.37	U
2,4-Dinitrotoluene	mg/kg	NA	NA	10	NA	0.7	0.2	U	0.461	U	---	---	0.252	U	0.305	U	0.211	U	0.282	U	0.24	U	---	---	0.243	U	---	---	0.167	U	0.152	U	0.343	U
2,6-Dinitrotoluene	mg/kg	NA	NA	1,000	NA	100	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
2-Chloronaphthalene	mg/kg	NA	NA	10,000	NA	1,000	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
2-Chlorophenol	mg/kg	NA	NA	100	NA	0.7	0.2	U	0.461	U	---	---	0.252	U	0.305	U	0.211	U	0.282	U	0.24	U	---	---	0.243	U	---	---	0.167	U	0.152	U	0.343	U
2-Methylnaphthalene	mg/kg	NA	NA	40	0.02	0.7	0.2	U	0.461	U	---	---	0.252	U	**2.93**	-	0.211	U	0.282	U	0.24	U	---	---	0.243	U	---	---	0.167	U	0.152	U	0.343	U
2-Methylphenol	mg/kg	NA	NA	5,000	NA	500	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
2-Nitrophenol	mg/kg	NA	NA	1,000	NA	100	0.8	U	1.85	U	---	---	1.01	U	1.22	U	0.844	U	1.13	U	0.96	U	---	---	0.97	U	---	---	0.667	U	0.607	U	0.685	U
3,3-Dichlorobenzidine	mg/kg	NA	NA	20	NA	3	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
3/4-Methylphenol	mg/kg	NA	NA	5,000	NA	500	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
4-Bromophenylphenylether	mg/kg	NA	NA	500	NA	100	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
4-Chloroaniline	mg/kg	NA	NA	3	NA	1	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
4-Nitrophenol	mg/kg	NA	NA	1,000	NA	100	1.6	U	3.69	U	---	---	2.02	U	2.44	U	1.69	U	2.26	U	1.92	U	---	---	1.94	U	---	---	1.33	U	1.21	U	1.37	U
Acenaphthene	mg/kg	NA	NA	1,500	0.02	4	0.4	U	0.923	U	---	---	0.505	U	**15.5**	-	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Acenaphthylene	mg/kg	NA	NA	5	0.02	1	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Acetophenone	mg/kg	NA	NA	10,000	NA	1,000	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Aniline	mg/kg	NA	NA	10,000	NA	1,000	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Anthracene	mg/kg	NA	NA	3,000	0.02	1,000	0.4	U	0.923	U	---	---	0.505	U	**32.4**	D	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Azobenzene	mg/kg	NA	NA	500	NA	NA	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Benzo(a)anthracene	mg/kg	NA	NA	300	0.02	7	0.4	U	0.923	U	---	---	0.505	U	**51.2**	D	**0.463**	-	0.564	U	**0.901**	-	---	---	0.485	U	---	---	0.333	U	0.303	U	**0.465**	-
Benzo(a)pyrene	mg/kg	NA	NA	30	0.02	2	0.4	U	0.923	U	---	---	0.505	U	**49.8**	D	**0.492**	-	0.564	U	**1.06**	-	---	---	0.485	U	---	---	0.333	U	0.303	U	**0.481**	-
Benzo(b)fluoranthene	mg/kg	NA	NA	300	0.02	7	0.4	U	0.923	U	---	---	0.505	U	**52.1**	D	**0.558**	-	0.564	U	**1.25**	-	---	---	0.485	U	---	---	0.333	U	0.303	U	**0.506**	-
Benzo(g,h,i)perylene	mg/kg	NA	NA	3,000	0.02	1,000	0.4	U	0.923	U	---	---	0.505	U	**30.3**	-	0.422	U	0.564	U	**0.652**	-	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Benzo(k)fluoranthene	mg/kg	NA	NA	3,000	0.02	70	0.4	U	0.923	U	---	---	0.505	U	**20.5**	-	0.422	U	0.564	U	**0.539**	-	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Biphenyl	mg/kg	NA	NA	NA	NA	0.05	0.04	U	0.092	U	---	---	0.05	U	0.909	-	0.042	U	0.056	U	0.048	U	---	---	0.049	U	---	---	0.033	U	0.03	U	0.034	U
Bis(2-chloroethoxy)methane	mg/kg	NA	NA	5,000	NA	500	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Bis(2-chloroethyl)ether	mg/kg	NA	NA	1	NA	0.7	0.2	U	0.461	U	---	---	0.252	U	0.305	U	0.211	U	0.282	U	0.24	U	---	---	0.243	U	---	---	0.167	U	0.152	U	0.343	U
Bis(2-chloroisopropyl)ether	mg/kg	NA	NA	1	NA	0.7	0.2	U	0.461	U	---	---	0.252	U	0.305	U	0.211	U	0.282	U	0.24	U	---	---	0.243	U	---	---	0.167	U	0.152	U	0.343	U
Bis(2-Ethylhexyl)phthalate	mg/kg	NA	NA	700	NA	90	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Butylbenzylphthalate	mg/kg	NA	NA	1,000	NA	100	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Chrysene	mg/kg	NA	NA	3,000	0.02	70	0.4	U	0.923	U	---	---	0.505	U	**54.5**	D	**0.516**	-	0.564	U	**1.09**	-	---	---	0.485	U	---	---	0.333	U	0.303	U	**0.537**	-
Dibenz(a,h)anthracene	mg/kg	NA	NA	30	0.02	0.7	0.2	U	0.461	U	---	---	0.252	U	**6.99**	-	0.211	U	0.282	U	0.24	U	---	---	0.243	U	---	---	0.167	U	0.152	U	0.343	U
Dibenzofuran	mg/kg	NA	NA	1,000	NA	100	0.4	U	0.923	U	---	---	0.505	U	10.5	-	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Diethylphthalate	mg/kg	NA	NA	500	NA	10	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Dimethylphthalate	mg/kg	NA	NA	100	NA	0.7	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Di-n-butylphthalate	mg/kg	NA	NA	500	NA	50	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Di-n-octylphthalate	mg/kg	NA	NA	10,000	NA	1,000	0.8	U	1.85	U	---	---	1.01	U	1.22	U	0.844	U	1.13	U	0.96	U	---	---	0.97	U	---	---	0.667	U	0.607	U	0.685	U
Fluoranthene	mg/kg	NA	NA	3,000	0.02	1,000	0.4	U	0.923	U	---	---	0.505	U	**172**	D	**0.975**	-	0.564	U	**1.94**	-	---	---	0.485	U	---	---	0.333	U	**0.392**	-	**0.984**	-
Fluorene	mg/kg	NA	NA	3,000	0.02	1,000	0.4	U	0.923	U	---	---	0.505	U	**18.2**	-	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Hexachlorobenzene	mg/kg	NA	NA	1	NA	0.7	0.2	U	0.461	U	---	---	0.252	U	0.305	U	0.211	U	0.282	U	0.24	U	---	---	0.243	U	---	---	0.167	U	0.152	U	0.343	U
Hexachlorobutadiene	mg/kg	NA	NA	100	0.1	30	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Hexachloroethane	mg/kg	NA	NA	3	NA	0.7	0.2	U	0.461	U	---	---	0.252	U	0.305	U	0.211	U	0.282	U	0.24	U	---	---	0.243	U	---	---	0.167	U	0.152	U	0.343	U
Indeno(1,2,3-cd)pyrene	mg/kg	NA	NA	300	0.02	7	0.4	U	0.923	U	---	---	0.505	U	**29.7**	D	0.422	U	0.564	U	**0.683**	-	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Isophorone	mg/kg	NA	NA	1,000	NA	100	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Naphthalene	mg/kg	NA	NA	10	0.02	4	0.4	U	0.923	U	---	---	0.505	U	**3.3**	-	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Nitrobenzene	mg/kg	NA	NA	5,000	NA	500	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
N-Nitrosodimethylamine	mg/kg	NA	NA	NA	NA	NA	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Pentachlorophenol	mg/kg	NA	NA	10	NA	3	0.8	U	1.85	U	---	---	1.01	U	1.22	U	0.844	U	1.13	U	0.96	U	---	---	0.97	U	---	---	0.667	U	0.607	U	1.37	U
Phenanthrene	mg/kg	NA	NA	500	0.02	10	0.4	U	0.923	U	---	---	0.505	U	**140**	D	0.422	U	0.564	U	**0.676**	-	---	---	0.485	U	---	---	0.333	U	0.303	U	**0.383**	-
Phenol	mg/kg	NA	NA	10	NA	1	0.4	U	0.923	U	---	---	0.505	U	0.609	U	0.422	U	0.564	U	0.48	U	---	---	0.485	U	---	---	0.333	U	0.303	U	0.343	U
Pyrene	mg/kg	NA	NA	3,000	0.02	1,000	0.4	U	0.923	U	---	---	0.505	U	**123**	D	**0.786**	-	0.564	U	**1.63**	-	---	---	0.485	U	---	---	0.333	U	**0.304**	-	**0.824**	-
Total SVOCs	mg/kg	NA	100	NA	NA	NA	ND			ND			ND		**813.829**		3.79		ND		10.421			ND			ND		0.696		4.18	
Extractable Petroleum Hydrocarbons (EPH)																															
C9-C18 Aliphatics	mg/kg	NA	NA	NA	25	1,000	15.7	U	35.1	U	---	---	19.4	U	23.3	U	17	U	22.1	U	18.4	U	---	---	18.6	U	---	---	13.3	U	12.4	U	13.1	U
C19-C36 Aliphatics	mg/kg	NA	NA	NA	25	3,000	15.7	U	35.1	U	---	---	19.4	U	23.3	U	66.3	-	22.1	U	19.6	-	---	---	18.6	U	---	---	13.3	U	12.4	U	13.1	U
C11-C22 Aromatics	mg/kg	NA	NA	NA	NA	1,000	15.9	U	35.6	U	---	---	19.6	U	76.1	-	56.3	D	22.4	U	27.5	-	---	---	18.9	U	---	---	13.5	U	12.6	U	13.3	U
2-Methylnaphthalene	mg/kg	NA	NA	40	0.02	0.7	0.013	U	0.028	U	---	---	0.015	U	0.093 J	D	0.051	-	0.018	U	0.039	-	---	---	0.015	U	---	---	0.011	U	0.014	-	0.011	U
Acenaphthene	mg/kg	NA	NA	1,500	0.02	4	0.013	U	0.028	U	---	---	0.015	U	0.536	D	0.043	-	0.018	U	0.035	-	---	---	0.015	U	---	---	0.011	U	0.01	U	0.011	U
Naphthalene	mg/kg	NA	NA	10	0.02	4	0.013	U	0.028	U	---	---	**0.02**	-	**0.106**	D	**0.19**	-	**0.045**	-	**0.152**	-	---	---	**0.048**	-	---	---	**0.115**	-	0.012	-		
Phenanthrene	mg/kg	NA	NA	500	0.02	10	**0.07**	-	**0.059**	-	---	---	**0.037**	-	**5.74**	D	2	-	**0.425**	-	**1.24**	-	---	---	**0.407**	-	---	---	**0.08**	-	**0.173**	-	**0.303**	-
Acenaphthylene	mg/kg	NA	NA	5	0.02	1	0.013	U	0.028	U	---	---	0.015	U	0.093 J	D	**0.225**	-	**0.046**	-	**0.162**	-	---	---	**0.056**	-	---	---	0.011	U	0.019	-	0.019	-
Anthracene	mg/kg	NA	NA	3,000	0.02	1,000	0.013	U	0.028	U	---	---	0.015	U	**1.42**	D	**0.417**	-	**0.074**	-	**0.238**	-	---	---	**0.062**	-	---	---	0.011	U	**0.029**	-	**0.055**	-
Benzo(a)anthracene	mg/kg	NA	NA	300	0.02	7	**0.086**	-	**0.05**	-	---	---	**0.032**	-	**3.06**	D	**2.98**	-	**0.512**	-	**1.4**	-	---	---	**0.546**	-	---	---	**0.075**	-	**0.235**	-	**0.297**	-
Benzo(a)pyrene	mg/kg	NA	NA	30	0.02	2	**0.1**	-	**0.062**	-	---	---	**0.041**	-	**2.84**	D	**2.24**	-	**0.539**	-	**1.32**	-	---	---	**0.502**	-	---	---	**0.091**	-	**0.238**	-	**0.266**	-
Benzo(b)fluoranthene	mg/kg	NA	NA	300	0.02	7	**0.073**	-	**0.054**	-	---	---	**0.036**	-	**2.19**	D	**1.9**	-	**0.453**	-	**1.16**	-	---	---	**0.549**	-	---	---	**0.084**	-	**0.201**	-	**0.22**	-
Benzo(g,h,i)perylene	mg/kg	NA	NA	3,000	0.02	1,000	**0.063**	-	**0.04**	-	---	---	**0.028**	-	**1.6**	D	**1.49**	-	**0.326**	-	**0.935**	-	---	---	**0.401**	-	---	---	**0.059**	-	**0.146**	-	**0.159**	-
Benzo(k)fluoranthene	mg/kg	NA	NA	3,000	0.02	70	**0.096**	-	**0.046**	-	---	---	**0.031**	-	**2.15**	D	**2.31**	-	**0.416**	-	**1.12**	-	---	---	**0.467**	-	---	---	**0.071**	-	**0.194**	-	**0.225**	-
Chrysene	mg/kg	NA	NA	3,000	0.02	70	**0.106**	-	**0.062**	-	---	---	**0.04**	-	**2.7**	D	**2.95**	-	**0.521**	-	**1.48**	-	---	---	**0.615**	-	---	---	**0.084**	-	**0.238**	-	**0.294**	-
Dibenzo(a,h)Anthracene	mg/kg	NA	NA	30	0.02	0.7	**0.028**	-	0.028	U	---	---	**0.017**	-	**0.808**	D	**0.716**	-	**0.155**	-	**0.438**	-	---	---	**0.208**	-	---	---	**0.032**	-	**0.075**	-	**0.077**	-
Fluoranthene	mg/kg	NA	NA	3,000	0.02	1,000	**0.183**	-	**0.109**	-	---	---	**0.066**	-	**7.86**	D	**5.95**	D	**1.02**	-	**2.83**	-	---	---	**1.08**	-	---	---	**0.149**	-	**0.45**	-	**0.62**	-
Fluorene	mg/kg	NA	NA	3,000	0.02	1,000	0.013	U	0.028	U	---	---	0.015	U	**0.582**	-	**0.099**	-	**0.026**	-	**0.08**	-	---	---	**0.022**	-	---	---	**0.011**	U	0.01	U	0.015	-
Indeno(1,2,3-cd)Pyrene	mg/kg	NA	NA	300	0.02	7	**0.055**	-	**0.04**	-	---	---	**0.027**	-	**1.44**	D	**1.21**	-	**0.282**	-	**0.812**	-	---	---	**0.367**	-	---	---	**0.057**	-	**0.137**	-	**0.141**	-
Pyrene	mg/kg	NA	NA	3,000	0.02	1,000	**0.163**	-	**0.093**	-	---	---	**0.059**	-	**6.83**	D	**7.28**	D	**1.01**	-	**2.74**	-	---	---	**1.05**	-	---	---	**0.14**	-	**0.409**	-	**0.544**	-
Total PAHs	mg/kg	100	NA	NA	NA	NA	1.013		0.615		---	---	0.434		40.048		32.051		5.85		16.181		---	---	6.48		---	---	0.892		2.673		3.247	

Last Modified: 06/24/2026 at 9:48AM EDT

Table 1 - Sediment Sample Data
Lily Pond, Nantucket, MA

Sample Location							2025-SS-1		2025-SS-2			2025-SS-3		2025-SS-4		2025-SS-5		2025-SS-6		2025-SS-7			2025-SS-8			2025-SS-9		2025-SS-10		2025-SS-11	
Sample Depth							0-2'		0-1'		-	0-3'		0-1'		0-1'		0-2'		0-2'		-	0-3'		-	0-3'		0-2'		0-3'	
Sample Date							3/5/2025		3/5/2025		5/27/2026	3/5/2025		3/5/2025		3/5/2025		3/5/2025		3/5/2025		5/27/2026	3/5/2025		5/27/2026	3/5/2025		3/5/2025		3/5/2025	
Soil Standards		COMM-94 for Dredged Sediment for Reuse or Disposal at MA Landfill		COMM-97-001 Lined Landfill	Marylin's Landing Soil Acceptance Criteria (SAC)	401 WQC Reporting Limit	MCP RCS-1	Sample Results																							
Metals																														
Antimony	mg/kg	NA		NA	40	NA	20	2.91	U	6.75	U	---	---	3.63	U	4.26	U	3.36	U	4.1	U	3.4	U	---	---	3.7	U	---	---	2.61	U	2.45	U	2.64	U
Arsenic	mg/kg	40		40	20	0.5	20	**2.35**	-	**8.23**	-	---	---	**1.81**	EL, U	**7.92**	-	**5.83**	-	**10.8**	-	**4.65**	-	---	---	**3.49**	-	---	---	**2.59**	-	**2.16**	-	**1.81**	-
Barium	mg/kg	NA		NA	3,000	NA	1,000	44	-	238	-	---	---	20.8	-	69.6	-	85.2	-	77.1	-	68.9	-	---	---	56.2	-	---	---	19.9	-	11.4	-	74.3	-
Beryllium	mg/kg	NA		NA	200	NA	90	0.4	-	1.14	-	---	---	0.21	-	0.24	-	0.44	-	0.46	-	0.51	-	---	---	0.35	-	---	---	0.37	-	0.18	-	0.18	-
Cadmium	mg/kg	80		30	80	0.1	70	0.29	U	**1.98**	-	---	---	0.36	U	0.43	U	0.34	U	0.41	U	0.34	U	---	---	0.37	U	---	---	0.26	U	0.24	U	0.26	U
Chromium	mg/kg	1,000		1,000	200	1	100	**10.3**	-	**32.5**	-	---	---	**6.22**	-	**8.16**	-	**14.2**	-	**13.6**	-	**18.2**	-	---	---	**10.1**	-	---	---	**14.3**	-	**5.63**	-	**3.4**	-
Lead	mg/kg	2,000		2,000	600	1	200	**79.5**	-	**339**	-	**3830**		**42.5**	-	**231**	-	**344**	-	**358**	-	**209**	-	33.2		**180**	-	**154**		**21.6**	-	**35.9**	-	---	---
TCLP Lead*	mg/kg	100		5	5	NA	NA	---	-	---	-			---	-	---	-	0.45	-	0.18	-	---	-	---	---	---	-	---	---	---	-	---	-	126	-
Mercury	mg/kg	10		10	40	0.02	20	**0.077**	-	**0.388**	-	---	---	**0.053**	-	**0.402**	D	**0.274**	-	**0.673**	D	**0.088**	-	---	---	**0.803**	D	---	---	**0.065**	-	**0.054**	-	**0.497**	D
Nickel	mg/kg	NA		NA	1,000	1	600	5.44	-	19.5	-	---	---	3.08	-	5.79	-	8.26	-	7.75	-	10.7	-	---	---	5.81	-	---	---	6.56	-	2.76	-	2.56	-
Selenium	mg/kg	NA		NA	800	NA	400	2.91	U	6.75	U	---	---	3.63	U	4.26	U	3.36	U	4.1	U	3.4	U	---	---	3.7	U	---	---	2.61	U	2.45	U	2.64	U, D
Silver	mg/kg	NA		NA	200	NA	100	0.29	U	0.67	U	---	---	0.36	U	0.43	U	0.34	U	0.41	U	0.34	U	---	---	0.37	U	---	---	0.26	U	0.24	U	1.76	-
Thallium	mg/kg	NA		NA	70	NA	8	2.91	U	6.75	U	---	---	3.63	U	4.26	U	3.36	U	4.1	U	3.4	U	---	---	3.7	U	---	---	2.61	U	2.45	U	2.64	U
Vanadium	mg/kg	NA		NA	800	NA	400	13	-	44.1	-	---	---	7.64	-	11	-	20.6	-	24.6	-	22.7	-	---	---	13.4	-	---	---	16.4	-	7.65	-	7.58	-
Zinc	mg/kg	NA		NA	3,000	1	1,000	44.6	-	863	-	---	---	22.2	-	429	-	141	-	125	-	254	-	---	---	86.6	-	---	---	20.5	-	13.6	-	61.3	-
401 WQC Metals (Oven Dried)																														
Arsenic	mg/kg	40		40	20	0.5	20	**3.58**	-	**6.78**	-	---	---	**0.82**	-	**10.5**	-	**5.68**	-	**8.05**	-	**2.29**	-	---	---	**3.79**	-	---	---	**1.28**	-	**2.23**	-	**1.61**	-
Cadmium	mg/kg	80		80	80	0.1	70	**0.25**	-	**2.9**	-	---	---	0.1	U	**0.38**	-	**0.11**	-	0.1	U	0.09	U	---	---	**0.22**	-	---	---	0.1	U	0.1	U	0.09	U
Chromium	mg/kg	1,000		1,000	200	1	100	**11.7**	-	**19**	-	---	---	**4.68**	-	**14.1**	-	**13.8**	-	**9.65**	-	**10.2**	-	---	---	**10.1**	-	---	---	**5.42**	-	**6.25**	-	**4.36**	-
Lead	mg/kg	2,000		2,000	600	1	200	**368**	-	**278**	-	---	---	**33.3**	-	**383**	-	**361**	-	**271**	-	**117**	-	---	---	**189**	-	---	---	**43.6**	-	**38.3**	-	**78.4**	-
Mercury	mg/kg	10		10	40	0.02	20	**0.171**	-	**0.364**	D	---	---	**0.049**	-	**0.48**	D	**0.354**	D	**0.453**	D	**0.132**	-	---	---	**0.423**	D	---	---	**0.036**	-	**0.063**	-	**1.91**	D
Nickel	mg/kg	NA		NA	1,000	1	600	**7.33**	-	**12.9**	-	---	---	**2.63**	-	**10.3**	-	**8.29**	-	**5.57**	-	**5.23**	-	---	---	**6.03**	-	---	---	**2.77**	-	**3.08**	-	**2.52**	-
Zinc	mg/kg	NA		NA	3,000	1	1,000	**140**	-	**1790**	D	---	---	**16.5**	-	**414**	D	**126**	-	**94.4**	-	**65.2**	-	---	---	**100**	-	---	---	**11.2**	-	**14.1**	-	**30.8**	-
Total Petroleum Hydrocarbons																														
TPH (C9-C36)	mg/kg	5,000		5,000	3,000	NA	1,000	16.3	U	144	-	---	---	62.6	-	245	-	150	-	59.6	-	18.6	U	---	---	19.2	U	---	---	51.2	-	12.8	U	33.9	-
Polychlorinated Biphenyls (PCBs)																														
BZ#101	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	0.0218	-	---	---	0.00199	-	0.00063	U	0.00046	U	0.00078	P, LC	0.0005	U	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#105	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	0.00343	P, LC	---	---	0.00124	P, LC	---	---	0.00046	U	0.00062	P, LC	---	---	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#105	mg/kg	<2		<2	0.5	0.01	1	---	---	---	---	---	---	---	---	0.00063	U	---	---	---	---	0.0005	U	---	---	---	---	---	---	---	---	---	---	0.00036	U
BZ#118	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	0.0153	-	---	---	0.00286	-	---	---	0.00046	U	---	---	---	---	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#118	mg/kg	<2		<2	0.5	0.01	1	---	---	---	---	---	---	---	---	0.00063	U	---	---	0.00111	P, LC	0.0005	U	---	---	---	---	---	---	---	---	---	---	---	---
BZ#128	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	---	---	---	---	---	---	0.00063	U	0.00046	U	0.00059	U	0.0005	U	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#128	mg/kg	<2		<2	0.5	0.01	1	---	---	0.00513	-	---	---	0.00072	-	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
BZ#138	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	---	---	---	---	0.00275	P, LC	0.00063	U	0.00046	U	0.00106	P, LC	0.0005	U	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#138	mg/kg	<2		<2	0.5	0.01	1	---	---	**0.11**	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
BZ#153	mg/kg	<2		<2	0.5	0.01	1	---	---	**0.154**	D	---	---	---	---	0.00063	U	0.00046	U	---	---	---	---	---	---	---	---	---	---	0.00036	U	0.00034	U	---	---
BZ#153	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	---	---	---	---	0.00171	P, LC	---	---	---	---	0.00068	P, LC	0.0005	U	---	---	0.0005	U	---	---	---	---	---	---	0.00036	U
BZ#170	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	0.0903	LC, D	---	---	---	---	0.00063	U	0.00046	U	---	---	0.0005	U	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#170	mg/kg	<2		<2	0.5	0.01	1	---	---	---	---	---	---	0.0007	-	---	---	---	---	0.00059	U	---	---	---	---	---	---	---	---	---	---	---	---	---	---
BZ#18	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	0.00095	U	---	---	0.00052	U	0.00063	U	0.00046	U	0.00059	U	0.0005	U	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#180	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	**0.259**	D	---	---	0.00105	-	0.00063	U	---	---	0.00059	U	---	---	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#180	mg/kg	<2		<2	0.5	0.01	1	---	---	---	---	---	---	---	---	---	---	0.00046	U	---	---	0.0005	U	---	---	---	---	---	---	---	---	---	---	---	---
BZ#187	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	---	---	---	---	0.00057	P, LC	0.00063	U	0.00046	U	0.00059	U	0.0005	U	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#187	mg/kg	<2		<2	0.5	0.01	1	---	---	**0.147**	D	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	U
BZ#195	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	0.0403	D	---	---	0.00052	U	0.00063	U	0.00046	U	0.00059	U	0.0005	U	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#206	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	---	---	---	---	0.00052	U	0.00063	U	---	---	0.00059	U	0.0005	U	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#206	mg/kg	<2		<2	0.5	0.01	1	---	---	0.0388	D	---	---	---	---	---	---	0.00046	U	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
BZ#209	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	0.00216	LC, P	---	---	0.00052	U	0.00063	U	0.00046	U	0.00059	U	0.0005	U	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#28	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	0.00137	-	---	---	0.00052	U	0.00063	U	0.00046	U	0.00059	U	0.0005	U	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#44	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	0.00313	-	---	---	0.00052	U	0.00063	U	0.00046	U	0.00059	U	0.0005	U	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#52	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	0.00525	-	---	---	0.00052	U	0.00063	U	0.00046	U	---	---	0.0005	U	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#52	mg/kg	<2		<2	0.5	0.01	1	---	---	---	---	---	---	---	---	---	---	---	---	0.00059	U	---	---	---	---	---	---	---	---	---	---	---	---	---	---
BZ#66	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	0.00095	U	---	---	0.00052	U	0.00063	U	0.00046	U	0.00059	U	0.0005	U	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
BZ#8	mg/kg	<2		<2	0.5	0.01	1	0.00042	U	0.00095	U	---	---	0.00052	U	0.00063	U	0.00046	U	0.00059	U	0.0005	U	---	---	0.0005	U	---	---	0.00036	U	0.00034	U	0.00036	U
Pesticides																														
4,4'-DDD	mg/kg	NA		NA	1	NA	10	0.0038	U	0.034	-	---	---	0.0086	-	0.227	D	0.0103	LC	0.0263	-	0.0045	U	---	---	0.0086	LC	---	---	0.0033	U	0.003	U	0.0033	U
4,4'-DDE	mg/kg	NA		NA	0.7	NA	7	0.0038	U	0.0229	P, LC	---	---	0.0217	-	0.352	D	0.0241	-	0.0847	D	0.0051	-	---	---	0.0189	-	---	---	0.0033	U	0.003	U	0.0063	-
4,4'-DDT	mg/kg	NA		NA	0.7	NA	7	0.0038	U	0.0089	U	---	---	0.0048	U	0.0342	-	0.0096	-	0.0298	-	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0037	-
Aldrin	mg/kg	NA		NA	0.05	NA	0.09	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.0043	U	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
alpha-BHC	mg/kg	NA		NA	5	NA	50	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.0043	U	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
alpha-Chlordane	mg/kg	NA		NA	NA	NA	NA	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.006	-	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
beta-BHC	mg/kg	NA		NA	1	NA	10	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.0043	U	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
Chlordane (Total)	mg/kg	NA		NA	0.6	NA	6	0.0308	U	0.0709	U	---	---	0.0386	U	0.0461	U	0.0341	U	0.0427	U	0.0363	U	---	---	0.0363	U	---	---	0.0265	U	0.0244	U	0.0263	U
delta-BHC	mg/kg	NA		NA	1	NA	10	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.0043	U	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
Dieldrin	mg/kg	NA		NA	0.01	NA	0.09	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.0043	U	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
Endosulfan I	mg/kg	NA		NA	0.06	NA	0.6	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.0043	U	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
Endosulfan II	mg/kg	NA		NA	0.06	NA	0.6	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.0043	U	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
Endosulfan Sulfate	mg/kg	NA		NA	NA	NA	NA	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.0043	U	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
Endrin	mg/kg	NA		NA	2	NA	20	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.0043	U	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
Endrin Ketone	mg/kg	NA		NA	NA	NA	NA	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.0043	U	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
gamma-BHC (Lindane)	mg/kg	NA		NA	0.0003	NA	0.003	0.0023	U	0.0053	U	---	---	0.0029	U	0.0035	U	0.0026	U	0.0032	U	0.0027	U	---	---	0.0027	U	---	---	0.002	U	0.0018	U	0.002	U
gamma-Chlordane	mg/kg	NA		NA	NA	NA	NA	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.0043	U	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
Heptachlor	mg/kg	NA		NA	0.03	NA	0.3	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.0043	U	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
Heptachlor Epoxide	mg/kg	NA		NA	0.03	NA	0.3	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.0043	U	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
Hexachlorobenzene	mg/kg	NA		NA	1	NA	0.7	0.2	U	0.461	U	---	---	0.252	U	0.363	U	0.211	U	0.282	U	0.24	U	---	---	0.243	U	---	---	0.167	U	0.152	U	0.343	U
Methoxychlor	mg/kg	NA		NA	30	NA	300	0.0038	U	0.0089	U	---	---	0.0048	U	0.0058	U	0.0043	U	0.0053	U	0.0045	U	---	---	0.0045	U	---	---	0.0033	U	0.003	U	0.0033	U
Herbicides																														
2,4,5-T	mg/kg	NA		NA	10	NA	100	0.014	U	0.033	U	---	---	0.018	U	0.021	U	0.016	U	0.021	U	0.017	U	---	---	0.017	U	---	---	0.012	U	0.012	U	0.013	U
2,4,5-TP (Silvex)	mg/kg	NA		NA	10	NA	100	0.014	U	0.033	U	---	---	0.018	U	0.021	U	0.016	U	0.021	U	0.017	U	---	---	0.017	U	---	---	0.012	U	0.012	U	0.013	U
2,4-D	mg/kg	NA		NA	10	NA	100	0.071	U	0.163	U	---	---	0.088	U	0.104	U	0.078	U	0.102	U	0.085	U	---	---	0.085	U	---	---	0.061	U	0.058	U	0.062	U
2,4-DB	mg/kg	NA		NA	10	NA	100	0.072	U	0.165	U	---	---	0.089	U	0.105	U	0.079	U	0.103	U	0.086	U	---	---	0.086	U	---	---	0.061	U	0.058	U	0.063	U
Dalapon	mg/kg	NA		NA	NA	NA	NA	0.069	U	0.158	U	---	---	0.085	U	0.1	U	0.076	U	0.099	U	0.083	U	---	---	0.082	U	---	---	0.059	U	0.056	U	0.06	U
Dicamba	mg/kg	NA		NA	50	NA	500	0.014	U	0.033	U	---	---	0.018	U	0.021	U	0.016	U	0.02	U	0.017	U	---	---	0.017	U	---	---	0.012	U	0.012	U	0.012	U
Dichloroprop	mg/kg	NA		NA	NA	NA	NA	0.071	U	0.163	U	---	---	0.088	U	0.104	U	0.078	U	0.102	U	0.085	U	---	---	0.085	U	---	---	0.061	U	0.058	U	0.062	U
MCPA	mg/kg	NA		NA	10	NA	100	3.52	U	8.08	U	---	---	4.35	U	5.13	U	3.87	U	5.04	U	4.22	U	---	---	4.21	U	---	---	3.01	U	2.85	U	3.09	U
MCPP	mg/kg	NA		NA	NA	NA	NA	3.56		8.16		---	---	4.4		5.19		3.91		5.09		4.27		---	---	4.25		---	---	3.04		2.88		3.12	U
Classical Chemistry																														
pH	S.U.	NA		NA	5-9	NA	NA	5.96	-	5.92	-	---	---	5.93	-	6.36	-	6.31	-	5.87	-	6.07	-	---	---	5.85	-	---	---	6.03	-	5.73	-	5.94	-
Flashpoint	°F	NA		NA	>140	NA	NA	200	>	200	>	---	---	200	>	200	>	200	>	200	>	200	>	---	---	200	>	---	---	200	>	200	>	200	>
Reactive Cyanide	mg/kg	NA		NA	NA	NA	NA	2	U	2	U	---	---	2	U	2	U	2	U	2	U	2	U	---	---	2	U	---	---	2	U	2	U	2	U
Reactive Sulfide	mg/kg	NA		NA	NA	NA	NA	2	U	2	U	---	---	2	U	2	U	2	U	2	U	2	U	---	---	2	U	---	---	2	U	2	U	2	U
Total Organic Carbon (Average)	mg/kg	NA		NA	NA	0.1	NA	50600	-	124000	-	---	---	83200	-	93000	-	63400	-	72100	-	65400	-	---	---	78500	-	---	---	14300	-	17900	-	24600	-
Percent Moisture	%	NA		NA	NA	NA	NA	36	-	72	-	---	---	48	-	57	-	41	-	54	-	46	-	---	---	46	-	---	---	25	-	20	-	25	-
Conductivity	mhos/cm	NA		NA	2,000	NA	NA	39	WL	113	WL	---	---	313	WL	96	WL	79	WL	60	WL	64	WL	---	---	63	WL	---	---	33	WL	44	WL	63	WL

Notes:
1. µg/kg = Micrograms per kilogram
2. mg/kg = Milligrams per kilogram
3. MCP = Massachusetts Contingency Plan
4. RCS-1 = The Reportable Concentration for category S-1 soils
5. WQC = Water Quality Certification (Sediment standards for permitting purposes)
6. **Bold** indicates concentration exceeds applicable 401 WQC reporting limits
7. **Bold and highlighted** indicates concentration exceeds applicable MCP Standards
8. Highlighted indicated concentration exceeds applicable Marylin's Landing Soil Acceptance Criteria (SAC)
9. Highlighted indicated concentration exceeds applicable COMM-97 Soil Reuse Values in Lined Landfill
10. < = Not detected by the laboratory above the reporting limit. Laboratory reporting limit shown.
11. U = Not detected by the laboratory above the method detection limit. Laboratory method detection limit shown.
12. TOV PID = Total Organic Vapors, Photoionization Detector Calibrated to Benzene
13. ND = Not Detected
14. NA = Not Applicable
15. D = Samples were diluted for laboratory analysis
16. WL = Results obtained from a deionized water leach of the sample.
17. > = Greater than
18. --- = Not Sampled
19. LC = lower value is used by laboratory due to matrix interferences
20. P = Percent difference between primary and confirmation results exceeds 40% (P) for laboratory use.

Last Modified: 06/24/2026 at 9:48AM EDT

Table 2 - Sediment Sample Data
Lily Pond, Nantucket, MA

Sample Location								2025-SS-1A		2025-SS-2C		2025-SS-3A		2025-SS-4B		2025-SS-5C		2025-SS-6A		2025-SS-7B		2025-SS-8C		2025-SS-9A		2025-SS-10C		2025-SS-11B	
Sample Depth								0-1'		0-1'		0-1'		0-2'		0-1'		0-1'		0-1'		0-3'		0-3'		0-1'		0-2'	
Sample Date								3/5/2025		3/5/2025		3/5/2025		3/5/2025		3/5/2025		3/5/2025		3/5/2025		3/5/2025		3/5/2025		3/5/2025		3/5/2025	
TOV PID								0.3		<0.01		0.1		0.3		0.4		0.4		0.1		<0.01		<0.01		<0.01		0.2	
Soil Standards		COMM-97-001 Lined Landfill		COMM-97-001 Unlined Landfill		Marylin's Landing Soil Acceptance Criteria (SAC)	COMM-94 for Dredged Sediment for Reuse or Disposal at MA Landfill	401 WQC Reporting Limit	MCP RCS-1	Sample Results																					
Volatile Organic Compounds (VOCs)																													
1,1,1,2-Tetrachloroethane	mg/kg	NA	NA	0.01	NA	0.1	0.1	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,1,1-Trichloroethane	mg/kg	NA	NA	3	NA	0.1	30	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,1,2,2-Tetrachloroethane	mg/kg	NA	NA	0.0005	NA	0.1	0.005	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,1,2-Trichloroethane	mg/kg	NA	NA	0.01	NA	0.1	0.1	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,1-Dichloroethane	mg/kg	NA	NA	0.04	NA	0.1	0.4	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,1-Dichloroethene	mg/kg	NA	NA	0.3	NA	0.1	NA	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,1-Dichloropropene	mg/kg	NA	NA	NA	NA	0.1	500	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,2,3-Trichlorobenzene	mg/kg	NA	NA	NA	NA	0.1	NA	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,2,3-Trichloropropane	mg/kg	NA	NA	10	NA	0.1	100	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,2,4-Trichlorobenzene	mg/kg	NA	NA	6	NA	0.1	2	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,2,4-Trimethylbenzene	mg/kg	NA	NA	100	NA	0.1	1000	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,2-Dibromo-3-Chloropropane	mg/kg	NA	NA	1	NA	0.1	10	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,2-Dibromoethane	mg/kg	NA	NA	0.01	NA	0.1	0.1	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,2-Dichlorobenzene	mg/kg	NA	NA	100	NA	0.1	9	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,2-Dichloroethane	mg/kg	NA	NA	0.01	NA	0.1	0.1	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,2-Dichloropropane	mg/kg	NA	NA	0.01	NA	0.1	0.1	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,3,5-Trimethylbenzene	mg/kg	NA	NA	1	NA	0.1	NA	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,3-Dichlorobenzene	mg/kg	NA	NA	200	NA	0.1	3	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,3-Dichloropropane	mg/kg	NA	NA	50	NA	0.1	500	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,4-Dichlorobenzene	mg/kg	NA	NA	1	NA	0.1	0.7	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
1,4-Dioxane	mg/kg	NA	NA	0.02	NA	0.1	0.2	0.262	U	0.236	U	0.382	U	0.233	U	0.132	U	0.246	U	0.276	U	0.276	U	0.334	U	0.301	U	0.128	U
2,2-Dichloropropane	mg/kg	NA	NA	0.01	NA	0.1	NA	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
2-Butanone	mg/kg	NA	NA	0.4	NA	0.1	4	0.131	U	0.118	U	0.191	U	0.116	U	0.0659	U	**0.279**	-	0.138	U	0.138	U	0.167	U	0.151	U	0.0641	U
2-Chlorotoluene	mg/kg	NA	NA	10	NA	0.1	100	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
2-Hexanone	mg/kg	NA	NA	10	NA	0.1	100	0.131	U	0.118	U	0.191	U	0.116	U	0.0659	U	0.123	U	0.138	U	0.138	U	0.167	U	0.151	U	0.0641	U
4-Chlorotoluene	mg/kg	NA	NA	10	NA	0.1	NA	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
4-Isopropyltoluene	mg/kg	NA	NA	10	NA	0.1	100	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
4-Methyl-2-Pentanone	mg/kg	NA	NA	0.04	NA	0.1	0.4	0.131	U	0.118	U	0.191	U	0.116	U	0.0659	U	0.123	U	0.138	U	0.138	U	0.167	U	0.151	U	0.0641	U
Acetone	mg/kg	NA	NA	0.6	NA	0.1	6	0.131	U	**0.352**	-	**0.327**	-	**0.371**	-	0.0659	U	**0.368**	-	**0.445**	-	**0.391**	-	**0.443**	-	**0.564**	-	0.0641	U
Benzene	mg/kg	NA	NA	0.2	NA	0.1	2	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Bromobenzene	mg/kg	NA	NA	10	NA	0.1	100	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Bromochloromethane	mg/kg	NA	NA	NA	NA	0.1	NA	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Bromodichloromethane	mg/kg	NA	NA	0.01	NA	0.1	0.1	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Bromoform	mg/kg	NA	NA	0.01	NA	0.1	0.1	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Bromomethane	mg/kg	NA	NA	0.05	NA	0.1	0.5	0.0262	U	0.0236	U	0.0382	U	0.0233	U	0.0132	U	0.0246	U	0.0276	U	0.0276	U	0.0334	U	0.0301	U	0.0128	U
Carbon Disulfide	mg/kg	NA	NA	10	NA	0.1	100	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Carbon Tetrachloride	mg/kg	NA	NA	0.5	NA	0.1	5	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Chlorobenzene	mg/kg	NA	NA	0.1	NA	0.1	1	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Chloroethane	mg/kg	NA	NA	10	NA	0.1	100	0.0262	U	0.0236	U	0.0382	U	0.0233	U	0.0132	U	0.0246	U	0.0276	U	0.0276	U	0.0334	U	0.0301	U	0.0128	U
Chloroform	mg/kg	NA	NA	0.02	NA	0.1	0.2	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Chloromethane	mg/kg	NA	NA	10	NA	0.1	100	0.0262	U	0.0236	U	0.0382	U	0.0233	U	0.0132	U	0.0246	U	0.0276	U	0.0276	U	0.0334	U	0.0301	U	0.0128	U
cis-1,2-Dichloroethene	mg/kg	NA	NA	0.01	NA	0.1	0.1	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
cis-1,3-Dichloropropene	mg/kg	NA	NA	0.001	NA	0.1	0.01	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Dibromochloromethane	mg/kg	NA	NA	0.0005	NA	0.1	0.005	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Dibromomethane	mg/kg	NA	NA	50	NA	0.1	500	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Dichlorodifluoromethane	mg/kg	NA	NA	100	NA	0.1	1000	0.0262	U	0.0236	U	0.0382	U	0.0233	U	0.0132	U	0.0246	U	0.0276	U	0.0276	U	0.0334	U	0.0301	U	0.0128	U
Diethyl Ether	mg/kg	NA	NA	10	NA	0.1	100	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Di-isopropyl ether	mg/kg	NA	NA	10	NA	0.1	100	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Ethyl tertiary-butyl ether	mg/kg	NA	NA	NA	NA	0.1	NA	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Ethylbenzene	mg/kg	NA	NA	4	NA	0.1	40	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Hexachlorobutadiene	mg/kg	NA	NA	100	NA	0.1	30	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Isopropylbenzene	mg/kg	NA	NA	100	NA	0.1	1000	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Methyl tert-Butyl Ether	mg/kg	NA	NA	0.01	NA	0.1	0.1	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Methylene Chloride	mg/kg	NA	NA	0.01	NA	0.1	0.1	0.0654	U	0.0591	U	0.0956	U	0.0582	U	0.0329	U	0.0614	U	0.0689	U	0.0689	U	0.0834	U	0.0754	U	0.0321	U
Naphthalene	mg/kg	NA	NA	10	NA	0.02	4	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
n-Butylbenzene	mg/kg	NA	NA	NA	NA	0.1	NA	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
n-Propylbenzene	mg/kg	NA	NA	10	NA	0.1	100	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
sec-Butylbenzene	mg/kg	NA	NA	NA	NA	0.1	NA	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Styrene	mg/kg	NA	NA	0.3	NA	0.1	3	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
tert-Butylbenzene	mg/kg	NA	NA	10	NA	0.1	100	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Tertiary-amyl methyl ether	mg/kg	NA	NA	NA	NA	0.1	NA	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Tetrachloroethene	mg/kg	NA	NA	0.1	NA	0.1	1	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Tetrahydrofuran	mg/kg	NA	NA	50	NA	0.1	500	0.0523	U	0.0473	U	0.0765	U	0.0466	U	0.0264	U	0.0491	U	0.0551	U	0.0551	U	0.0667	U	0.0603	U	0.0256	U
Toluene	mg/kg	NA	NA	3	NA	0.1	30	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
trans-1,2-Dichloroethene	mg/kg	NA	NA	0.1	NA	0.1	1	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
trans-1,3-Dichloropropene	mg/kg	NA	NA	0.001	NA	0.1	0.01	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Trichloroethene	mg/kg	NA	NA	0.03	NA	0.1	0.3	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Trichlorofluoromethane	mg/kg	NA	NA	100	NA	0.1	1000	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Vinyl Chloride	mg/kg	NA	NA	0.03	NA	0.1	0.7	0.0262	U	0.0236	U	0.0382	U	0.0233	U	0.0132	U	0.0246	U	0.0276	U	0.0276	U	0.0334	U	0.0301	U	0.0128	U
Xylene O	mg/kg	NA	NA	10	NA	0.1	NA	0.0131	U	0.0118	U	0.0191	U	0.0116	U	0.0066	U	0.0123	U	0.0138	U	0.0138	U	0.0167	U	0.0151	U	0.0064	U
Xylene P,M	mg/kg	NA	NA	10	NA	0.1	NA	0.0262	U	0.0236	U	0.0382	U	0.0233	U	0.0132	U	0.0246	U	0.0276	U	0.0276	U	0.0334	U	0.0301	U	0.0128	U
Xylenes (Total)	mg/kg	NA	NA	NA	NA	NA	100	0.0262	U	0.0236	U	0.0382	U	0.0233	U	0.0132	U	0.0246	U	0.0276	U	0.0276	U	0.0334	U	0.0301	U	0.0128	U
Total VOCs	mg/kg	NA	NA	NA	NA	10	NA	NA		ND		0.352		0.327		0.371		ND		0.647		0.445		0.391		0.443		0.564		ND	

Notes:
1. µg/kg = Micrograms per kilogram
2. mg/kg = Milligrams per kilogram
3. MCP = Massachusetts Contingency Plan
4. RCS-1 = The Reportable Concentration for category S-1 soils
5. WQC = Water Quality Certification (Sediment standards for permitting purposes)
6. **Bold** indicates concentration exceeds applicable 401 WQC reporting limits
7. **Bold and highlighted** indicates concentration exceeds applicable MCP Standards
8. Highlighted indicated concentration exceeds applicable Marylin's Landing Soil Acceptance Criteria (SAC)
9. Highlighted indicated concentration exceeds applicable COMM-97 Soil Reuse Values in Lined Landfill
10. < = Not detected by the laboratory above the reporting limit. Laboratory reporting limit shown.
11. U = Not detected by the laboratory above the method detection limit. Laboratory method detection limit shown.
12. TOV PID = Total Organic Vapors, Photoionization Detector Calibrated to Benzene
13. ND = Not Detected
14. NA = Not Applicable
15. D = Samples were diluted for laboratory analysis
16. WL = Results obtained from a deionized water leach of the sample.
17. > = Greater than
18. --- = Not Sampled

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Table 2 - Sediment Sample Data
Lily Pond, Nantucket, MA

Sample Location					2025-SS-1	2025-SS-2	2025-SS-3	2025-SS-5	2025-SS-6	2025-SS-7	2025-SS-8	2025-SS-9	2025-SS-10	2025-SS-11
Sample Date					5/27/2026	5/27/2026	5/27/2026	5/27/2026	5/27/2026	5/27/2026	5/27/2026	5/27/2026	5/27/2026	5/27/2026
Soil Standards		Marylin's Landing Soil Acceptance Criteria (SAC)	401 WQC Reporting Limit	MCP RCS-1	Sample Results									
Fecal Coliform														
Fecal Coliform	MPG/gram	1,000	NA	NA	20	4,000	>31,000	1,700	230	12	<3	100	24	4.8

Notes:
1. µg/kg = Micrograms per kilogram
2. mg/kg = Milligrams per kilogram
3. MCP = Massachusetts Contingency Plan
4. RCS-1 = The Reportable Concentration for category S-1 soils
5. WQC = Water Quality Certification (Sediment standards for permitting purposes)
6. **Bold** indicates concentration exceeds applicable 401 WQC reporting limits
7. **Bold and highlighted** indicates concentration exceeds applicable MCP Standards
8. Highlighted indicated concentration exceeds applicable Marylin's Landing Soil Acceptance Criteria (SAC)
9. Highlighted indicated concentration exceeds applicable COMM-97 Soil Reuse Values in Lined Landfill
10. < = Not detected by the laboratory above the reporting limit. Laboratory reporting limit shown.
11. U = Not detected by the laboratory above the method detection limit. Laboratory method detection limit shown.
12. TOV PID = Total Organic Vapors, Photoionization Detector Calibrated to Benzene
13. ND = Not Detected
14. NA = Not Applicable
15. D = Samples were diluted for laboratory analysis
16. WL = Results obtained from a deionized water leach of the sample.
17. > = Greater than
18. --- = Not Sampled
19. LC = lower value is used by laboratory due to matrix interferences
20. P = Percent difference between primary and confirmation results exceeds 40% (P) for laboratory use.

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Table 4- Surface Water Sample Data
Lily Pond Park, Nantucket, MA

Sample Designation				SW-1
Sample Date				6/17/2022
Groundwater Standards		Fresh Water Aquatic Life Criteria	MassDEP RCGW-1	Sample Results
Volatile Petroleum Hydrocarbons				
C5-C8 Aliphatics	µg/L	NS	300	<500 *
C9-C12 Aliphatics	µg/L	NS	700	<500
C9-C10 Aromatics	µg/L	NS	200	<500 *
Benzene	µg/L	NS	5	<5.0
Ethylbenzene	µg/L	NS	700	<5.0
Methyl tert-Butyl Ether	µg/L	NS	70	<5.0
Naphthalene	µg/L	NS	140	<25
Toluene	µg/L	NS	1,000	<5.0
Xylene O	µg/L	NS	3,000	<5.0
Xylene P,M	µg/L	NS	3,000	<10
Extractable Petroleum Hydrocarbons				
C9-C18 Aliphatics	µg/L	NS	700	<97
C19-C36 Aliphatics	µg/L	NS	14,000	130
C11-C22 Aromatics	µg/L	NS	200	160
2-Methylnaphthalene	µg/L	NS	10	<1.9
Acenaphthene	µg/L	NS	20	2.3
Naphthalene	µg/L	NS	140	<1.9
Phenanthrene	µg/L	NS	40	<1.9
Acenaphthylene	µg/L	NS	30	2.0
Anthracene	µg/L	NS	30	<1.9
Benzo(g,h,i)perylene	µg/L	NS	20	<1.9
Fluoranthene	µg/L	NS	90	<1.9
Fluorene	µg/L	NS	30	<1.9
Pyrene	µg/L	NS	20	<1.9

Notes:
µg//L = micrograms per liter
Bold indicates concentration exceeds RCGW-1. RCGW-1 is applicable to groundwater only.
An * following a detection limit indicates that the minimum laboratory reporting limit exceeds one or more of the regulatory criteria. The laboratory was unable to meet a lower detection limit due to matrix interference.
MassDEP = Massachusetts Department of Environmental Protection
< = Not detected by the laboratory above the reporting limit. Laboratory reporting limit shown
NS = No Standard

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Table 5 - DRGP Sample Data
Lily Pond Park, Nantucket, MA

Sample Location						LP-GW-1
Sample Date						5/26/2026
Soil Standards		DRGP Wastewater Limitations				Sample Results
		Groundwater	Stormwater	Potable Water	Surface Water	
Semivolatile Organic Compounds (SVOCs)						
1-Chloropropane	ug/L	NA	NA	NA	NA	< 5.00
Acenaphthene	ug/L	NA	NA	NA	NA	< 5.00
Acenaphthylene	ug/L	NA	NA	NA	NA	< 5.00
Anthracene	ug/L	NA	NA	NA	NA	< 5.00
Benzo(a)anthracene	ug/L	NA	NA	NA	NA	< 5.00
Benzo(a)pyrene	ug/L	NA	NA	NA	NA	< 5.00
Benzo(b)fluoranthene	ug/L	NA	NA	NA	NA	< 5.00
Benzo(g,h,i)perylene	ug/L	NA	NA	NA	NA	< 5.00
Benzo(k)fluoranthene	ug/L	NA	NA	NA	NA	< 5.00
Bis(2-Ethylhexyl)phthalate	ug/L	NA	NA	NA	NA	< 5.00
Butylbenzylphthalate	ug/L	NA	NA	NA	NA	< 5.00
Chrysene	ug/L	NA	NA	NA	NA	< 5.00
Dibenz(a,h)anthracene	ug/L	NA	NA	NA	NA	< 5.00
Diethylphthalate	ug/L	NA	NA	NA	NA	< 5.00
Dimethylphthalate	ug/L	NA	NA	NA	NA	< 5.00
Di-n-butylphthalate	ug/L	NA	NA	NA	NA	< 5.00
Di-n-octylphthalate	ug/L	NA	NA	NA	NA	< 5.00
Ethylene Dibromide	ug/L	NA	NA	NA	NA	< 0.0194
Fluoranthene	ug/L	NA	NA	NA	NA	< 5.00
Fluorene	ug/L	NA	NA	NA	NA	< 5.00
Indeno(1,2,3-cd)pyrene	ug/L	NA	NA	NA	NA	< 5.00
Naphthalene	ug/L	NA	NA	NA	NA	< 2.00
Pentachlorophenol	ug/L	NA	NA	NA	NA	< 5.00
Phenanthrene	ug/L	NA	NA	NA	NA	< 5.00
Pyrene	ug/L	NA	NA	NA	NA	< 5.00
1,4-Dioxane	ug/L	NA	NA	NA	NA	< 0.195
Total SVOCs	ug/L	NA	NA	NA	NA	ND
Volatile Organic Compounds (VOCs)						
1,1,1-Trichloroethane	ug/L	NA	NA	NA	NA	< 1.00
1,1,2-Trichloroethane	ug/L	NA	NA	NA	NA	< 1.00
1,1-Dichloroethane	ug/L	NA	NA	NA	NA	< 1.00
1,1-Dichloroethene	ug/L	NA	NA	NA	NA	< 1.00
1,2-Dichlorobenzene	ug/L	NA	NA	NA	NA	< 1.00
1,2-Dichloroethane	ug/L	NA	NA	NA	NA	< 1.00
1,2-Dichloroethene, Total	ug/L	NA	NA	NA	NA	< 2.00
1,2-Dichloropropane	ug/L	NA	NA	NA	NA	< 1.00
1,3-Dichlorobenzene	ug/L	NA	NA	NA	NA	< 1.00
1,3-Dichloropropene, Total	ug/L	NA	NA	NA	NA	< 2.00
1,4-Dichlorobenzene	ug/L	NA	NA	NA	NA	< 1.00
Acetone	ug/L	NA	NA	NA	NA	< 10.0
Benzene	ug/L	NA	NA	NA	NA	< 1.00
Carbon tetrachloride	ug/L	NA	NA	NA	NA	< 1.00
Chloromethane	ug/L	NA	NA	NA	NA	< 2.00
cis-1,2-Dichloroethene	ug/L	NA	NA	NA	NA	< 1.00
Ethanol	ug/L	NA	NA	NA	NA	< 200
Ethylbenzene	ug/L	NA	NA	NA	NA	< 1.00
Methyl tert-butyl ether	ug/L	NA	NA	NA	NA	< 1.00
Methylene Chloride	ug/L	NA	NA	NA	NA	< 10.0
m-Xylene & p-Xylene	ug/L	NA	NA	NA	NA	< 2.00
Naphthalene	ug/L	NA	NA	NA	NA	< 2.00
o-Xylene	ug/L	NA	NA	NA	NA	< 1.00
t-Butyl alcohol	ug/L	NA	NA	NA	NA	< 10.0
Tert-amyl methyl ether	ug/L	NA	NA	NA	NA	< 1.00
Tetrachloroethene	ug/L	NA	NA	NA	NA	< 1.00
Toluene	ug/L	NA	NA	NA	NA	< 1.00
trans-1,2-Dichloroethene	ug/L	NA	NA	NA	NA	< 1.00
trans-1,3-Dichloropropene	ug/L	NA	NA	NA	NA	< 1.00
Trichloroethene	ug/L	NA	NA	NA	NA	< 1.00
Vinyl chloride	ug/L	NA	NA	NA	NA	< 1.00
Xylenes, Total	ug/L	NA	NA	NA	NA	< 3.00
Total Phenols						
Total Phenols	mg/L	NA	NA	NA	NA	<0.0200
Metals (Total)						
Antimony	ug/L	NA	NA	NA	NA	<2.00
Arsenic	ug/L	104	NA	NA	NA	<2.00
Cadmium	ug/L	NA	NA	NA	NA	<1.00
Chromium	ug/L	NA	NA	NA	NA	<4.00
Copper	ug/L	242	242	242	NA	<4.00
Iron	ug/L	5,000	NA	NA	NA	**18,700**
Lead	ug/L	160	NA	160	NA	4.11
Mercury	mg/L	NA	NA	NA	0.739	< 0.000200
Nickel	ug/L	NA	1450	NA	NA	<2.00
Selenium	ug/L	NA	NA	NA	NA	<4.00
Silver	ug/L	NA	NA	NA	NA	<2.00
Zinc	ug/L	NA	420	420	NA	<25.0
Metals (Dissolved)						
Antimony	ug/L	NA	NA	NA	NA	<2.00
Arsenic	ug/L	104	NA	NA	NA	<2.00
Cadmium	ug/L	NA	NA	NA	NA	<1.00
Chromium	ug/L	NA	NA	NA	NA	<4.00
Copper	ug/L	242	242	242	NA	<4.00
Iron	ug/L	5,000	NA	NA	NA	**18,900**
Lead	ug/L	160	NA	160	NA	<2.00
Mercury	mg/L	NA	NA	NA	0.739	< 0.000200
Nickel	ug/L	NA	1450	NA	NA	<2.00
Selenium	ug/L	NA	NA	NA	NA	<4.00
Silver	ug/L	NA	NA	NA	NA	<2.00
Zinc	ug/L	NA	420	420	NA	<25.0
Metals						
Calcium	mg/L	NA	NA	NA	NA	16.9
Magnesium	mg/L	NA	NA	NA	NA	3.42
Chromium						
Chromium	mg/L	NA	NA	NA	NA	< 4.00
Chromium III	mg/L	NA	NA	NA	NA	< 0.0100
Chromium VI	mg/L	NA	NA	NA	NA	< 0.0600
Total Petroleum Hydrocarbons (TPH) / SGT-HEM						
Total Petroleum Hydrocarbons (TPH)	mg/L	5	NA	NA	NA	<4.9
Polychlorinated Biphenyls (PCBs)						
PCB-1016	ug/L	NA	NA	NA	NA	< 0.400
PCB-1221	ug/L	NA	NA	NA	NA	< 0.400
PCB-1232	ug/L	NA	NA	NA	NA	< 0.400
PCB-1242	ug/L	NA	NA	NA	NA	< 0.400
PCB-1248	ug/L	NA	NA	NA	NA	< 0.400
PCB-1254	ug/L	NA	NA	NA	NA	< 0.400
PCB-1260	ug/L	NA	NA	NA	NA	< 0.400
PCB-1262	ug/L	NA	NA	NA	NA	< 0.400
PCB-1268	ug/L	NA	NA	NA	NA	< 0.400
Total PCBs	ug/L	NA	NA	NA	NA	ND
Classical Chemistry						
Total Suspended Solids	mg/L	30	30	30	30	**33**
Cyanide, Total	mg/L	17.8	NA	NA	NA	< 0.00500
Ammonia-N	mg/L	NA	NA	NA	NA	< 0.750
Chlorine, Total Residual	mg/L	NA	NA	200	NA	< 0.600
Nitrate Nitrite as N	mg/L	NA	NA	NA	NA	< 0.0400
Nitrogen, Total	mg/L	10	10	NA	NA	< 7.50
Total Kjeldahl Nitrogen	mg/L	NA	NA	NA	NA	< 7.50

Notes:
1. µg/L = Micrograms per liter
2. mg/L = Milligrams per liter
3. DRGP = Dewatering and Remediation General Permit
4. DRGP limitations based on the National Pollutant Discharge Elimination System (NPDES) General Permit for Dewatering and Remediation Discharge
5. **Bold and highlighted** indicates concentration exceeds applicable DRGP Standards
6. < = Not detected by the laboratory above the reporting limit. Laboratory reporting limit shown.
7. U = Not detected by the laboratory above the method detection limit. Laboratory method detection limit shown.
8. ND = Not Detected
9. NA = Not Applicable

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Last Modified: 06/24/2026 at 9:48AM EDT

Lily Pond

17 N Liberty St

Nantucket, MA 02554

Inquiry Number: 6976069.3

May 12, 2022

Last Modified: 06/24/2026 at 9:48AM EDT

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

05/12/22

Site Name:

Lily Pond
17 N Liberty St
Nantucket, MA 02554
EDR Inquiry # 6976069.3

Client Name:

Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563
Contact: Caroline Armstrong

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Horsley Witten Group, Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 8A8C-4868-BBC2

PO # 20008

Project Lily Pond Park Nantucket

Maps Provided:

1962
1949
1923
1909
1904
1898
1892
1887

Sanborn® Library search results

Certification #: 8A8C-4868-BBC2

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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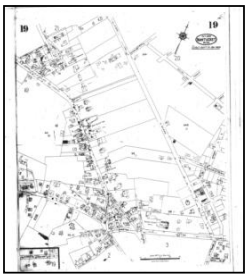
Sanborn Sheet Key

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1962 Source Sheets


Volume 1, Sheet 2
1962

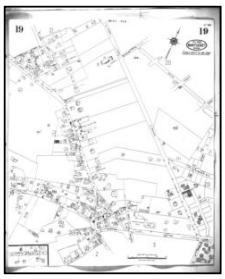

Volume 1, Sheet 4
1962


Volume 1, Sheet 19
1962

1949 Source Sheets

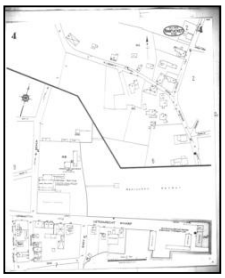

Volume 1, Sheet 2
1949

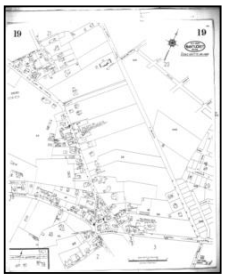

Volume 1, Sheet 4
1949


Volume 1, Sheet 19
1949

1923 Source Sheets


Volume 1, Sheet 2
1923


Volume 1, Sheet 4
1923


Volume 1, Sheet 19
1923

1909 Source Sheets


Volume 1, Sheet 3
1909


Volume 1, Sheet 5
1909

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Sanborn Sheet Key

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1904 Source Sheets

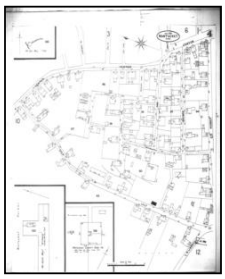


Volume 1, Sheet 3
1904



Volume 1, Sheet 5
1904

1898 Source Sheets



Volume 1, Sheet 4
1898



Volume 1, Sheet 2
1898

1892 Source Sheets



Volume 1, Sheet 2
1892



Volume 1, Sheet 4
1892



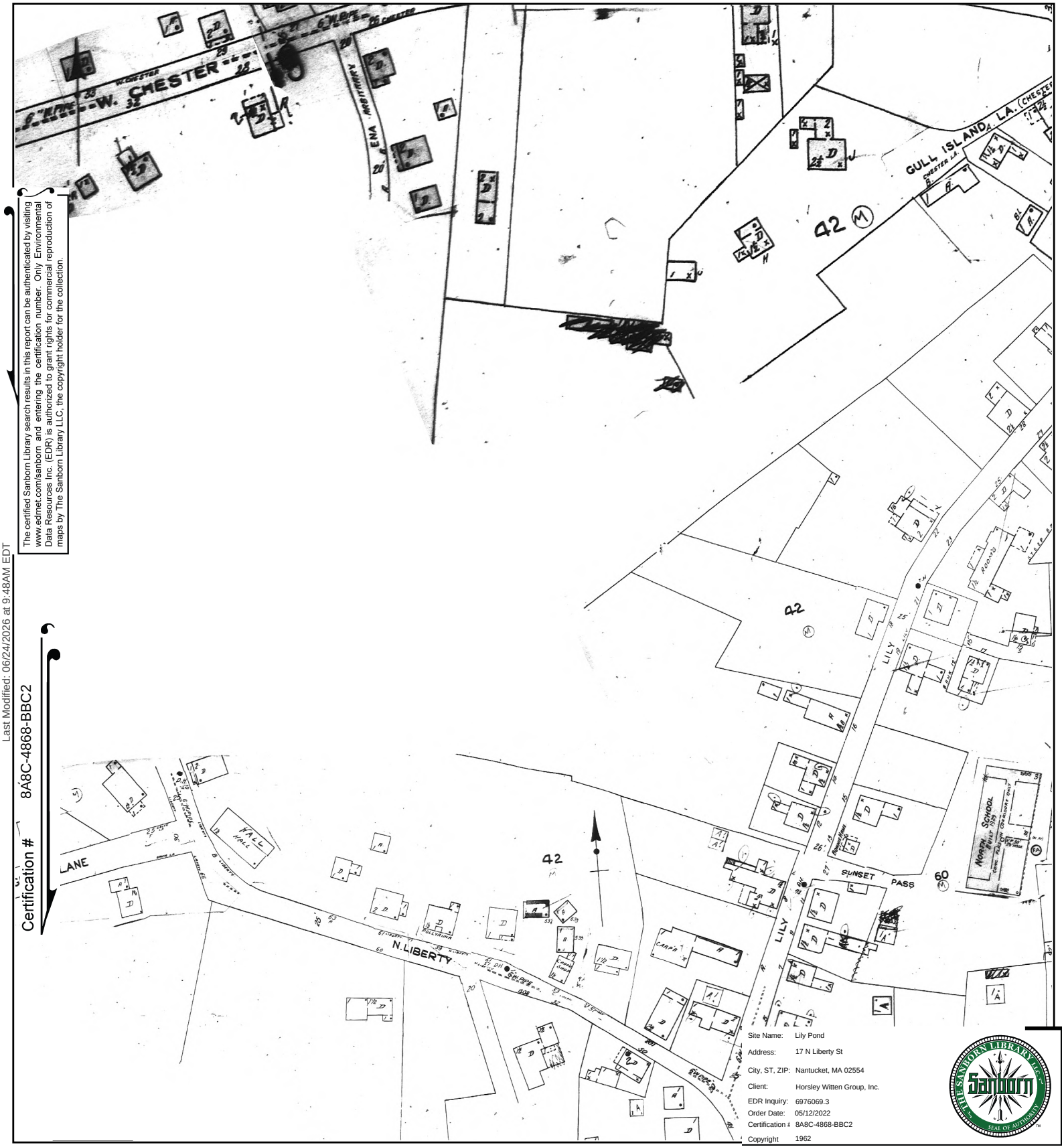
Volume 1, Sheet 5
1892

1887 Source Sheets



Volume 1, Sheet 4
1887

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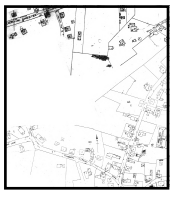
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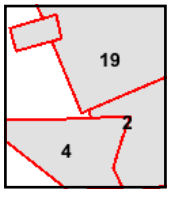
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Certification # 8A8C-4868-BBC2

Site Name:	Lily Pond
Address:	17 N Liberty St
City, ST, ZIP:	Nantucket, MA 02554
Client:	Horsley Witten Group, Inc.
EDR Inquiry:	6976069.3
Order Date:	05/12/2022
Certification #:	8A8C-4868-BBC2
Copyright	1962

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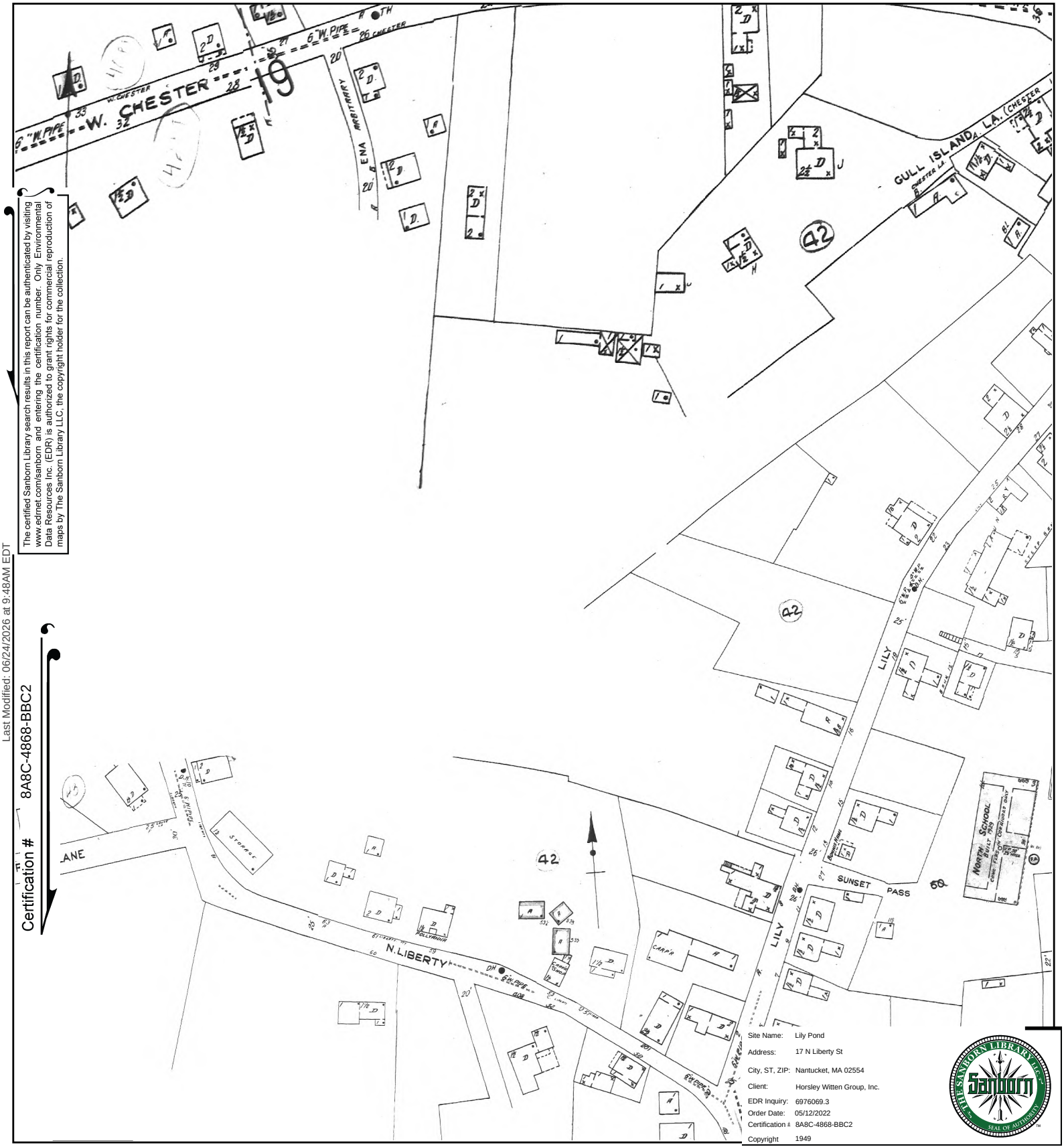
Volume 1, Sheet 19
Volume 1, Sheet 4
Volume 1, Sheet 2

0 Feet 150 300 600

N

Certified Sanborn® Map

1949



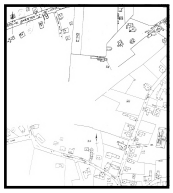
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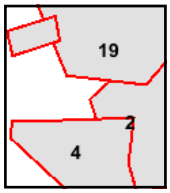
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Site Name:	Lily Pond
Address:	17 N Liberty St
City, ST, ZIP:	Nantucket, MA 02554
Client:	Horsley Witten Group, Inc.
EDR Inquiry:	6976069.3
Order Date:	05/12/2022
Certification #:	8A8C-4868-BBC2
Copyright	1949

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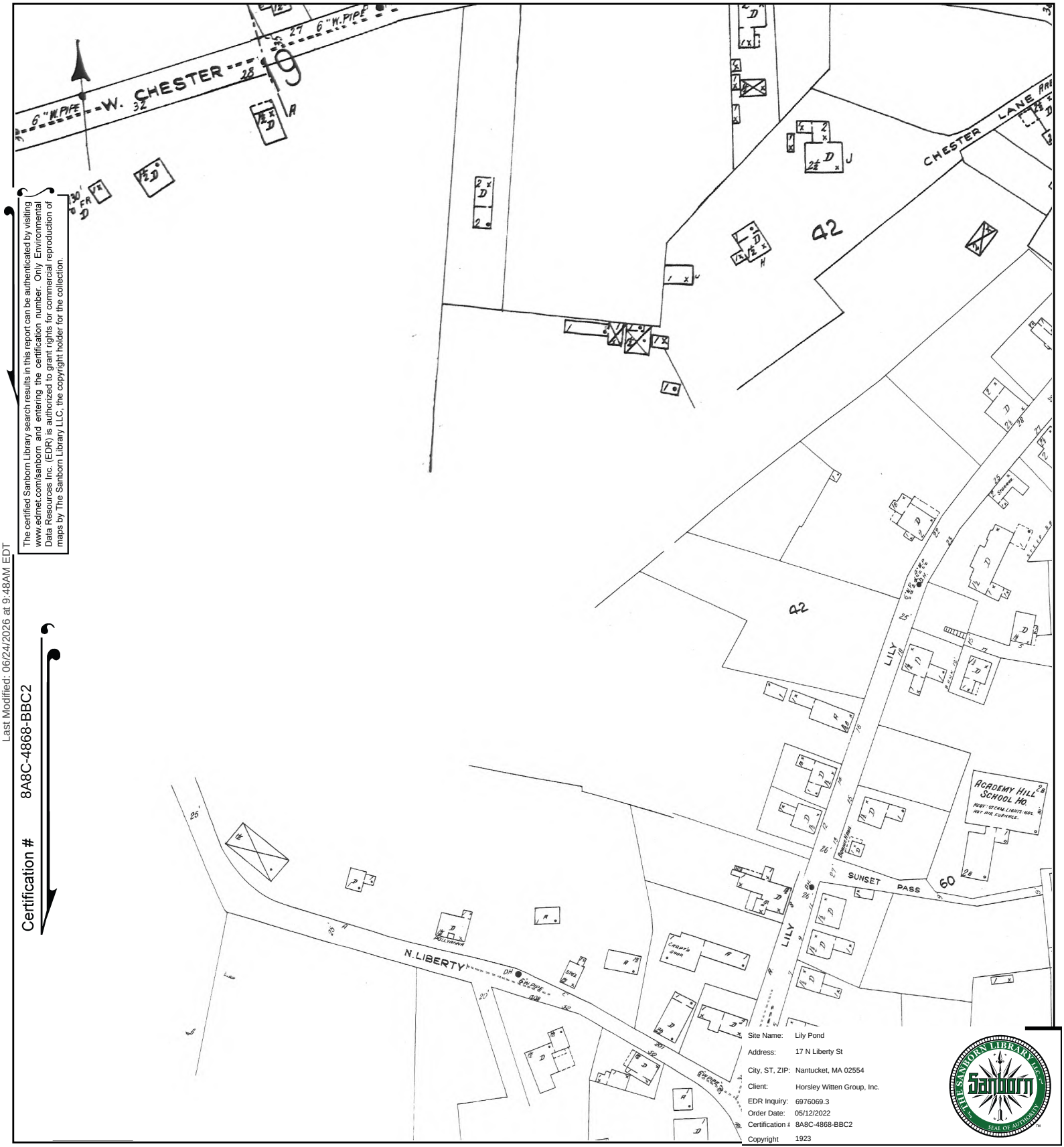




Volume 1, Sheet 19
Volume 1, Sheet 4
Volume 1, Sheet 2

0 Feet 150 300 600

N



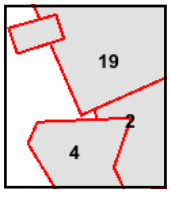
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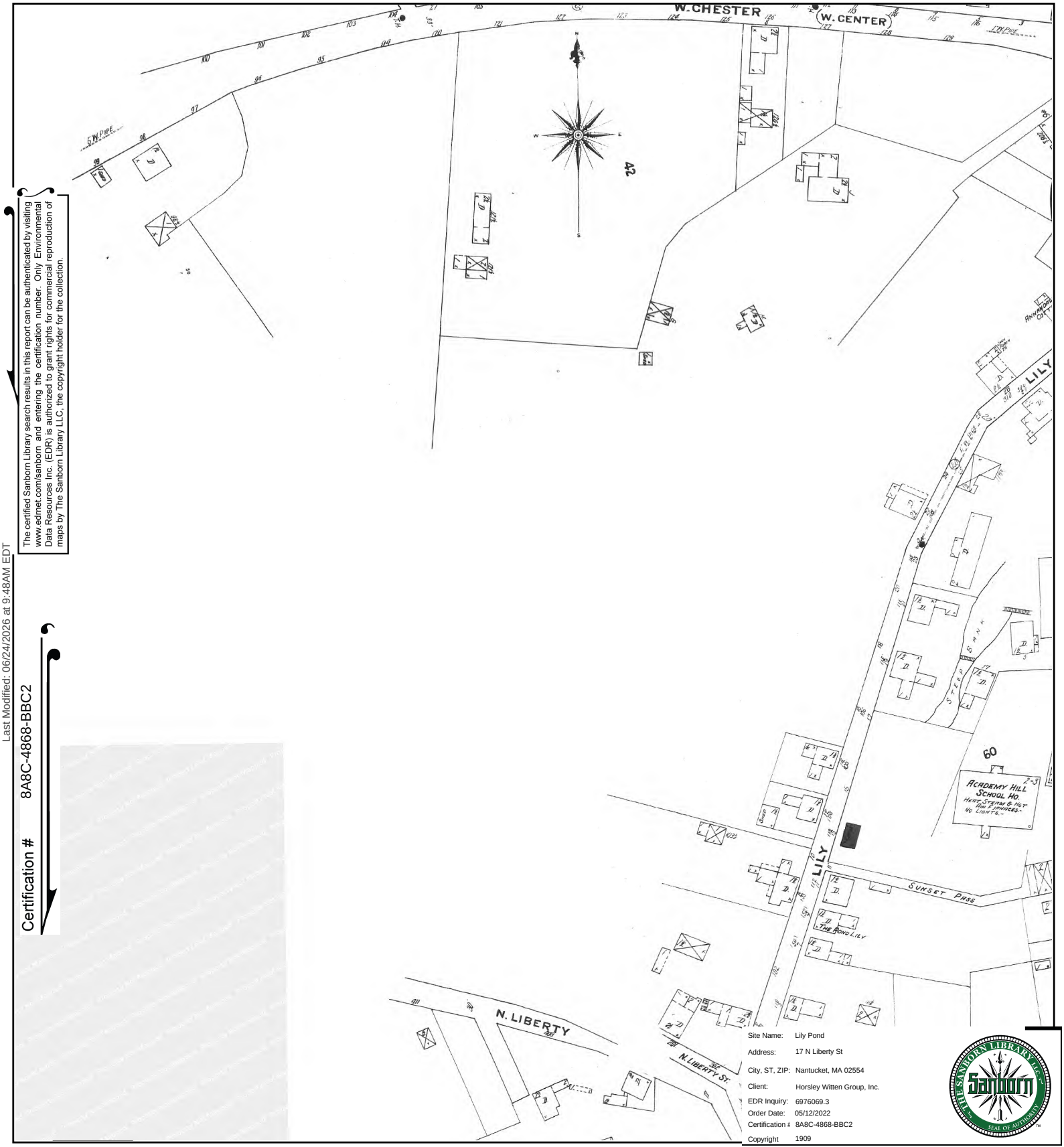




Volume 1, Sheet 19
Volume 1, Sheet 4
Volume 1, Sheet 2

0 Feet 150 300 600

N



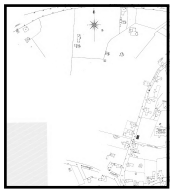
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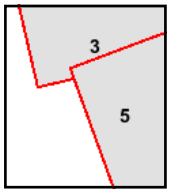
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Certification # 8A8C-4868-BBC2

Site Name:	Lily Pond
Address:	17 N Liberty St
City, ST, ZIP:	Nantucket, MA 02554
Client:	Horsley Witten Group, Inc.
EDR Inquiry:	6976069.3
Order Date:	05/12/2022
Certification #:	8A8C-4868-BBC2
Copyright	1909

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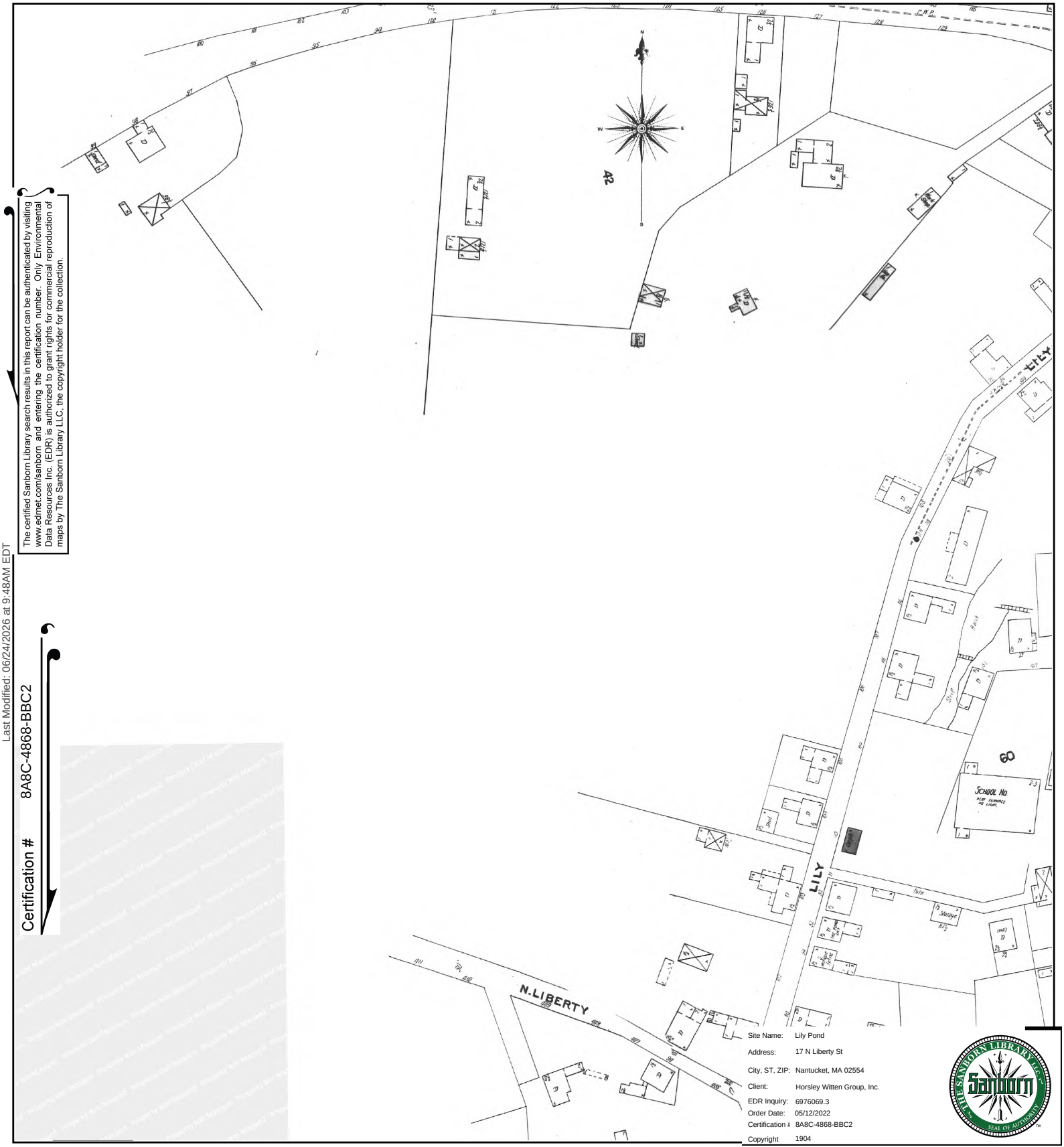
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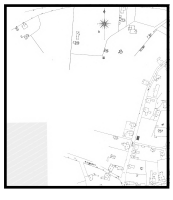
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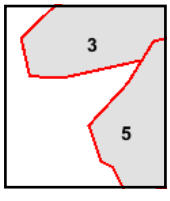
Certification # 8A8C-4868-BBC2



Site Name: Lily Pond
Address: 17 N Liberty St
City, ST, ZIP: Nantucket, MA 02554
Client: Horsley Witten Group, Inc.
EDR Inquiry: 6976069.3
Order Date: 05/12/2022
Certification #: 8A8C-4868-BBC2
Copyright 1904

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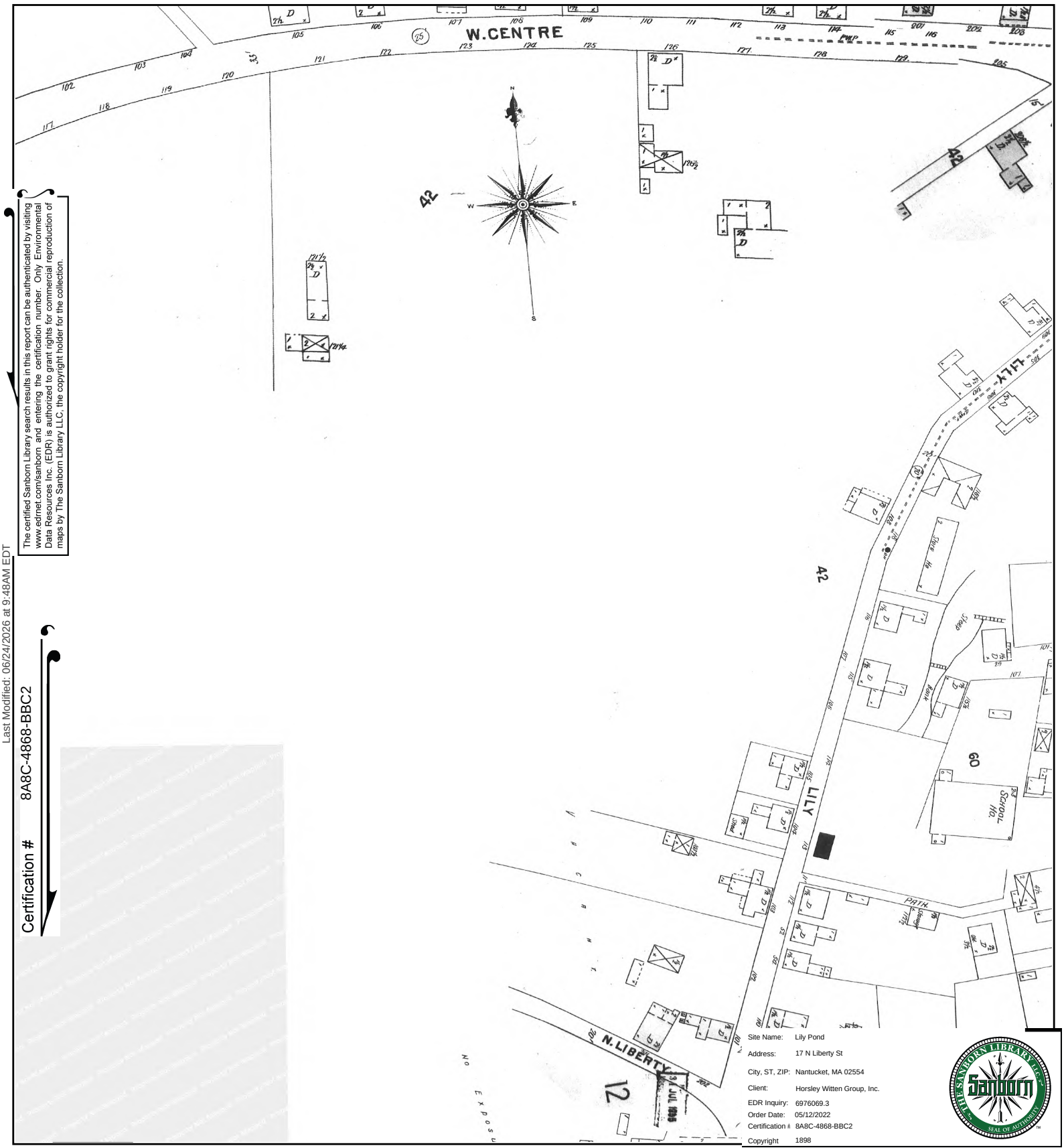
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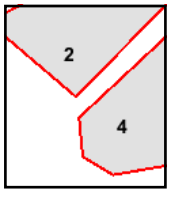
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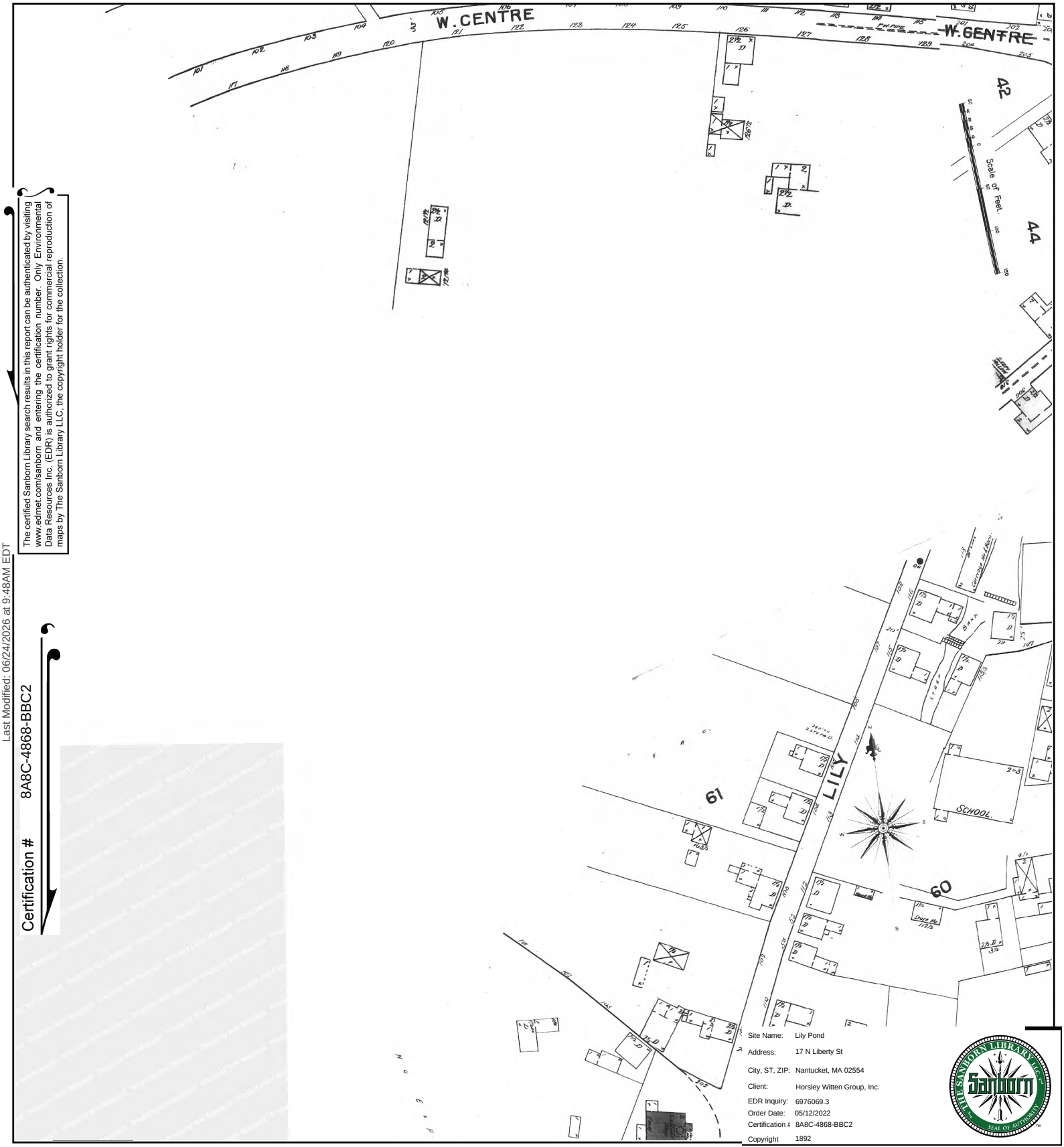




Volume 1, Sheet 2
Volume 1, Sheet 4

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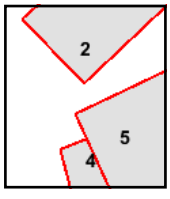
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Certification # 8A8C-4868-BBC2

Site Name:	Lily Pond
Address:	17 N Liberty St
City, ST, ZIP:	Nantucket, MA 02554
Client:	Horsley Witten Group, Inc.
EDR Inquiry:	6976069.3
Order Date:	05/12/2022
Certification #:	8A8C-4868-BBC2
Copyright	1892

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Volume 1, Sheet 4
Volume 1, Sheet 2

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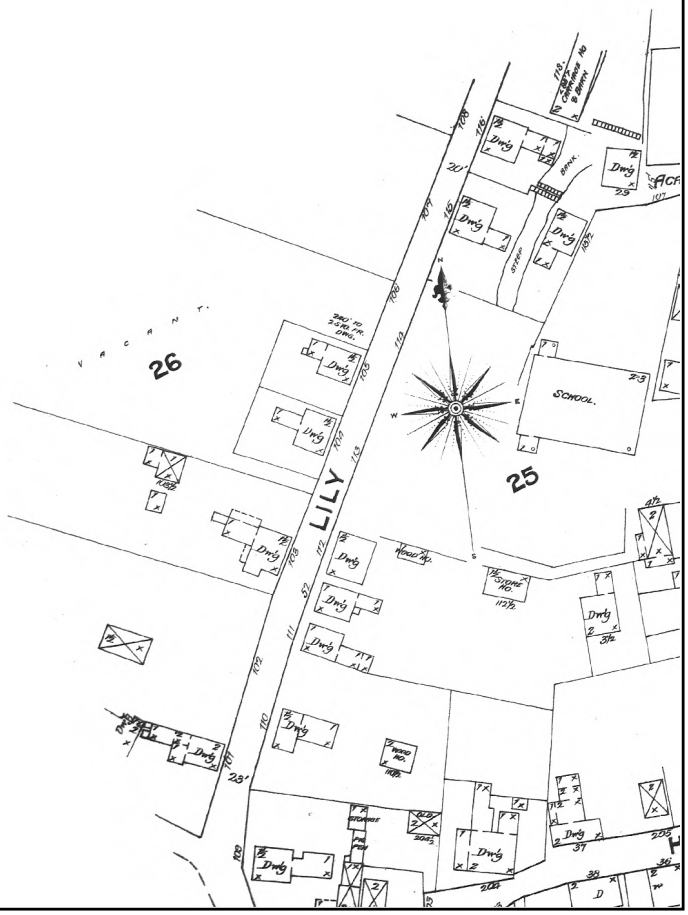
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Site Name: Lily Pond
Address: 17 N Liberty St
City, ST, ZIP: Nantucket, MA 02554
Client: Horsley Witten Group, Inc.
EDR Inquiry: 6976069.3
Order Date: 05/12/2022
Certification #: 8A8C-4868-BBC2
Copyright 1887

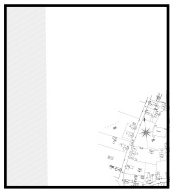
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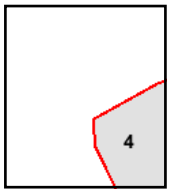
Certification # 8A8C-4868-BBC2

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Volume 1, Sheet 4

0 Feet 150 300 600

N

Lily Pond

17 N Liberty St

Nantucket, MA 02554

Inquiry Number: 6976069.8

May 13, 2022

Last Modified: 06/24/2026 at 9:48AM EDT

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

05/13/22

Site Name:

Lily Pond
17 N Liberty St
Nantucket, MA 02554
EDR Inquiry # 6976069.8

Client Name:

Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563
Contact: Caroline Armstrong

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Search Results:

Year	Scale	Details	Source
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2008	1"=500'	Flight Year: 2008	USDA/NAIP
1995	1"=500'	Acquisition Date: March 29, 1995	USGS/DOQQ
1991	1"=500'	Flight Date: April 04, 1991	USGS
1982	1"=500'	Flight Date: March 23, 1982	USGS
1975	1"=500'	Flight Date: October 28, 1975	USGS
1969	1"=500'	Flight Date: November 13, 1969	USGS
1960	1"=500'	Flight Date: May 19, 1960	USGS
1951	1"=500'	Flight Date: October 23, 1951	USDA
1938	1"=500'	Flight Date: November 21, 1938	USGS

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Last Modified: 06/24/2026 at 9:48AM EDT

INQUIRY #: 6976069.8

YEAR: 2016

= 500'

N

EDR



Last Modified: 06/24/2026 at 9:48AM EDT

INQUIRY #: 6976069.8

YEAR: 2012

= 500'

N

EDR



Last Modified: 06/24/2026 at 9:48AM EDT

INQUIRY #: 6976069.8

YEAR: 2008

= 500'

N

EDR



Last Modified: 06/24/2026 at 9:48AM EDT

INQUIRY #: 6976069.8

YEAR: 1995

= 500'

N

EDR



Last Modified: 06/24/2026 at 9:48AM EDT

INQUIRY #: 6976069.8

YEAR: 1991

= 500'

N

EDR



Last Modified: 06/24/2026 at 9:48AM EDT

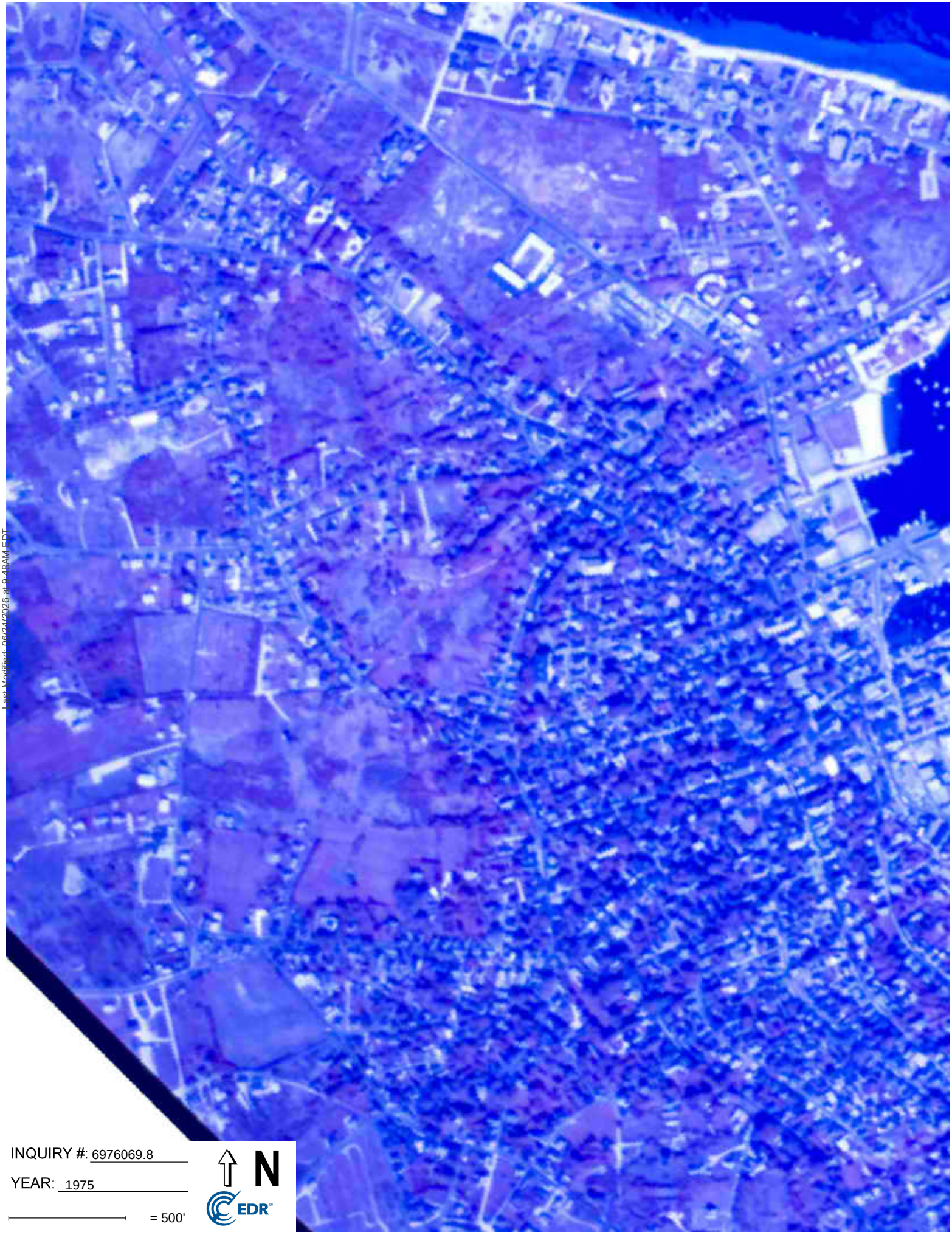
INQUIRY #: 6976069.8

YEAR: 1982

= 500'

N

EDR



Last Modified: 06/24/2026 at 9:48AM EDT

INQUIRY #: 6976069.8

YEAR: 1975

= 500'

N

EDR



Last Modified: 06/24/2026 at 9:48AM EDT

INQUIRY #: 6976069.8

YEAR: 1969

= 500'

N

EDR



Last Modified: 06/24/2026 at 9:48AM EDT

INQUIRY #: 6976069.8

YEAR: 1960

= 500'

N

EDR



Last Modified: 06/24/2026 at 9:48AM EDT

INQUIRY #: 6976069.8

YEAR: 1951

= 500'

N

EDR



Last Modified: 06/24/2026 at 9:48AM EDT

INQUIRY #: 6976069.8

YEAR: 1938

= 500'

N

EDR

Lily Pond

17 N Liberty St

Nantucket, MA 02554

Inquiry Number: 6976069.4

May 11, 2022

Last Modified: 06/24/2026 at 9:48AM EDT

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

05/11/22

Site Name:

Lily Pond
17 N Liberty St
Nantucket, MA 02554
EDR Inquiry # 6976069.4

Client Name:

Horsley Witten Group, Inc.
90 Route 6A
Sandwich, MA 02563
Contact: Caroline Armstrong

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Horsley Witten Group, Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# 20008

Project: Lily Pond Park Nantucket

Coordinates:

Latitude:	41.285621 41° 17' 8" North
Longitude:	-70.104936 -70° 6' 18" West
UTM Zone:	Zone 19 North
UTM X Meters:	407474.75
UTM Y Meters:	4571053.19
Elevation:	12.51' above sea level

Maps Provided:

2018	1901
2015	1893
2012	1889
1977	
1972	
1951	
1945	
1942	

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

2018 Source Sheets



Siasconset
2018
7.5-minute, 24000



Nantucket
2018
7.5-minute, 24000

2015 Source Sheets



Siasconset
2015
7.5-minute, 24000



Nantucket
2015
7.5-minute, 24000

2012 Source Sheets



Siasconset
2012
7.5-minute, 24000



Nantucket
2012
7.5-minute, 24000

1977 Source Sheets



Nantucket
1977
7.5-minute, 24000
Aerial Photo Revised 1969

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1972 Source Sheets



Siasconset
1972
7.5-minute, 24000
Aerial Photo Revised 1970



Nantucket
1972
7.5-minute, 24000
Aerial Photo Revised 1969

1951 Source Sheets



Siasconset
1951
7.5-minute, 24000



Nantucket
1951
7.5-minute, 24000

1945 Source Sheets



Siasconset
1945
7.5-minute, 31680



Nantucket
1945
7.5-minute, 31680

1942 Source Sheets



Nantucket
1942
30-minute, 125000

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1901 Source Sheets



Nantucket
1901
15-minute, 62500

1893 Source Sheets



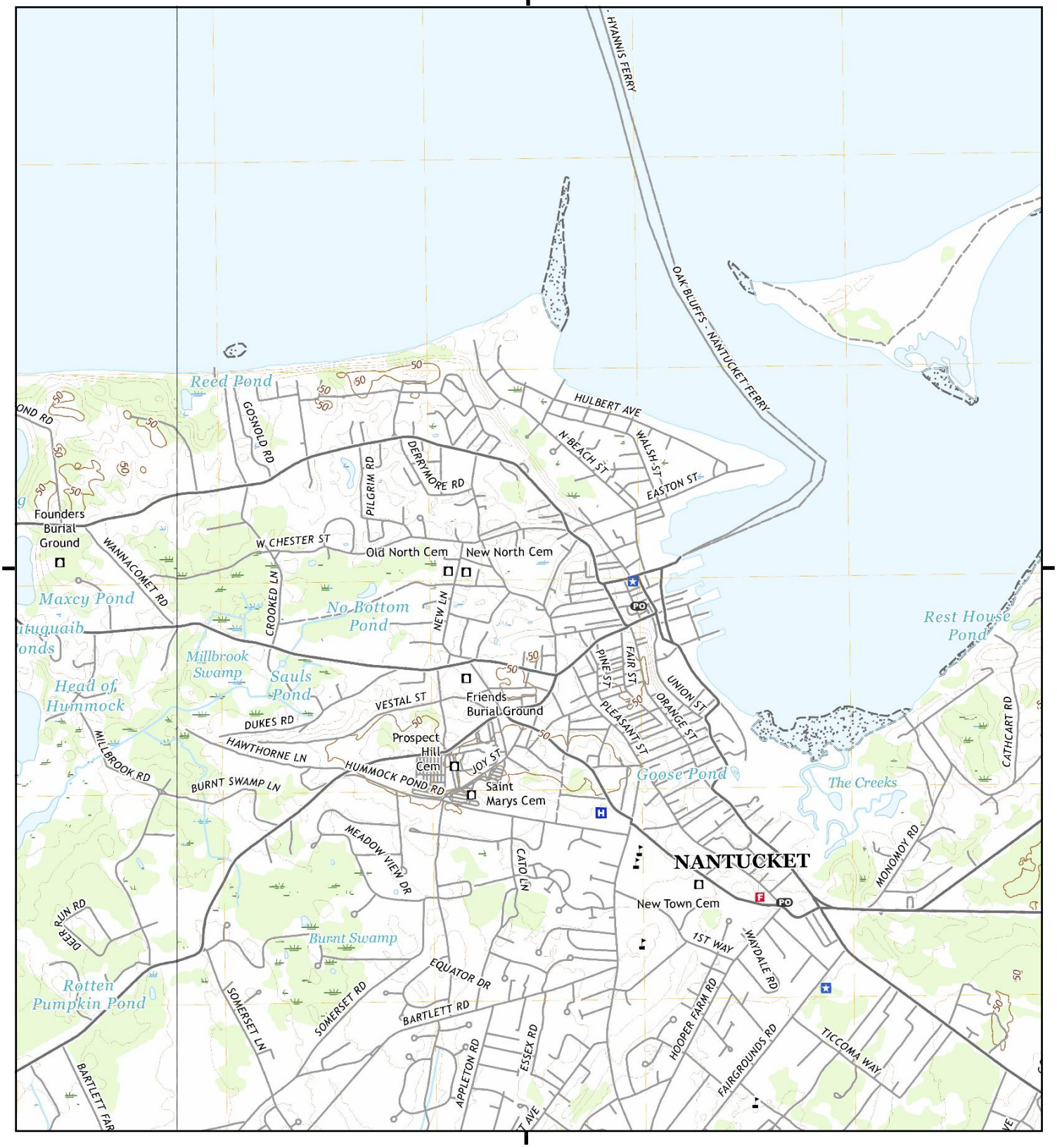
Nantucket
1893
15-minute, 62500

1889 Source Sheets



Nantucket
1889
15-minute, 62500

Last Modified: 06/24/2026 at 9:48AM EDT



Last Modified: 06/24/2026 at 9:48AM EDT

This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

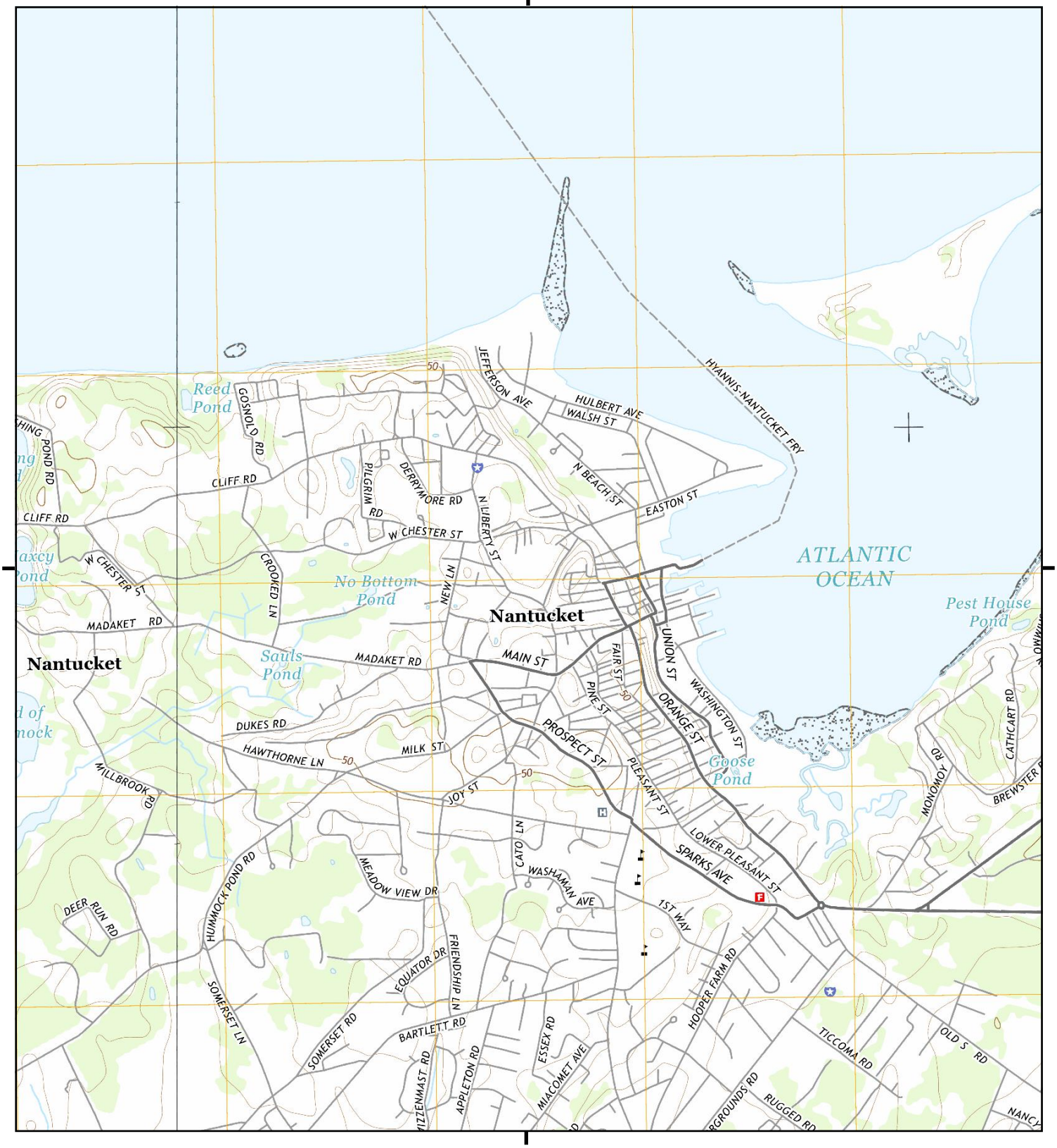
TP, Siasconset, 2018, 7.5-minute
NW, Nantucket, 2018, 7.5-minute

SITE NAME: Lily Pond
ADDRESS: 17 N Liberty St
Nantucket, MA 02554
CLIENT: Horsley Witten Group, Inc.

N

Historical Topo Map

2015



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Siasconset, 2015, 7.5-minute
NW, Nantucket, 2015, 7.5-minute

SITE NAME: Lily Pond
ADDRESS: 17 N Liberty St
Nantucket, MA 02554
CLIENT: Horsley Witten Group, Inc.

N

Last Modified: 06/24/2026 at 9:48AM EDT

Historical Topo Map

2012



Last Modified: 06/24/2026 at 9:48AM EDT

This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Siasconset, 2012, 7.5-minute
NW, Nantucket, 2012, 7.5-minute

SITE NAME: Lily Pond
ADDRESS: 17 N Liberty St
Nantucket, MA 02554
CLIENT: Horsley Witten Group, Inc.

N



This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

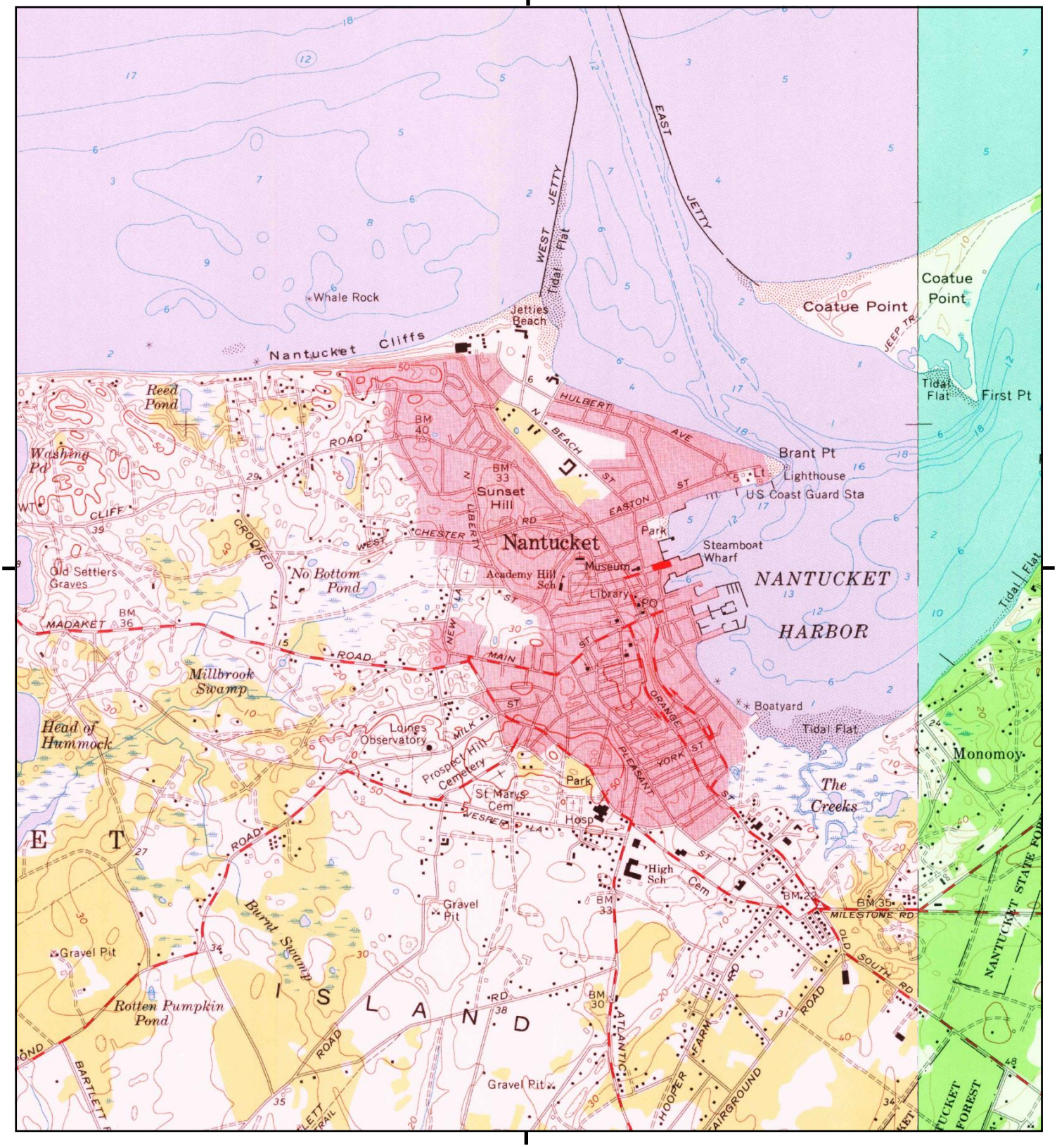
NW N NE
W E
SW S SE

TP, Nantucket, 1977, 7.5-minute

SITE NAME: Lily Pond
ADDRESS: 17 N Liberty St
Nantucket, MA 02554
CLIENT: Horsley Witten Group, Inc.

N

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This report includes information from the following map sheet(s).

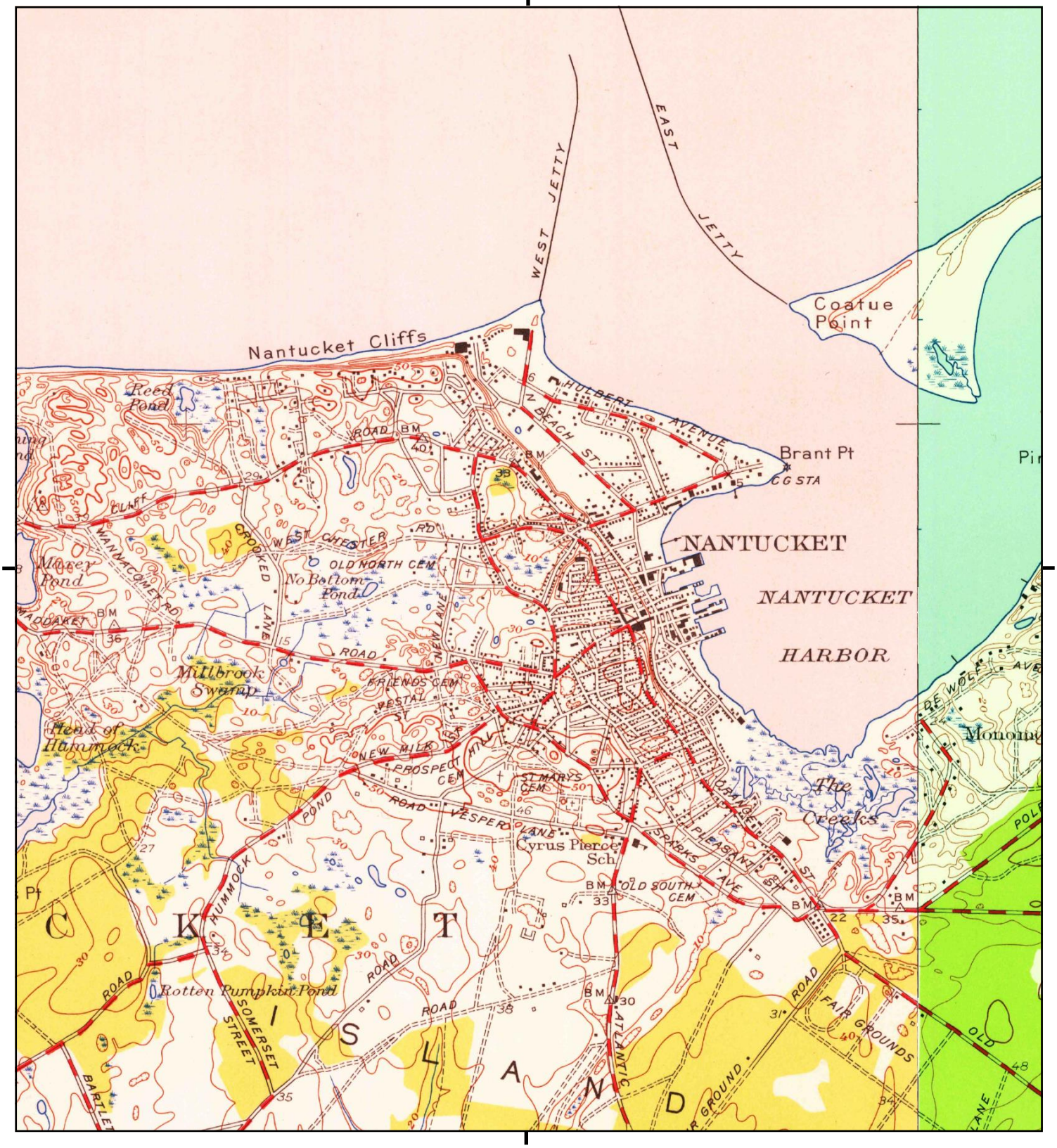
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Nantucket, 1972, 7.5-minute
E, Siasconset, 1972, 7.5-minute

SITE NAME: Lily Pond
ADDRESS: 17 N Liberty St
Nantucket, MA 02554
CLIENT: Horsley Witten Group, Inc.

N



Last Modified: 06/24/2026 at 9:48AM EDT

This report includes information from the following map sheet(s).

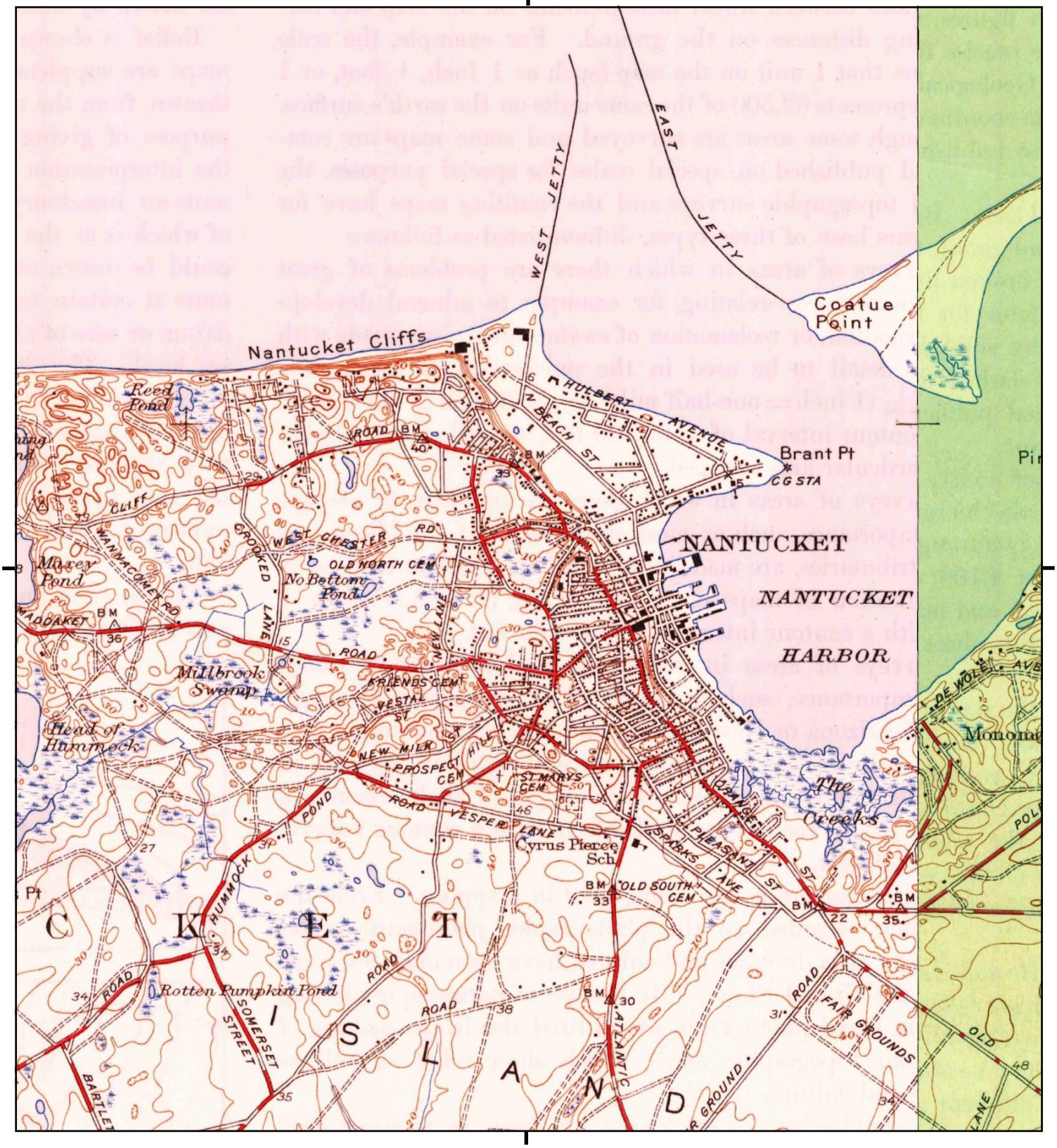
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Nantucket, 1951, 7.5-minute
E, Siasconset, 1951, 7.5-minute

SITE NAME: Lily Pond
ADDRESS: 17 N Liberty St
Nantucket, MA 02554
CLIENT: Horsley Witten Group, Inc.

N



Last Modified: 06/24/2026 at 9:48AM EDT

This report includes information from the following map sheet(s).

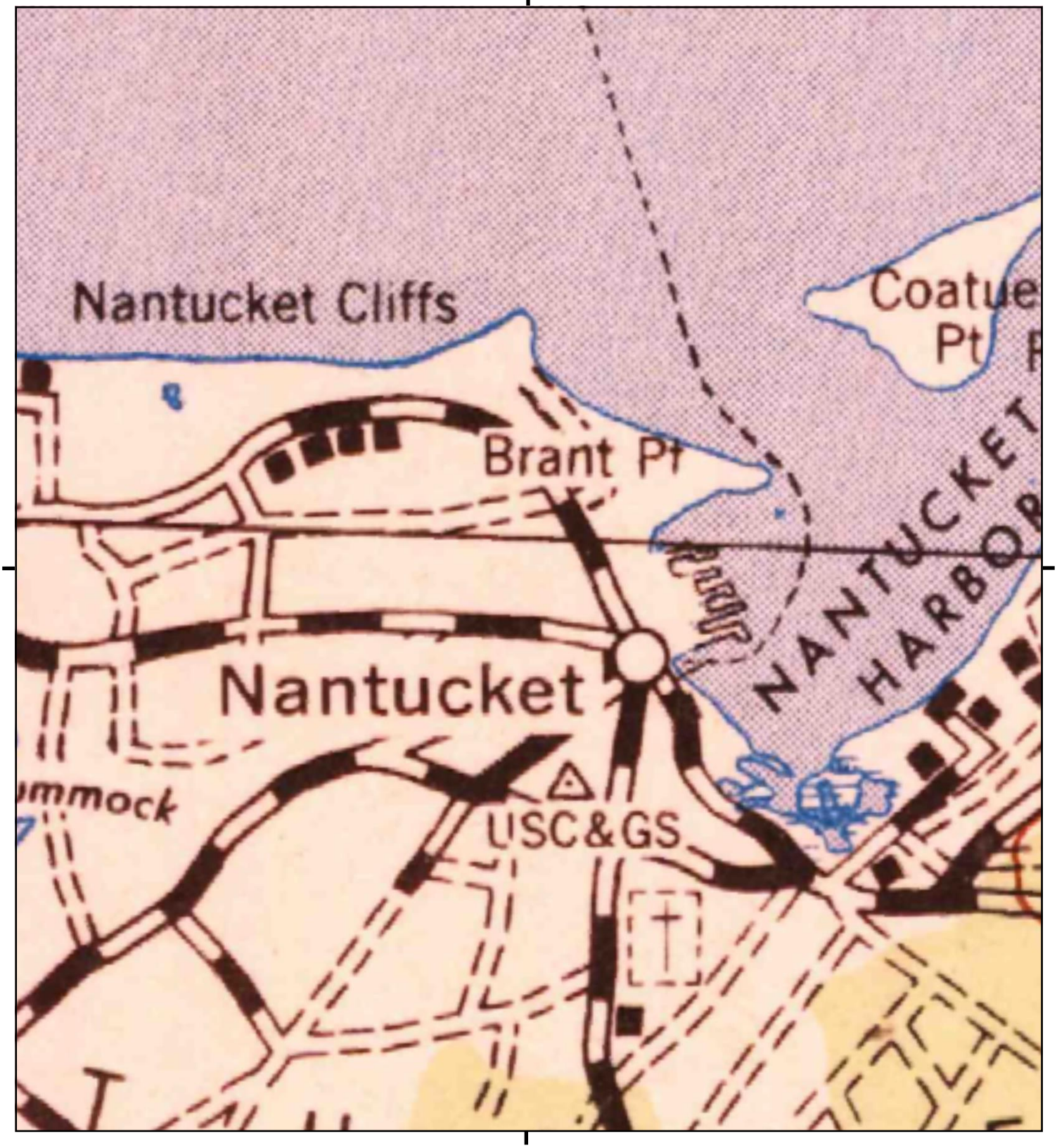
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Nantucket, 1945, 7.5-minute
E, Siasconset, 1945, 7.5-minute

SITE NAME: Lily Pond
ADDRESS: 17 N Liberty St
Nantucket, MA 02554
CLIENT: Horsley Witten Group, Inc.

N



Last Modified: 06/24/2026 at 9:48AM EDT

This report includes information from the following map sheet(s).

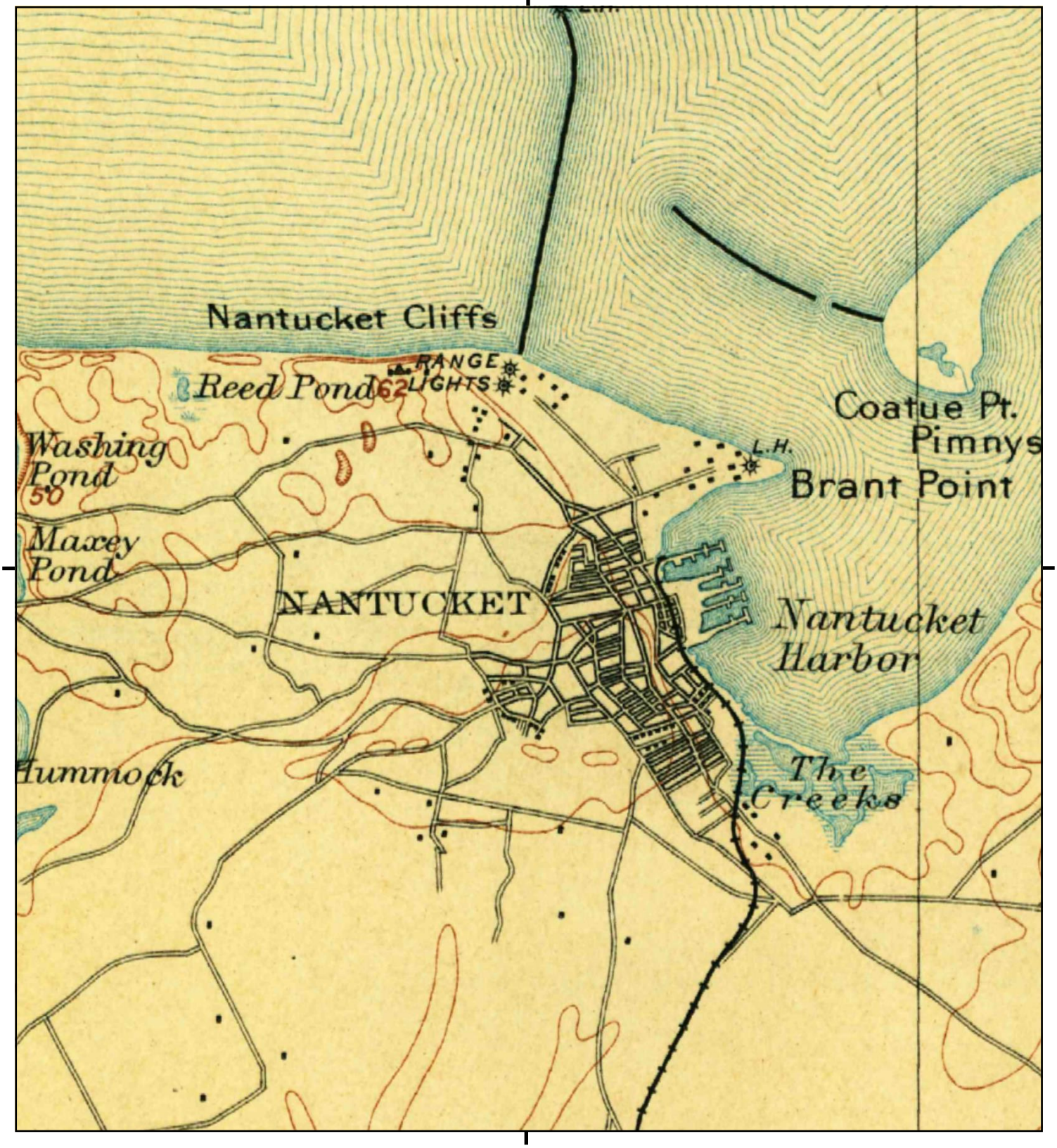
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Nantucket, 1942, 30-minute

SITE NAME: Lily Pond
ADDRESS: 17 N Liberty St
Nantucket, MA 02554
CLIENT: Horsley Witten Group, Inc.

N



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This report includes information from the following map sheet(s).

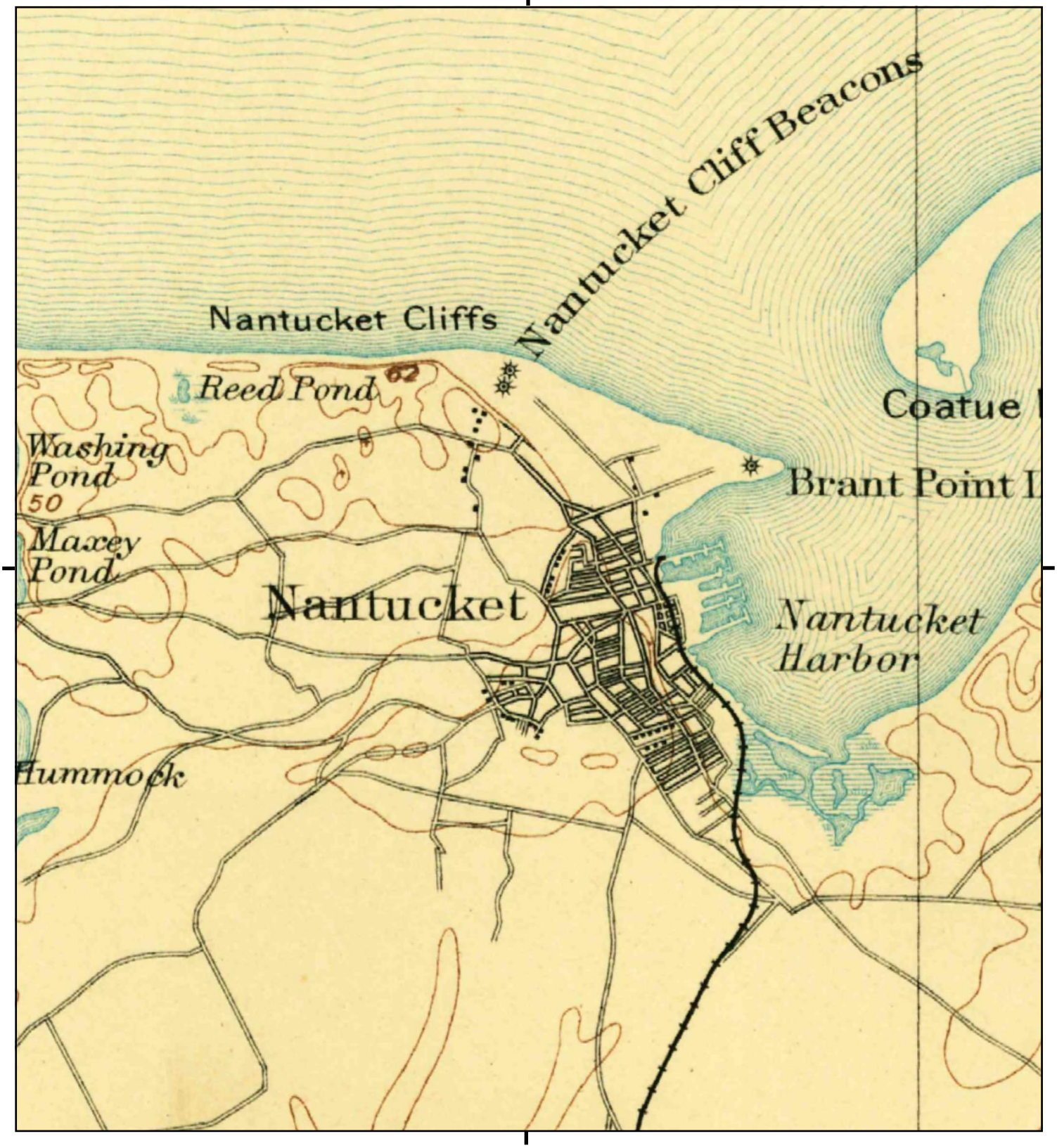
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Nantucket, 1901, 15-minute

SITE NAME: Lily Pond
ADDRESS: 17 N Liberty St
Nantucket, MA 02554
CLIENT: Horsley Witten Group, Inc.

N



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This report includes information from the following map sheet(s).

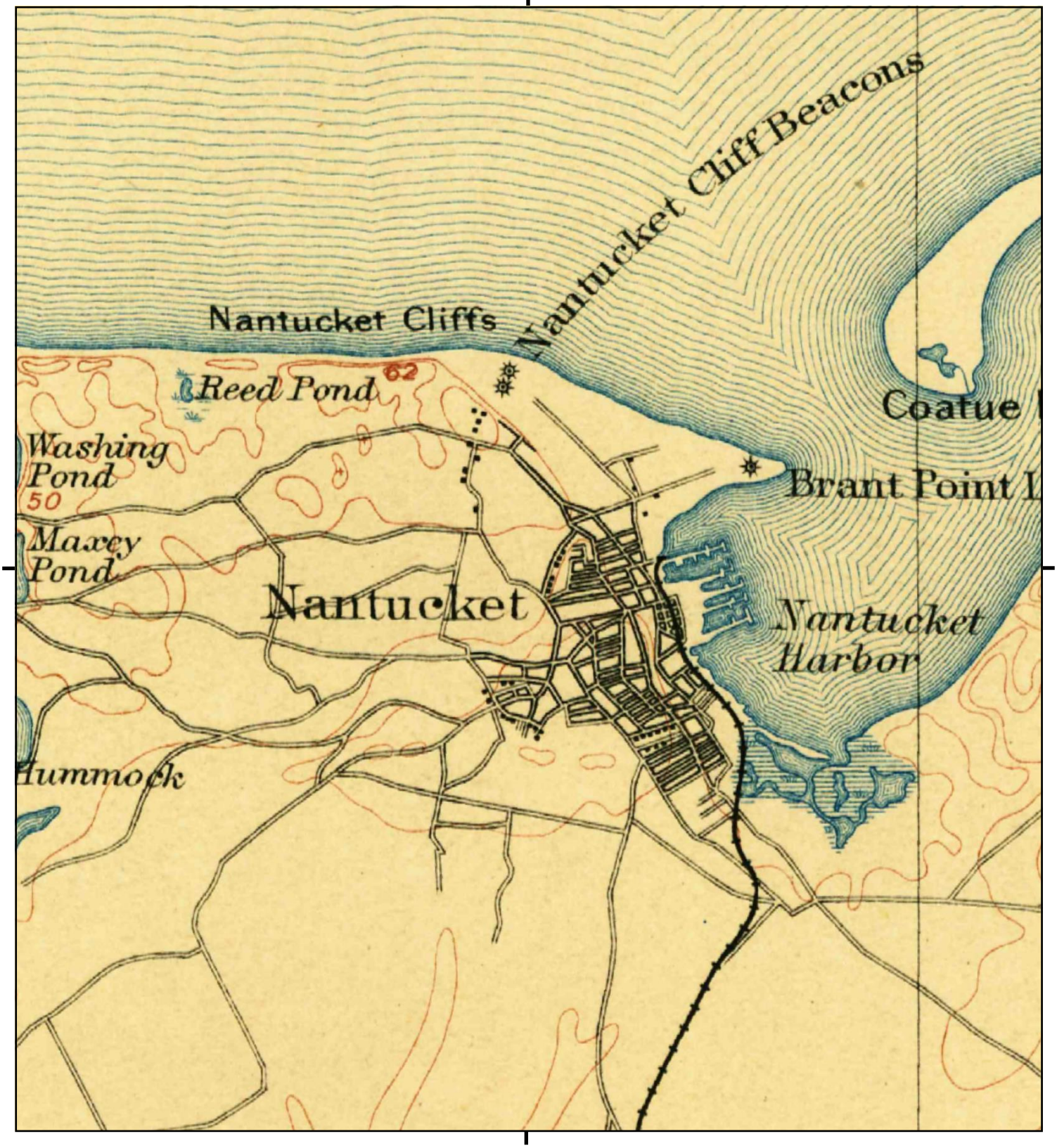
0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Nantucket, 1893, 15-minute

SITE NAME: Lily Pond
ADDRESS: 17 N Liberty St
Nantucket, MA 02554
CLIENT: Horsley Witten Group, Inc.

N



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This report includes information from the following map sheet(s).

0 Miles 0.25 0.5 1 1.5

NW N NE
W E
SW S SE

TP, Nantucket, 1889, 15-minute

SITE NAME: Lily Pond
ADDRESS: 17 N Liberty St
Nantucket, MA 02554
CLIENT: Horsley Witten Group, Inc.

N

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Gary Hedman
Horsley & Witten
90 Route 6A
Sandwich, MA 02563

RE: Lily Pond - 401WQ (20008C)
ESS Laboratory Work Order Number: 25C0241

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Last Modified: 06/24/2026 at 9:48AM EDT



Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 5:56 pm, Apr 22, 2025

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

Subcontracted Analyses

CTS - Cranston, RI	Grain Size Analysis, Water Content
Microvision Laboratories, Inc. - Chelmsford, MA	Coal/Wood Ash Determination

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

SAMPLE RECEIPT

The following samples were received on March 07, 2025 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

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Samples 25C0241-01 through 25C0241-10 for 401 WQ Metals were oven dried at 60 degrees Celsius prior to digestion and relogged in as samples 25C0241-21 through 25C0241-30. This was done to increase the dry weight of the sample digested which decreases variability of results and lowers the detection limits for samples with high water content.

Low Level VOA vials were frozen by the client within 48 hrs.
Tetrahydrofuran is reported above the MA CAM reporting limit of 0.010 mg/kg.

Question I: All samples for EPH and Metals were analyzed for a subset of the required MCP list per the client's request.

Revision 1 April 22, 2025: This report has been revised to include TCLP Lead on samples 25C0241-05 and 06, Coal Ash on samples 25C0241-01, 04, 05, and 06 per the client's request, and to include lead redigests of 25C0241-01 and 21 reported as RE1 and RE2 for each sample.

Lab Number	Sample Name	Matrix	Analysis
25C0241-01	2025-SS-1	Sediment	1010A, 2540G, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8081B, 8082A Cong, 8100M, 8151A, 8270E, 9045, 9050A, EPH8270, EPH8270SIM, LK, MADEP-EPH, SUB

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
ESS Laboratory Work Order: 25C0241

25C0241-02	2025-SS-2	Sediment	1010A, 2540G, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8081B, 8082A Cong, 8100M, 8151A, 8270E, 9045, 9050A, EPH8270, EPH8270SIM, LK, MADEP-EPH, SUB
25C0241-03	2025-SS-3	Sediment	1010A, 2540G, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8081B, 8082A Cong, 8100M, 8151A, 8270E, 9045, 9050A, EPH8270, EPH8270SIM, LK, MADEP-EPH, SUB
25C0241-04	2025-SS-4	Sediment	1010A, 2540G, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8081B, 8082A Cong, 8100M, 8151A, 8270E, 9045, 9050A, EPH8270, EPH8270SIM, LK, MADEP-EPH, SUB
25C0241-05	2025-SS-5	Sediment	1010A, 1311, 2540G, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8081B, 8082A Cong, 8100M, 8151A, 8270E, 9045, 9050A, EPH8270, EPH8270SIM, LK, MADEP-EPH, SUB, XXXX
25C0241-06	2025-SS-6	Sediment	1010A, 1311, 2540G, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8081B, 8082A Cong, 8100M, 8151A, 8270E, 9045, 9050A, EPH8270, EPH8270SIM, LK, MADEP-EPH, SUB, XXXX
25C0241-07	2025-SS-7	Sediment	1010A, 2540G, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8081B, 8082A Cong, 8100M, 8151A, 8270E, 9045, 9050A, EPH8270, EPH8270SIM, LK, MADEP-EPH, SUB
25C0241-08	2025-SS-8	Sediment	1010A, 2540G, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8081B, 8082A Cong, 8100M, 8151A, 8270E, 9045, 9050A, EPH8270, EPH8270SIM, LK, MADEP-EPH, SUB
25C0241-09	2025-SS-9	Sediment	1010A, 2540G, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8081B, 8082A Cong, 8100M, 8151A, 8270E, 9045, 9050A, EPH8270, EPH8270SIM, LK, MADEP-EPH, SUB
25C0241-10	2025-SS-10	Sediment	1010A, 2540G, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7471B, 8081B, 8082A Cong, 8100M, 8151A, 8270E, 9045, 9050A, EPH8270, EPH8270SIM, LK, MADEP-EPH, SUB
25C0241-11	2025-SS-1A	Sediment	8260D Low
25C0241-12	2025-SS-2C	Sediment	8260D Low
25C0241-13	2025-SS-3A	Sediment	8260D Low
25C0241-14	2025-SS-4B	Sediment	8260D Low
25C0241-15	2025-SS-5C	Sediment	8260D Low
25C0241-16	2025-SS-6A	Sediment	8260D Low
25C0241-17	2025-SS-7B	Sediment	8260D Low
25C0241-18	2025-SS-8C	Sediment	8260D Low
25C0241-19	2025-SS-9A	Sediment	8260D Low
25C0241-20	2025-SS-10C	Sediment	8260D Low

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ ESS Laboratory Work Order: 25C0241

25C0241-21	2025-SS-1 - Oven Dried	Sediment	6010D, 7471B
25C0241-22	2025-SS-2 - Oven Dried	Sediment	6010D, 7471B
25C0241-23	2025-SS-3 - Oven Dried	Sediment	6010D, 7471B
25C0241-24	2025-SS-4 - Oven Dried	Sediment	6010D, 7471B
25C0241-25	2025-SS-5 - Oven Dried	Sediment	6010D, 7471B
25C0241-26	2025-SS-6 - Oven Dried	Sediment	6010D, 7471B
25C0241-27	2025-SS-7 - Oven Dried	Sediment	6010D, 7471B
25C0241-28	2025-SS-8 - Oven Dried	Sediment	6010D, 7471B
25C0241-29	2025-SS-9 - Oven Dried	Sediment	6010D, 7471B
25C0241-30	2025-SS-10 - Oven Dried	Sediment	6010D, 7471B

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ ESS Laboratory Work Order: 25C0241

PROJECT NARRATIVE

Last Modified: 06/24/2026 at 9:48AM EDT

8081B Organochlorine Pesticides

25C0241-02 **Lower value is used due to matrix interferences (LC).**
4,4´-DDE [2C]

25C0241-02 **Percent difference between primary and confirmation results exceeds 40% (P).**
4,4´-DDE [2C]

25C0241-05 **Lower value is used due to matrix interferences (LC).**
4,4´-DDD [2C]

25C0241-05 **Percent difference between primary and confirmation results exceeds 40% (P).**
4,4´-DDD [2C]

25C0241-08 **Lower value is used due to matrix interferences (LC).**
4,4´-DDD [2C]

25C0241-08 **Percent difference between primary and confirmation results exceeds 40% (P).**
4,4´-DDD [2C]

8082 Polychlorinated Biphenyls (PCB) / Congeners

25C0241-02 **Lower value is used due to matrix interferences (LC).**
BZ#105 , BZ#170 , BZ#209

25C0241-02 **Percent difference between primary and confirmation results exceeds 40% (P).**
BZ#105 , BZ#170 , BZ#209

25C0241-03 **Lower value is used due to matrix interferences (LC).**
BZ#105 , BZ#138 , BZ#153 [2C] , BZ#187

25C0241-03 **Percent difference between primary and confirmation results exceeds 40% (P).**
BZ#105 , BZ#138 , BZ#153 [2C] , BZ#187

25C0241-06 **Lower value is used due to matrix interferences (LC).**
BZ#101 , BZ#105 , BZ#118 [2C] , BZ#138 , BZ#153 [2C]

25C0241-06 **Percent difference between primary and confirmation results exceeds 40% (P).**
BZ#101 , BZ#105 , BZ#118 [2C] , BZ#138 , BZ#153 [2C]

Semi-Volatile Organic Compounds

D5C0182-CCV1 **Calibration required quadratic regression (Q).**
2,4-Dinitrophenol (75% @ 40-160%)

D5C0182-CCV1 **Continuing Calibration %Diff/Drift is below control limit (CD-).**
N-Nitrosodimethylamine (24% @ 20%)

D5C0182-TUN1 **DDT breakdown > 20%**

Total Metals

25C0241-03 **Elevated Method Reporting Limits due to sample matrix (EL).**
Arsenic

DC51107-SRM1 **Standard Reference Material is biased low (R-).**
Lead (77% @ 81-120%)

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ ESS Laboratory Work Order: 25C0241

Volatile Organics Low Level

25C0241-17	**Internal Standard(s) outside of criteria. Sample was reanalyzed to confirm (IC).**
	1,4-Dichlorobenzene-D4 (45% @ 50-200%)
25C0241-17RE1	**Internal Standard(s) outside of criteria. Sample was reanalyzed to confirm (IC).**
	1,4-Dichlorobenzene-D4 (45% @ 50-200%)
25C0241-18	**Internal Standard(s) outside of criteria. Sample was reanalyzed to confirm (IC).**
	1,4-Dichlorobenzene-D4 (38% @ 50-200%)
25C0241-18RE1	**Internal Standard(s) outside of criteria. Sample was reanalyzed to confirm (IC).**
	1,4-Dichlorobenzene-D4 (40% @ 50-200%)
D5C0185-CCV1	**Calibration required quadratic regression (Q).**
	Bromoform (106% @ 40-160%)
D5C0185-CCV1	**Continuing Calibration %Diff/Drift is below control limit (CD-).**
	Vinyl Chloride (32% @ 20%)
D5C0208-CCV1	**Calibration required quadratic regression (Q).**
	Bromoform (100% @ 40-160%)
DC51032-BS1	**Blank Spike recovery is below lower control limit (B-).**
	Vinyl Chloride (56% @ 70-130%)
DC51032-BSD1	**Blank Spike recovery is below lower control limit (B-).**
	Vinyl Chloride (59% @ 70-130%)

No other observations noted.

End of Project Narrative.

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DATA USABILITY LINKS

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Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010D - ICP
6020B - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260D - VOA
8270E - SVOA
8270E SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 19-2.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

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SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **25C0241-01 through 25C0241-30**

Matrices: ( ) Ground Water/Surface Water (x) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other:_____

CAM Protocol (check all that apply below):

( ) 8260 VOC CAM II A	(x) 7470/7471 Hg CAM III B	( ) MassDEP VPH (GC/PID/FID) CAM IV A	(x) 8082 PCB CAM V A	( ) 9014 Total Cyanide/PAC CAM VI A	( ) 6860 Perchlorate CAM VIII B
(x) 8270 SVOC CAM II B	( ) 7010 Metals CAM III C	( ) MassDEP VPH (GC/MS) CAM IV C	(x) 8081 Pesticides CAM V B	( ) 7196 Hex Cr CAM VI B	( ) MassDEP APH CAM IX A
(x) 6010 Metals CAM III A	( ) 6020 Metals CAM III D	(x) MassDEP EPH CAM IV B	(x) 8151 Herbicides CAM V C	( ) Explosives CAM VIII A	( ) TO-15 VOC CAM IX B

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (x) No ( )
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (x) No ( )
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (x) No ( )
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (x) No ( )
E	VPH, EPH, APH and TO-15 only: a. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes (x) No ( )
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ( ) No ( )
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (x) No ( )

Responses to Questions G, H and I below are required for "'Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)?	Yes ( ) No (x)*
	***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*	
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes ( ) No (x)*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes ( ) No (x)*

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: _____ Date: March 21, 2025

Printed Name: Laurel Stoddard Position: Laboratory Director

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1
Date Sampled: 03/05/25 13:20
Percent Solids: 64

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-01
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**2.35** (1.45)	---	6010D	---	1	CEV	03/10/25 18:46	5.37 100	DC51007
Barium	**44.0** (0.58)	---	6010D	---	1	CEV	03/10/25 18:46	5.37 100	DC51007
Cadmium	ND (0.29)	---	6010D	---	1	CEV	03/10/25 18:46	5.37 100	DC51007
Chromium	**10.3** (0.58)	---	6010D	---	1	CEV	03/10/25 18:46	5.37 100	DC51007
Lead	**79.5** (2.91)	---	6010D	---	1	CEV	03/10/25 18:46	5.37 100	DC51007
Mercury	**0.077** (0.015)	---	7471B	---	1	BJV	03/11/25 12:43	2.04 40	DC51008
Selenium	ND (2.91)	---	6010D	---	1	CEV	03/10/25 18:46	5.37 100	DC51007
Silver	ND (0.29)	---	6010D	---	1	CEV	03/10/25 18:46	5.37 100	DC51007

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1
Date Sampled: 03/05/25 13:20
Percent Solids: 64
Initial Volume: 19.5g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.040)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
1,2,4-Trichlorobenzene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
1,2-Dichlorobenzene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
1,3-Dichlorobenzene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
1,4-Dichlorobenzene	ND (0.200)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
2,4,5-Trichlorophenol	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
2,4,6-Trichlorophenol	ND (0.200)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
2,4-Dichlorophenol	ND (0.200)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
2,4-Dimethylphenol	ND (0.280)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
2,4-Dinitrophenol	ND (0.800)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
2,4-Dinitrotoluene	ND (0.200)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
2,6-Dinitrotoluene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
2-Chloronaphthalene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
2-Chlorophenol	ND (0.200)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
2-Methylnaphthalene	ND (0.200)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
2-Methylphenol	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
2-Nitrophenol	ND (0.800)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
3,3´-Dichlorobenzidine	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
3+4-Methylphenol	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
4-Bromophenyl-phenylether	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
4-Chloroaniline	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
4-Nitrophenol	ND (1.60)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Acenaphthene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Acenaphthylene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Acetophenone	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Aniline	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Anthracene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1
Date Sampled: 03/05/25 13:20
Percent Solids: 64
Initial Volume: 19.5g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Benzo(a)anthracene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Benzo(a)pyrene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Benzo(b)fluoranthene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Benzo(g,h,i)perylene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Benzo(k)fluoranthene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
bis(2-Chloroethoxy)methane	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
bis(2-Chloroethyl)ether	ND (0.200)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
bis(2-chloroisopropyl)Ether	ND (0.200)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
bis(2-Ethylhexyl)phthalate	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Butylbenzylphthalate	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Chrysene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Dibenzo(a,h)Anthracene	ND (0.200)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Dibenzofuran	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Diethylphthalate	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Dimethylphthalate	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Di-n-butylphthalate	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Di-n-octylphthalate	ND (0.800)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Fluoranthene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Fluorene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Hexachlorobenzene	ND (0.200)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Hexachlorobutadiene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Hexachloroethane	ND (0.200)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Indeno(1,2,3-cd)Pyrene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Isophorone	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Naphthalene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Nitrobenzene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1
Date Sampled: 03/05/25 13:20
Percent Solids: 64
Initial Volume: 19.5g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Pentachlorophenol	ND (0.800)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Phenanthrene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Phenol	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743
Pyrene	ND (0.400)	---	8270E	---	1	TJ	03/10/25 20:24	D5C0182	DC50743

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*69 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*81 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*67 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*67 %*		*30-130*
Surrogate: 2-Fluorophenol	*65 %*		*30-130*
Surrogate: Nitrobenzene-d5	*68 %*		*30-130*
Surrogate: Phenol-d6	*65 %*		*30-130*
Surrogate: p-Terphenyl-d14	*74 %*		*30-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1
Date Sampled: 03/05/25 13:20
Percent Solids: 64
Initial Volume: 24.8g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-01
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 3/10/25 16:33

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (15.7)	---	MADEP-EPH	---	1	JDN	03/12/25 0:58	D5C0218	DC51006
C19-C36 Aliphatics1	ND (15.7)	---	MADEP-EPH	---	1	JDN	03/12/25 0:58	D5C0218	DC51006
C11-C22 Unadjusted Aromatics1	ND (15.7)	---	EPH8270	---	1	DMC	03/11/25 14:50	D5C0203	DC51006
C11-C22 Aromatics1,2	ND (15.9)	---	EPH8270	---		TJ	03/12/25 10:51	---	[CALC]
2-Methylnaphthalene	ND (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Acenaphthene	ND (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Naphthalene	ND (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Phenanthrene	**0.070** (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Acenaphthylene	ND (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Anthracene	ND (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Benzo(a)anthracene	**0.086** (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Benzo(a)pyrene	**0.100** (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Benzo(b)fluoranthene	**0.073** (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Benzo(g,h,i)perylene	**0.063** (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Benzo(k)fluoranthene	**0.086** (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Chrysene	**0.106** (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Dibenzo(a,h)Anthracene	**0.028** (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Fluoranthene	**0.183** (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Fluorene	ND (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Indeno(1,2,3-cd)Pyrene	**0.055** (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006
Pyrene	**0.163** (0.013)	---	EPH8270SIM	---	1	TJ	03/12/25 10:51	D5C0229	DC51006

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*75 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*104 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*102 %*		*40-140*
Surrogate: O-Terphenyl	*83 %*		*40-140*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1
Date Sampled: 03/05/25 13:20
Percent Solids: 64
Initial Volume: 20.3g
Final Volume: 5ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/10/25 10:18

8081B Organochlorine Pesticides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
4,4´-DDD [2C]	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
4,4´-DDE	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
4,4´-DDT [2C]	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
Aldrin	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
alpha-BHC	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
alpha-Chlordane	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
beta-BHC	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
Chlordane (Total)	ND (0.0308)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
delta-BHC	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
Dieldrin	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
Endosulfan I	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
Endosulfan II	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
Endosulfan Sulfate	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
Endrin	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
Endrin Ketone	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
gamma-BHC (Lindane)	ND (0.0023)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
gamma-Chlordane	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
Heptachlor	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
Heptachlor Epoxide	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
Hexachlorobenzene	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003
Methoxychlor	ND (0.0038)	---	8081B	---	1	03/11/25 17:38	D5C0200	DC51003

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*69 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*72 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*60 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*59 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1
Date Sampled: 03/05/25 13:20
Percent Solids: 64
Initial Volume: 10.3g
Final Volume: 4ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/11/25 18:00

8151A Chlorinated Herbicides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2,4,5-T	ND (0.014)	---	8151A	---	1	03/14/25 5:58	D5C0281	DC51147
2,4,5-TP (Silvex)	ND (0.014)	---	8151A	---	1	03/14/25 5:58	D5C0281	DC51147
2,4-D	ND (0.071)	---	8151A	---	1	03/14/25 5:58	D5C0281	DC51147
2,4-DB	ND (0.072)	---	8151A	---	1	03/14/25 5:58	D5C0281	DC51147
Dalapon	ND (0.069)	---	8151A	---	1	03/14/25 5:58	D5C0281	DC51147
Dicamba	ND (0.014)	---	8151A	---	1	03/14/25 5:58	D5C0281	DC51147
Dichlorprop	ND (0.071)	---	8151A	---	1	03/14/25 5:58	D5C0281	DC51147
MCPA	ND (3.52)	---	8151A	---	1	03/14/25 5:58	D5C0281	DC51147
MCPP	ND (3.56)	---	8151A	---	1	03/14/25 5:58	D5C0281	DC51147

	%Recovery	Qualifier	Limits
Surrogate: DCAA	*92 %*		*30-150*
Surrogate: DCAA [2C]	*89 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1
Date Sampled: 03/05/25 13:20
Percent Solids: 64
Initial Volume: 19.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JDN
Prepared: 3/7/25 22:15

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons (C9-C36)	ND (16.3)	---	8100M	---	1	03/10/25 20:03	---	DC50744

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	72 %		40-140

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1
Date Sampled: 03/05/25 13:20
Percent Solids: 64

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-01
Sample Matrix: Sediment

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 39** (5)	---	9050A	---	1	JLK	03/07/25 21:26	umhos/cm	DC50736
Corrosivity (pH)	**5.96** (N/A)	---	9045	---	1	CCP	03/07/25 20:17	S.U.	DC50725
Corrosivity (pH) Sample Temp	**19.6**	---	2550B	---	1	CCP	03/07/25 20:17	°C	DC50725
Flashpoint	**> 200** (N/A)	---	1010A	---	1	CCP	03/10/25 15:30	°F	DC51036
Percent Moisture	**36** (1)	---	2540G	---	1	CCP	03/07/25 20:00	%	DC50727
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Total Organic Carbon (Average)	**50600** (500)	---	LK	---	1	CCP	03/20/25 12:02	mg/kg	[CALC]

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1
Date Sampled: 03/05/25 13:20

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-01
Sample Matrix: Sediment

Subcontracted Analysis

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Coal/Wood Ash Determination	**See Attached** (N/A)	---		---				%	
Grain Size	**See Attached** (N/A)	---		---				%	
Water Content	**See Attached** (N/A)	---		---				%	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1
Date Sampled: 03/05/25 13:20
Percent Solids: 64
Initial Volume: 29.9g
Final Volume: 2ml
Extraction Method: 3540C

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JLG
Prepared: 3/11/25 10:28

8082 Polychlorinated Biphenyls (PCB) / Congeners

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
BZ#8	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#18	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#28	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#44	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#52	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#66	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#101	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#105	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#118	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#128	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#138	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#153 [2C]	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#170	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#180	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#187	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#195	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#206	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104
BZ#209	ND (0.00042)	---	8082A Cong	---	1	03/12/25 16:44	D5C0244	DC51104

	%Recovery	Qualifier	Limits
Surrogate: Tetrachloro-m-xylene	*80 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*77 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1
Date Sampled: 03/05/25 13:20
Percent Solids: 64

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-01RE1
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Lead	**84.7** (3.08)	---	6010D	---	1	CEV	04/10/25 15:12	5.06 100	DD51014

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1
Date Sampled: 03/05/25 13:20
Percent Solids: 64

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-01RE2
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Lead	**85.1** (2.97)	---	6010D	---	1	CEV	04/10/25 15:14	5.25 100	DD51014

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2
Date Sampled: 03/05/25 11:15
Percent Solids: 28

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-02
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**8.23** (3.37)	---	6010D	---	1	CEV	03/10/25 18:48	5.25 100	DC51007
Barium	**238** (1.35)	---	6010D	---	1	CEV	03/10/25 18:48	5.25 100	DC51007
Cadmium	**1.98** (0.67)	---	6010D	---	1	CEV	03/10/25 18:48	5.25 100	DC51007
Chromium	**32.5** (1.35)	---	6010D	---	1	CEV	03/10/25 18:48	5.25 100	DC51007
Lead	**339** (6.75)	---	6010D	---	1	CEV	03/10/25 18:48	5.25 100	DC51007
Mercury	**0.358** (0.035)	---	7471B	---	1	BJV	03/11/25 12:45	2.01 40	DC51008
Selenium	ND (6.75)	---	6010D	---	1	CEV	03/10/25 18:48	5.25 100	DC51007
Silver	ND (0.67)	---	6010D	---	1	CEV	03/10/25 18:48	5.25 100	DC51007

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2
Date Sampled: 03/05/25 11:15
Percent Solids: 28
Initial Volume: 19.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-02
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.092)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
1,2,4-Trichlorobenzene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
1,2-Dichlorobenzene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
1,3-Dichlorobenzene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
1,4-Dichlorobenzene	ND (0.461)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
2,4,5-Trichlorophenol	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
2,4,6-Trichlorophenol	ND (0.461)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
2,4-Dichlorophenol	ND (0.461)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
2,4-Dimethylphenol	ND (0.646)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
2,4-Dinitrophenol	ND (1.85)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
2,4-Dinitrotoluene	ND (0.461)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
2,6-Dinitrotoluene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
2-Chloronaphthalene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
2-Chlorophenol	ND (0.461)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
2-Methylnaphthalene	ND (0.461)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
2-Methylphenol	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
2-Nitrophenol	ND (1.85)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
3,3´-Dichlorobenzidine	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
3+4-Methylphenol	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
4-Bromophenyl-phenylether	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
4-Chloroaniline	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
4-Nitrophenol	ND (3.69)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Acenaphthene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Acenaphthylene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Acetophenone	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Aniline	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Anthracene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2
Date Sampled: 03/05/25 11:15
Percent Solids: 28
Initial Volume: 19.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-02
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Benzo(a)anthracene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Benzo(a)pyrene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Benzo(b)fluoranthene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Benzo(g,h,i)perylene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Benzo(k)fluoranthene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
bis(2-Chloroethoxy)methane	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
bis(2-Chloroethyl)ether	ND (0.461)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
bis(2-chloroisopropyl)Ether	ND (0.461)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
bis(2-Ethylhexyl)phthalate	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Butylbenzylphthalate	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Chrysene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Dibenzo(a,h)Anthracene	ND (0.461)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Dibenzofuran	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Diethylphthalate	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Dimethylphthalate	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Di-n-butylphthalate	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Di-n-octylphthalate	ND (1.85)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Fluoranthene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Fluorene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Hexachlorobenzene	ND (0.461)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Hexachlorobutadiene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Hexachloroethane	ND (0.461)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Indeno(1,2,3-cd)Pyrene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Isophorone	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Naphthalene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Nitrobenzene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2
Date Sampled: 03/05/25 11:15
Percent Solids: 28
Initial Volume: 19.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-02
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Pentachlorophenol	ND (1.85)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Phenanthrene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Phenol	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743
Pyrene	ND (0.923)	---	8270E	---	1	TJ	03/10/25 20:54	D5C0182	DC50743

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*75 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*84 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*70 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*71 %*		*30-130*
Surrogate: 2-Fluorophenol	*68 %*		*30-130*
Surrogate: Nitrobenzene-d5	*61 %*		*30-130*
Surrogate: Phenol-d6	*69 %*		*30-130*
Surrogate: p-Terphenyl-d14	*77 %*		*30-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2
Date Sampled: 03/05/25 11:15
Percent Solids: 28
Initial Volume: 25.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-02
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 3/10/25 16:33

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (35.1)	---	MADEP-EPH	---	1	JDN	03/12/25 1:32	D5C0218	DC51006
C19-C36 Aliphatics1	ND (35.1)	---	MADEP-EPH	---	1	JDN	03/12/25 1:32	D5C0218	DC51006
C11-C22 Unadjusted Aromatics1	ND (35.1)	---	EPH8270	---	1	DMC	03/11/25 15:27	D5C0203	DC51006
C11-C22 Aromatics1,2	ND (35.6)	---	EPH8270	---		TJ	03/12/25 11:20	---	[CALC]
2-Methylnaphthalene	ND (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Acenaphthene	ND (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Naphthalene	ND (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Phenanthrene	**0.059** (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Acenaphthylene	ND (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Anthracene	ND (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Benzo(a)anthracene	**0.050** (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Benzo(a)pyrene	**0.062** (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Benzo(b)fluoranthene	**0.054** (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Benzo(g,h,i)perylene	**0.040** (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Benzo(k)fluoranthene	**0.046** (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Chrysene	**0.062** (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Dibenzo(a,h)Anthracene	ND (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Fluoranthene	**0.109** (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Fluorene	ND (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Indeno(1,2,3-cd)Pyrene	**0.040** (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006
Pyrene	**0.093** (0.028)	---	EPH8270SIM	---	1	TJ	03/12/25 11:20	D5C0229	DC51006

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*66 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*101 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*98 %*		*40-140*
Surrogate: O-Terphenyl	*72 %*		*40-140*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2
Date Sampled: 03/05/25 11:15
Percent Solids: 28
Initial Volume: 20g
Final Volume: 5ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-02
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/10/25 10:18

8081B Organochlorine Pesticides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
4,4´-DDD	**0.0340** (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
4,4´-DDE [2C]	**P, LC 0.0229** (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
4,4´-DDT	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
Aldrin	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
alpha-BHC	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
alpha-Chlordane	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
beta-BHC	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
Chlordane (Total)	ND (0.0709)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
delta-BHC	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
Dieldrin	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
Endosulfan I [2C]	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
Endosulfan II	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
Endosulfan Sulfate	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
Endrin	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
Endrin Ketone	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
gamma-BHC (Lindane)	ND (0.0053)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
gamma-Chlordane	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
Heptachlor	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
Heptachlor Epoxide	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
Hexachlorobenzene	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003
Methoxychlor	ND (0.0089)	---	8081B	---	1	03/11/25 18:06	D5C0200	DC51003

	%Recovery	*Qualifier*	*Limits*
Surrogate: Decachlorobiphenyl	*55 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*55 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*51 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*42 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2
Date Sampled: 03/05/25 11:15
Percent Solids: 28
Initial Volume: 10.2g
Final Volume: 4ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-02
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/11/25 18:00

8151A Chlorinated Herbicides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2,4,5-T	ND (0.033)	---	8151A	---	1	03/14/25 6:25	D5C0281	DC51147
2,4,5-TP (Silvex)	ND (0.033)	---	8151A	---	1	03/14/25 6:25	D5C0281	DC51147
2,4-D	ND (0.163)	---	8151A	---	1	03/14/25 6:25	D5C0281	DC51147
2,4-DB	ND (0.165)	---	8151A	---	1	03/14/25 6:25	D5C0281	DC51147
Dalapon	ND (0.158)	---	8151A	---	1	03/14/25 6:25	D5C0281	DC51147
Dicamba	ND (0.033)	---	8151A	---	1	03/14/25 6:25	D5C0281	DC51147
Dichlorprop	ND (0.163)	---	8151A	---	1	03/14/25 6:25	D5C0281	DC51147
MCPA	ND (8.08)	---	8151A	---	1	03/14/25 6:25	D5C0281	DC51147
MCPP	ND (8.16)	---	8151A	---	1	03/14/25 6:25	D5C0281	DC51147

	%Recovery	Qualifier	Limits
Surrogate: DCAA	*79 %*		*30-150*
Surrogate: DCAA [2C]	*70 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2
Date Sampled: 03/05/25 11:15
Percent Solids: 28
Initial Volume: 19.5g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-02
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JDN
Prepared: 3/7/25 22:15

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons (C9-C36)	**144** (36.3)	---	8100M	---	1	03/10/25 20:34	---	DC50744

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*74 %*		*40-140*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2
Date Sampled: 03/05/25 11:15
Percent Solids: 28

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-02
Sample Matrix: Sediment

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 113** (5)	---	9050A	---	1	JLK	03/07/25 21:26	umhos/cm	DC50736
Corrosivity (pH)	**5.92** (N/A)	---	9045	---	1	CCP	03/07/25 20:17	S.U.	DC50725
Corrosivity (pH) Sample Temp	**19.0**	---	2550B	---	1	CCP	03/07/25 20:17	°C	DC50725
Flashpoint	**> 200** (N/A)	---	1010A	---	1	CCP	03/10/25 15:30	°F	DC51036
Percent Moisture	**72** (1)	---	2540G	---	1	CCP	03/07/25 20:00	%	DC50727
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Total Organic Carbon (Average)	**124000** (500)	---	LK	---	1	CCP	03/20/25 13:08	mg/kg	[CALC]

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2
Date Sampled: 03/05/25 11:15

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-02
Sample Matrix: Sediment

Subcontracted Analysis

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Grain Size	**See Attached** (N/A)	---		---				%	
Water Content	**See Attached** (N/A)	---		---				%	

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2
Date Sampled: 03/05/25 11:15
Percent Solids: 28
Initial Volume: 30.3g
Final Volume: 2ml
Extraction Method: 3540C

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-02
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JLG
Prepared: 3/11/25 10:28

8082 Polychlorinated Biphenyls (PCB) / Congeners

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
BZ#8	ND (0.00095)	---	8082A Cong	---	1	03/12/25 17:14	D5C0244	DC51104
BZ#18	ND (0.00095)	---	8082A Cong	---	1	03/12/25 17:14	D5C0244	DC51104
BZ#28	**0.00137** (0.00095)	---	8082A Cong	---	1	03/12/25 17:14	D5C0244	DC51104
BZ#44	**0.00313** (0.00095)	---	8082A Cong	---	1	03/12/25 17:14	D5C0244	DC51104
BZ#52	**0.00525** (0.00095)	---	8082A Cong	---	1	03/12/25 17:14	D5C0244	DC51104
BZ#66	ND (0.00095)	---	8082A Cong	---	1	03/12/25 17:14	D5C0244	DC51104
BZ#101	**0.0218** (0.00095)	---	8082A Cong	---	1	03/12/25 17:14	D5C0244	DC51104
BZ#105	**P, LC 0.00343** (0.00095)	---	8082A Cong	---	1	03/12/25 17:14	D5C0244	DC51104
BZ#118	**0.0153** (0.00095)	---	8082A Cong	---	1	03/12/25 17:14	D5C0244	DC51104
BZ#128 [2C]	**0.00513** (0.00095)	---	8082A Cong	---	1	03/12/25 17:14	D5C0244	DC51104
BZ#138 [2C]	**0.110** (0.00947)	---	8082A Cong	---	10	03/13/25 19:08	D5C0244	DC51104
BZ#153	**0.154** (0.00947)	---	8082A Cong	---	10	03/13/25 19:08	D5C0244	DC51104
BZ#170	**P, LC 0.0903** (0.00947)	---	8082A Cong	---	10	03/13/25 19:08	D5C0244	DC51104
BZ#180	**0.259** (0.0189)	---	8082A Cong	---	20	03/13/25 20:39	D5C0244	DC51104
BZ#187 [2C]	**0.147** (0.00947)	---	8082A Cong	---	10	03/13/25 19:08	D5C0244	DC51104
BZ#195	**0.0403** (0.00947)	---	8082A Cong	---	10	03/13/25 19:08	D5C0244	DC51104
BZ#206 [2C]	**0.0388** (0.00947)	---	8082A Cong	---	10	03/13/25 19:08	D5C0244	DC51104
BZ#209	**P, LC 0.00216** (0.00095)	---	8082A Cong	---	1	03/12/25 17:14	D5C0244	DC51104

	%Recovery	Qualifier	Limits
Surrogate: Tetrachloro-m-xylene	*85 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*82 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3
Date Sampled: 03/05/25 11:00
Percent Solids: 52

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-03
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**EL** ND (1.81)	---	6010D	---	1	CEV	03/10/25 18:51	5.32 100	DC51007
Barium	**20.8** (0.73)	---	6010D	---	1	CEV	03/10/25 18:51	5.32 100	DC51007
Cadmium	ND (0.36)	---	6010D	---	1	CEV	03/10/25 18:51	5.32 100	DC51007
Chromium	**6.22** (0.73)	---	6010D	---	1	CEV	03/10/25 18:51	5.32 100	DC51007
Lead	**42.5** (3.63)	---	6010D	---	1	CEV	03/10/25 18:51	5.32 100	DC51007
Mercury	**0.053** (0.018)	---	7471B	---	1	BJV	03/11/25 12:48	2.12 40	DC51008
Selenium	ND (3.63)	---	6010D	---	1	CEV	03/10/25 18:51	5.32 100	DC51007
Silver	ND (0.36)	---	6010D	---	1	CEV	03/10/25 18:51	5.32 100	DC51007

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3
Date Sampled: 03/05/25 11:00
Percent Solids: 52
Initial Volume: 19.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-03
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.050)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
1,2,4-Trichlorobenzene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
1,2-Dichlorobenzene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
1,3-Dichlorobenzene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
1,4-Dichlorobenzene	ND (0.252)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
2,4,5-Trichlorophenol	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
2,4,6-Trichlorophenol	ND (0.252)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
2,4-Dichlorophenol	ND (0.252)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
2,4-Dimethylphenol	ND (0.353)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
2,4-Dinitrophenol	ND (1.01)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
2,4-Dinitrotoluene	ND (0.252)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
2,6-Dinitrotoluene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
2-Chloronaphthalene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
2-Chlorophenol	ND (0.252)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
2-Methylnaphthalene	ND (0.252)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
2-Methylphenol	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
2-Nitrophenol	ND (1.01)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
3,3′-Dichlorobenzidine	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
3+4-Methylphenol	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
4-Bromophenyl-phenylether	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
4-Chloroaniline	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
4-Nitrophenol	ND (2.02)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Acenaphthene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Acenaphthylene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Acetophenone	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Aniline	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Anthracene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3
Date Sampled: 03/05/25 11:00
Percent Solids: 52
Initial Volume: 19.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-03
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Benzo(a)anthracene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Benzo(a)pyrene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Benzo(b)fluoranthene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Benzo(g,h,i)perylene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Benzo(k)fluoranthene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
bis(2-Chloroethoxy)methane	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
bis(2-Chloroethyl)ether	ND (0.252)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
bis(2-chloroisopropyl)Ether	ND (0.252)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
bis(2-Ethylhexyl)phthalate	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Butylbenzylphthalate	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Chrysene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Dibenzo(a,h)Anthracene	ND (0.252)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Dibenzofuran	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Diethylphthalate	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Dimethylphthalate	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Di-n-butylphthalate	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Di-n-octylphthalate	ND (1.01)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Fluoranthene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Fluorene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Hexachlorobenzene	ND (0.252)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Hexachlorobutadiene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Hexachloroethane	ND (0.252)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Indeno(1,2,3-cd)Pyrene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Isophorone	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Naphthalene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Nitrobenzene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3
Date Sampled: 03/05/25 11:00
Percent Solids: 52
Initial Volume: 19.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-03
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Pentachlorophenol	ND (1.01)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Phenanthrene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Phenol	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743
Pyrene	ND (0.505)	---	8270E	---	1	TJ	03/10/25 21:25	D5C0182	DC50743

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*95 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*111 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*91 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*94 %*		*30-130*
Surrogate: 2-Fluorophenol	*88 %*		*30-130*
Surrogate: Nitrobenzene-d5	*81 %*		*30-130*
Surrogate: Phenol-d6	*88 %*		*30-130*
Surrogate: p-Terphenyl-d14	*100 %*		*30-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3
Date Sampled: 03/05/25 11:00
Percent Solids: 52
Initial Volume: 24.9g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-03
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 3/10/25 16:33

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (19.4)	---	MADEP-EPH	---	1	JDN	03/12/25 2:07	D5C0218	DC51006
C19-C36 Aliphatics1	ND (19.4)	---	MADEP-EPH	---	1	JDN	03/12/25 2:07	D5C0218	DC51006
C11-C22 Unadjusted Aromatics1	ND (19.4)	---	EPH8270	---	1	DMC	03/11/25 16:05	D5C0203	DC51006
C11-C22 Aromatics1,2	ND (19.6)	---	EPH8270	---		TJ	03/12/25 11:49	---	[CALC]
2-Methylnaphthalene	ND (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Acenaphthene	ND (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Naphthalene	**0.020** (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Phenanthrene	**0.037** (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Acenaphthylene	ND (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Anthracene	ND (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Benzo(a)anthracene	**0.032** (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Benzo(a)pyrene	**0.041** (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Benzo(b)fluoranthene	**0.036** (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Benzo(g,h,i)perylene	**0.028** (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Benzo(k)fluoranthene	**0.031** (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Chrysene	**0.040** (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Dibenzo(a,h)Anthracene	**0.017** (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Fluoranthene	**0.066** (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Fluorene	ND (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Indeno(1,2,3-cd)Pyrene	**0.027** (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006
Pyrene	**0.059** (0.015)	---	EPH8270SIM	---	1	TJ	03/12/25 11:49	D5C0229	DC51006

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*65 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*100 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*100 %*		*40-140*
Surrogate: O-Terphenyl	*81 %*		*40-140*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3
Date Sampled: 03/05/25 11:00
Percent Solids: 52
Initial Volume: 20g
Final Volume: 5ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-03
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/10/25 10:18

8081B Organochlorine Pesticides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
4,4´-DDD	**0.0086** (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
4,4´-DDE [2C]	**0.0217** (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
4,4´-DDT [2C]	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
Aldrin	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
alpha-BHC	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
alpha-Chlordane	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
beta-BHC	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
Chlordane (Total)	ND (0.0386)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
delta-BHC	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
Dieldrin	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
Endosulfan I	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
Endosulfan II	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
Endosulfan Sulfate	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
Endrin	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
Endrin Ketone	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
gamma-BHC (Lindane)	ND (0.0029)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
gamma-Chlordane	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
Heptachlor	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
Heptachlor Epoxide	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
Hexachlorobenzene	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003
Methoxychlor	ND (0.0048)	---	8081B	---	1	03/11/25 18:34	D5C0200	DC51003

	%Recovery	*Qualifier*	*Limits*
Surrogate: Decachlorobiphenyl	*59 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*114 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*58 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*54 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3
Date Sampled: 03/05/25 11:00
Percent Solids: 52
Initial Volume: 10.3g
Final Volume: 4ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-03
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/11/25 18:00

8151A Chlorinated Herbicides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2,4,5-T	ND (0.018)	---	8151A	---	1	03/14/25 6:51	D5C0281	DC51147
2,4,5-TP (Silvex)	ND (0.018)	---	8151A	---	1	03/14/25 6:51	D5C0281	DC51147
2,4-D	ND (0.088)	---	8151A	---	1	03/14/25 6:51	D5C0281	DC51147
2,4-DB	ND (0.089)	---	8151A	---	1	03/14/25 6:51	D5C0281	DC51147
Dalapon	ND (0.085)	---	8151A	---	1	03/14/25 6:51	D5C0281	DC51147
Dicamba	ND (0.018)	---	8151A	---	1	03/14/25 6:51	D5C0281	DC51147
Dichlorprop	ND (0.088)	---	8151A	---	1	03/14/25 6:51	D5C0281	DC51147
MCPA	ND (4.35)	---	8151A	---	1	03/14/25 6:51	D5C0281	DC51147
MCPP	ND (4.40)	---	8151A	---	1	03/14/25 6:51	D5C0281	DC51147

	%Recovery	Qualifier	Limits
Surrogate: DCAA	*74 %*		*30-150*
Surrogate: DCAA [2C]	*69 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3
Date Sampled: 03/05/25 11:00
Percent Solids: 52
Initial Volume: 19.9g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-03
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JDN
Prepared: 3/7/25 22:15

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons (C9-C36)	**62.6** (19.4)	---	8100M	---	1	03/10/25 20:03	---	DC50744

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	59 %		40-140

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3
Date Sampled: 03/05/25 11:00
Percent Solids: 52

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-03
Sample Matrix: Sediment

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 313** (5)	---	9050A	---	1	JLK	03/07/25 21:26	umhos/cm	DC50736
Corrosivity (pH)	**5.93** (N/A)	---	9045	---	1	CCP	03/07/25 20:17	S.U.	DC50725
Corrosivity (pH) Sample Temp	**19.3**	---	2550B	---	1	CCP	03/07/25 20:17	°C	DC50725
Flashpoint	**> 200** (N/A)	---	1010A	---	1	CCP	03/10/25 15:30	°F	DC51036
Percent Moisture	**48** (1)	---	2540G	---	1	CCP	03/07/25 20:00	%	DC50727
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Total Organic Carbon (Average)	**83200** (500)	---	LK	---	1	CCP	03/20/25 13:58	mg/kg	[CALC]

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3
Date Sampled: 03/05/25 11:00

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-03
Sample Matrix: Sediment

Subcontracted Analysis

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Grain Size	**See Attached** (N/A)	---		---				%	
Water Content	**See Attached** (N/A)	---		---				%	

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3
Date Sampled: 03/05/25 11:00
Percent Solids: 52
Initial Volume: 29.9g
Final Volume: 2ml
Extraction Method: 3540C

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-03
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JLG
Prepared: 3/11/25 10:28

8082 Polychlorinated Biphenyls (PCB) / Congeners

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
BZ#8	ND (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#18	ND (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#28	ND (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#44	ND (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#52	ND (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#66	ND (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#101	**0.00199** (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#105	**P, LC 0.00124** (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#118	**0.00286** (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#128 [2C]	**0.00072** (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#138	**P, LC 0.00275** (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#153 [2C]	**P, LC 0.00171** (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#170 [2C]	**0.00070** (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#180	**0.00105** (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#187	**P, LC 0.00057** (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#195	ND (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#206	ND (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104
BZ#209	ND (0.00052)	---	8082A Cong	---	1	03/13/25 17:36	D5C0271	DC51104

	%Recovery	Qualifier	Limits
Surrogate: Tetrachloro-m-xylene	*78 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*76 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4
Date Sampled: 03/05/25 12:00
Percent Solids: 43

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-04
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**7.92** (2.13)	---	6010D	---	1	CEV	03/10/25 18:53	5.49 100	DC51007
Barium	**69.6** (0.85)	---	6010D	---	1	CEV	03/10/25 18:53	5.49 100	DC51007
Cadmium	ND (0.43)	---	6010D	---	1	CEV	03/10/25 18:53	5.49 100	DC51007
Chromium	**8.16** (0.85)	---	6010D	---	1	CEV	03/10/25 18:53	5.49 100	DC51007
Lead	**231** (4.26)	---	6010D	---	1	CEV	03/10/25 18:53	5.49 100	DC51007
Mercury	**0.402** (0.113)	---	7471B	---	5	BJV	03/11/25 14:16	2.05 40	DC51008
Selenium	ND (4.26)	---	6010D	---	1	CEV	03/10/25 18:53	5.49 100	DC51007
Silver	ND (0.43)	---	6010D	---	1	CEV	03/10/25 18:53	5.49 100	DC51007

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4
Date Sampled: 03/05/25 12:00
Percent Solids: 43
Initial Volume: 19.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-04
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	**0.909** (0.061)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
1,2,4-Trichlorobenzene	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
1,2-Dichlorobenzene	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
1,3-Dichlorobenzene	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
1,4-Dichlorobenzene	ND (0.305)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
2,4,5-Trichlorophenol	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
2,4,6-Trichlorophenol	ND (0.305)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
2,4-Dichlorophenol	ND (0.305)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
2,4-Dimethylphenol	ND (0.426)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
2,4-Dinitrophenol	ND (1.22)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
2,4-Dinitrotoluene	ND (0.305)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
2,6-Dinitrotoluene	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
2-Chloronaphthalene	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
2-Chlorophenol	ND (0.305)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
2-Methylnaphthalene	**2.93** (0.305)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
2-Methylphenol	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
2-Nitrophenol	ND (1.22)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
3,3´-Dichlorobenzidine	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
3+4-Methylphenol	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
4-Bromophenyl-phenylether	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
4-Chloroaniline	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
4-Nitrophenol	ND (2.44)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Acenaphthene	**15.5** (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Acenaphthylene	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Acetophenone	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Aniline	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Anthracene	**32.4** (6.09)	---	8270E	---	10	TJ	03/11/25 21:49	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4
Date Sampled: 03/05/25 12:00
Percent Solids: 43
Initial Volume: 19.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-04
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Benzo(a)anthracene	**51.2** (6.09)	---	8270E	---	10	TJ	03/11/25 21:49	D5C0182	DC50743
Benzo(a)pyrene	**49.8** (6.09)	---	8270E	---	10	TJ	03/11/25 21:49	D5C0182	DC50743
Benzo(b)fluoranthene	**52.1** (6.09)	---	8270E	---	10	TJ	03/11/25 21:49	D5C0182	DC50743
Benzo(g,h,i)perylene	**30.3** (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Benzo(k)fluoranthene	**20.5** (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
bis(2-Chloroethoxy)methane	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
bis(2-Chloroethyl)ether	ND (0.305)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
bis(2-chloroisopropyl)Ether	ND (0.305)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
bis(2-Ethylhexyl)phthalate	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Butylbenzylphthalate	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Chrysene	**54.5** (6.09)	---	8270E	---	10	TJ	03/11/25 21:49	D5C0182	DC50743
Dibenzo(a,h)Anthracene	**6.99** (0.305)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Dibenzofuran	**10.5** (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Diethylphthalate	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Dimethylphthalate	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Di-n-butylphthalate	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Di-n-octylphthalate	ND (1.22)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Fluoranthene	**172** (6.09)	---	8270E	---	10	TJ	03/11/25 21:49	D5C0182	DC50743
Fluorene	**18.2** (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Hexachlorobenzene	ND (0.305)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Hexachlorobutadiene	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Hexachloroethane	ND (0.305)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Indeno(1,2,3-cd)Pyrene	**29.7** (6.09)	---	8270E	---	10	TJ	03/11/25 21:49	D5C0182	DC50743
Isophorone	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Naphthalene	**3.30** (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Nitrobenzene	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4
Date Sampled: 03/05/25 12:00
Percent Solids: 43
Initial Volume: 19.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-04
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Pentachlorophenol	ND (1.22)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Phenanthrene	**140** (6.09)	---	8270E	---	10	TJ	03/11/25 21:49	D5C0182	DC50743
Phenol	ND (0.609)	---	8270E	---	1	TJ	03/10/25 21:55	D5C0182	DC50743
Pyrene	**123** (6.09)	---	8270E	---	10	TJ	03/11/25 21:49	D5C0182	DC50743

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*67 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*66 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*65 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*65 %*		*30-130*
Surrogate: 2-Fluorophenol	*64 %*		*30-130*
Surrogate: Nitrobenzene-d5	*55 %*		*30-130*
Surrogate: Phenol-d6	*62 %*		*30-130*
Surrogate: p-Terphenyl-d14	*71 %*		*30-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4
Date Sampled: 03/05/25 12:00
Percent Solids: 43
Initial Volume: 25.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-04
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 3/10/25 16:33

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (23.3)	---	MADEP-EPH	---	1	JDN	03/12/25 2:41	D5C0218	DC51006
C19-C36 Aliphatics1	ND (23.3)	---	MADEP-EPH	---	1	JDN	03/12/25 2:41	D5C0218	DC51006
C11-C22 Unadjusted Aromatics1	**116** (23.3)	---	EPH8270	---	1	DMC	03/11/25 16:42	D5C0203	DC51006
C11-C22 Aromatics1,2	**76.1** (24.9)	---	EPH8270	---		TJ	03/13/25 7:12	---	[CALC]
2-Methylnaphthalene	ND (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Acenaphthene	**0.536** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Naphthalene	**0.106** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Phenanthrene	**5.74** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Acenaphthylene	ND (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Anthracene	**1.42** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Benzo(a)anthracene	**3.06** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Benzo(a)pyrene	**2.84** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Benzo(b)fluoranthene	**2.19** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Benzo(g,h,i)perylene	**1.60** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Benzo(k)fluoranthene	**2.15** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Chrysene	**2.70** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Dibenzo(a,h)Anthracene	**0.808** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Fluoranthene	**7.86** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Fluorene	**0.582** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Indeno(1,2,3-cd)Pyrene	**1.44** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006
Pyrene	**6.83** (0.093)	---	EPH8270SIM	---	5	TJ	03/13/25 7:12	D5C0256	DC51006

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*66 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*102 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*103 %*		*40-140*
Surrogate: O-Terphenyl	*82 %*		*40-140*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4
Date Sampled: 03/05/25 12:00
Percent Solids: 43
Initial Volume: 20.3g
Final Volume: 5ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-04
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/10/25 10:18

8081B Organochlorine Pesticides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
4,4´-DDD	**0.227** (0.0576)	---	8081B	---	10	03/12/25 15:03	D5C0200	DC51003
4,4´-DDE	**0.352** (0.0576)	---	8081B	---	10	03/12/25 15:03	D5C0200	DC51003
4,4´-DDT [2C]	**0.0342** (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
Aldrin	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
alpha-BHC	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
alpha-Chlordane	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
beta-BHC	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
Chlordane (Total)	ND (0.0461)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
delta-BHC	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
Dieldrin	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
Endosulfan I	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
Endosulfan II	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
Endosulfan Sulfate	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
Endrin	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
Endrin Ketone	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
gamma-BHC (Lindane)	ND (0.0035)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
gamma-Chlordane	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
Heptachlor	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
Heptachlor Epoxide	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
Hexachlorobenzene	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003
Methoxychlor [2C]	ND (0.0058)	---	8081B	---	1	03/11/25 19:02	D5C0200	DC51003

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*57 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*60 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*49 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*42 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4
Date Sampled: 03/05/25 12:00
Percent Solids: 43
Initial Volume: 10.6g
Final Volume: 4ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-04
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/11/25 18:00

8151A Chlorinated Herbicides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2,4,5-T	ND (0.021)	---	8151A	---	1	03/14/25 7:17	D5C0281	DC51147
2,4,5-TP (Silvex)	ND (0.021)	---	8151A	---	1	03/14/25 7:17	D5C0281	DC51147
2,4-D	ND (0.104)	---	8151A	---	1	03/14/25 7:17	D5C0281	DC51147
2,4-DB	ND (0.105)	---	8151A	---	1	03/14/25 7:17	D5C0281	DC51147
Dalapon	ND (0.100)	---	8151A	---	1	03/14/25 7:17	D5C0281	DC51147
Dicamba	ND (0.021)	---	8151A	---	1	03/14/25 7:17	D5C0281	DC51147
Dichlorprop	ND (0.104)	---	8151A	---	1	03/14/25 7:17	D5C0281	DC51147
MCPA	ND (5.13)	---	8151A	---	1	03/14/25 7:17	D5C0281	DC51147
MCPP	ND (5.19)	---	8151A	---	1	03/14/25 7:17	D5C0281	DC51147

	%Recovery	Qualifier	Limits
Surrogate: DCAA	*71 %*		*30-150*
Surrogate: DCAA [2C]	*61 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4
Date Sampled: 03/05/25 12:00
Percent Solids: 43
Initial Volume: 19.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-04
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JDN
Prepared: 3/7/25 22:15

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons (C9-C36)	**245** (24.4)	---	8100M	---	1	03/10/25 21:05	---	DC50744

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	65 %		40-140

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4
Date Sampled: 03/05/25 12:00
Percent Solids: 43

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-04
Sample Matrix: Sediment

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 96** (5)	---	9050A	---	1	JLK	03/07/25 21:26	umhos/cm	DC50736
Corrosivity (pH)	**6.36** (N/A)	---	9045	---	1	CCP	03/07/25 20:17	S.U.	DC50725
Corrosivity (pH) Sample Temp	**19.1**	---	2550B	---	1	CCP	03/07/25 20:17	°C	DC50725
Flashpoint	**> 200** (N/A)	---	1010A	---	1	CCP	03/10/25 15:30	°F	DC51036
Percent Moisture	**57** (1)	---	2540G	---	1	CCP	03/07/25 20:00	%	DC50727
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Total Organic Carbon (Average)	**93000** (500)	---	LK	---	1	CCP	03/20/25 14:15	mg/kg	[CALC]

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4
Date Sampled: 03/05/25 12:00

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-04
Sample Matrix: Sediment

Subcontracted Analysis

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Coal/Wood Ash Determination	**See Attached** (N/A)	---		---				%	
Grain Size	**See Attached** (N/A)	---		---				%	
Water Content	**See Attached** (N/A)	---		---				%	

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4
Date Sampled: 03/05/25 12:00
Percent Solids: 43
Initial Volume: 30.1g
Final Volume: 2ml
Extraction Method: 3540C

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-04
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JLG
Prepared: 3/11/25 10:28

8082 Polychlorinated Biphenyls (PCB) / Congeners

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
BZ#8	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#18	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#28	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#44	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#52	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#66	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#101	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#105 [2C]	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#118 [2C]	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#128	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#138	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#153	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#170	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#180	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#187	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#195	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#206	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104
BZ#209	ND (0.00063)	---	8082A Cong	---	1	03/13/25 18:07	D5C0271	DC51104

	%Recovery	Qualifier	Limits
Surrogate: Tetrachloro-m-xylene	*33 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*32 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5
Date Sampled: 03/05/25 13:15
Percent Solids: 59

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-05
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**5.83** (1.68)	---	6010D	---	1	CEV	03/10/25 18:55	5.05 100	DC51007
Barium	**85.2** (0.67)	---	6010D	---	1	CEV	03/10/25 18:55	5.05 100	DC51007
Cadmium	ND (0.34)	---	6010D	---	1	CEV	03/10/25 18:55	5.05 100	DC51007
Chromium	**14.2** (0.67)	---	6010D	---	1	CEV	03/10/25 18:55	5.05 100	DC51007
Lead	**344** (3.36)	---	6010D	---	1	CEV	03/10/25 18:55	5.05 100	DC51007
Mercury	**0.274** (0.016)	---	7471B	---	1	BJV	03/11/25 12:52	2.05 40	DC51008
Selenium	ND (3.36)	---	6010D	---	1	CEV	03/10/25 18:55	5.05 100	DC51007
Silver	ND (0.34)	---	6010D	---	1	CEV	03/10/25 18:55	5.05 100	DC51007

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5
Date Sampled: 03/05/25 13:15
Percent Solids: 59

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-05
Sample Matrix: Sediment
Units: mg/L

Extraction Method: 3005A

1311 TCLP Metals

Analyte	Results (MRL)	MDL	Method	TCLP Limit	DF	Analyst	Analyzed	IV / FV	Batch
Lead	**0.45** (0.05)	---	1311/6010D	5	1	CEV	04/11/25 23:32	50 50	DD51127

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5
Date Sampled: 03/05/25 13:15
Percent Solids: 59
Initial Volume: 20.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-05
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.042)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
1,2,4-Trichlorobenzene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
1,2-Dichlorobenzene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
1,3-Dichlorobenzene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
1,4-Dichlorobenzene	ND (0.211)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
2,4,5-Trichlorophenol	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
2,4,6-Trichlorophenol	ND (0.211)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
2,4-Dichlorophenol	ND (0.211)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
2,4-Dimethylphenol	ND (0.295)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
2,4-Dinitrophenol	ND (0.844)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
2,4-Dinitrotoluene	ND (0.211)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
2,6-Dinitrotoluene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
2-Chloronaphthalene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
2-Chlorophenol	ND (0.211)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
2-Methylnaphthalene	ND (0.211)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
2-Methylphenol	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
2-Nitrophenol	ND (0.844)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
3,3′-Dichlorobenzidine	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
3+4-Methylphenol	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
4-Bromophenyl-phenylether	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
4-Chloroaniline	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
4-Nitrophenol	ND (1.69)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Acenaphthene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Acenaphthylene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Acetophenone	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Aniline	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Anthracene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5
Date Sampled: 03/05/25 13:15
Percent Solids: 59
Initial Volume: 20.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-05
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Benzo(a)anthracene	**0.463** (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Benzo(a)pyrene	**0.492** (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Benzo(b)fluoranthene	**0.558** (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Benzo(g,h,i)perylene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Benzo(k)fluoranthene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
bis(2-Chloroethoxy)methane	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
bis(2-Chloroethyl)ether	ND (0.211)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
bis(2-chloroisopropyl)Ether	ND (0.211)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
bis(2-Ethylhexyl)phthalate	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Butylbenzylphthalate	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Chrysene	**0.516** (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Dibenzo(a,h)Anthracene	ND (0.211)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Dibenzofuran	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Diethylphthalate	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Dimethylphthalate	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Di-n-butylphthalate	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Di-n-octylphthalate	ND (0.844)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Fluoranthene	**0.975** (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Fluorene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Hexachlorobenzene	ND (0.211)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Hexachlorobutadiene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Hexachloroethane	ND (0.211)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Indeno(1,2,3-cd)Pyrene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Isophorone	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Naphthalene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Nitrobenzene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5
Date Sampled: 03/05/25 13:15
Percent Solids: 59
Initial Volume: 20.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-05
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Pentachlorophenol	ND (0.844)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Phenanthrene	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Phenol	ND (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743
Pyrene	**0.786** (0.422)	---	8270E	---	1	TJ	03/10/25 22:26	D5C0182	DC50743

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*91 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*99 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*88 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*92 %*		*30-130*
Surrogate: 2-Fluorophenol	*83 %*		*30-130*
Surrogate: Nitrobenzene-d5	*83 %*		*30-130*
Surrogate: Phenol-d6	*89 %*		*30-130*
Surrogate: p-Terphenyl-d14	*98 %*		*30-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5
Date Sampled: 03/05/25 13:15
Percent Solids: 59
Initial Volume: 24.9g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-05
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 3/10/25 16:33

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (17.0)	---	MADEP-EPH	---	1	JDN	03/12/25 3:16	D5C0218	DC51006
C19-C36 Aliphatics1	**66.3** (17.0)	---	MADEP-EPH	---	1	JDN	03/12/25 3:16	D5C0218	DC51006
C11-C22 Unadjusted Aromatics1	**88.4** (17.0)	---	EPH8270	---	1	DMC	03/11/25 17:20	D5C0203	DC51006
C11-C22 Aromatics1,2	**56.3** (17.5)	---	EPH8270	---		TJ	03/13/25 8:08	---	[CALC]
2-Methylnaphthalene	**0.051** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Acenaphthene	**0.043** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Naphthalene	**0.190** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Phenanthrene	**2.00** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Acenaphthylene	**0.225** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Anthracene	**0.417** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Benzo(a)anthracene	**2.98** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Benzo(a)pyrene	**2.24** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Benzo(b)fluoranthene	**1.90** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Benzo(g,h,i)perylene	**1.49** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Benzo(k)fluoranthene	**2.31** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Chrysene	**2.95** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Dibenzo(a,h)Anthracene	**0.716** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Fluoranthene	**5.95** (0.136)	---	EPH8270SIM	---	10	TJ	03/13/25 8:08	D5C0256	DC51006
Fluorene	**0.099** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Indeno(1,2,3-cd)Pyrene	**1.21** (0.014)	---	EPH8270SIM	---	1	TJ	03/13/25 7:40	D5C0256	DC51006
Pyrene	**7.28** (0.136)	---	EPH8270SIM	---	10	TJ	03/13/25 8:08	D5C0256	DC51006

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*72 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*97 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*95 %*		*40-140*
Surrogate: O-Terphenyl	*71 %*		*40-140*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5
Date Sampled: 03/05/25 13:15
Percent Solids: 59
Initial Volume: 19.9g
Final Volume: 5ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-05
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/10/25 10:18

8081B Organochlorine Pesticides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
4,4´-DDD [2C]	**P, LC 0.0103** (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
4,4´-DDE [2C]	**0.0241** (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
4,4´-DDT [2C]	**0.0096** (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
Aldrin	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
alpha-BHC	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
alpha-Chlordane	**0.0060** (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
beta-BHC	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
Chlordane (Total)	ND (0.0341)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
delta-BHC	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
Dieldrin	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
Endosulfan I	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
Endosulfan II	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
Endosulfan Sulfate	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
Endrin	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
Endrin Ketone	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
gamma-BHC (Lindane)	ND (0.0026)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
gamma-Chlordane	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
Heptachlor	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
Heptachlor Epoxide	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
Hexachlorobenzene	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003
Methoxychlor	ND (0.0043)	---	8081B	---	1	03/11/25 19:29	D5C0200	DC51003

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*54 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*67 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*63 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*55 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5
Date Sampled: 03/05/25 13:15
Percent Solids: 59
Initial Volume: 10.2g
Final Volume: 4ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-05
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/11/25 18:00

8151A Chlorinated Herbicides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2,4,5-T	ND (0.016)	---	8151A	---	1	03/14/25 7:43	D5C0281	DC51147
2,4,5-TP (Silvex)	ND (0.016)	---	8151A	---	1	03/14/25 7:43	D5C0281	DC51147
2,4-D	ND (0.078)	---	8151A	---	1	03/14/25 7:43	D5C0281	DC51147
2,4-DB	ND (0.079)	---	8151A	---	1	03/14/25 7:43	D5C0281	DC51147
Dalapon	ND (0.076)	---	8151A	---	1	03/14/25 7:43	D5C0281	DC51147
Dicamba	ND (0.016)	---	8151A	---	1	03/14/25 7:43	D5C0281	DC51147
Dichlorprop	ND (0.078)	---	8151A	---	1	03/14/25 7:43	D5C0281	DC51147
MCPA	ND (3.87)	---	8151A	---	1	03/14/25 7:43	D5C0281	DC51147
MCPP	ND (3.91)	---	8151A	---	1	03/14/25 7:43	D5C0281	DC51147

	%Recovery	Qualifier	Limits
Surrogate: DCAA	*76 %*		*30-150*
Surrogate: DCAA [2C]	*66 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5
Date Sampled: 03/05/25 13:15
Percent Solids: 59
Initial Volume: 20g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-05
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JDN
Prepared: 3/7/25 22:15

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons (C9-C36)	**150** (17.0)	---	8100M	---	1	03/10/25 21:36	---	DC50744

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	72 %		40-140

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5
Date Sampled: 03/05/25 13:15
Percent Solids: 59

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-05
Sample Matrix: Sediment

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 79** (5)	---	9050A	---	1	JLK	03/07/25 21:26	umhos/cm	DC50736
Corrosivity (pH)	**6.31** (N/A)	---	9045	---	1	CCP	03/07/25 20:17	S.U.	DC50725
Corrosivity (pH) Sample Temp	**19.3**	---	2550B	---	1	CCP	03/07/25 20:17	°C	DC50725
Flashpoint	**> 200** (N/A)	---	1010A	---	1	CCP	03/10/25 15:30	°F	DC51036
Percent Moisture	**41** (1)	---	2540G	---	1	CCP	03/07/25 20:00	%	DC50727
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Total Organic Carbon (Average)	**63400** (500)	---	LK	---	1	CCP	03/20/25 14:32	mg/kg	[CALC]

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5
Date Sampled: 03/05/25 13:15

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-05
Sample Matrix: Sediment

Subcontracted Analysis

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Coal/Wood Ash Determination	**See Attached** (N/A)	---		---				%	
Grain Size	**See Attached** (N/A)	---		---				%	
Water Content	**See Attached** (N/A)	---		---				%	

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5
Date Sampled: 03/05/25 13:15
Percent Solids: 59

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-05
Sample Matrix: Sediment
Units: °C

Extraction Method: 1311

TCLP Extraction by 1311 - Metals

Analyte	Results (MRL)	MDL	Method	TCLP Limit	DF	Analyst	Analyzed	IV / FV	Batch
Temperature (Min C)	**20.0** (N/A)	---	1311	---	1	RAP	04/11/25 9:51		DD51030
Temperature (Max C)	**21.5** (N/A)	---	1311	---	1	RAP	04/11/25 9:51		DD51030
Temperature (Range)	**Temperature is not within 23 +/-2 °C.** (N/A)								

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5
Date Sampled: 03/05/25 13:15
Percent Solids: 59
Initial Volume: 29.8g
Final Volume: 2ml
Extraction Method: 3540C

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-05
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JLG
Prepared: 3/11/25 10:28

8082 Polychlorinated Biphenyls (PCB) / Congeners

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
BZ#8	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#18	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#28	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#44	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#52	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#66	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#101	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#105	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#118	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#128	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#138	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#153	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#170	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#180 [2C]	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#187	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#195	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#206 [2C]	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104
BZ#209	ND (0.00046)	---	8082A Cong	---	1	03/13/25 18:37	D5C0271	DC51104

	%Recovery	Qualifier	Limits
Surrogate: Tetrachloro-m-xylene	*56 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*53 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6
Date Sampled: 03/05/25 12:30
Percent Solids: 46

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-06
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**10.8** (2.05)	---	6010D	---	1	CEV	03/10/25 18:57	5.33 100	DC51007
Barium	**77.1** (0.82)	---	6010D	---	1	CEV	03/10/25 18:57	5.33 100	DC51007
Cadmium	ND (0.41)	---	6010D	---	1	CEV	03/10/25 18:57	5.33 100	DC51007
Chromium	**13.6** (0.82)	---	6010D	---	1	CEV	03/10/25 18:57	5.33 100	DC51007
Lead	**358** (4.10)	---	6010D	---	1	CEV	03/10/25 18:57	5.33 100	DC51007
Mercury	**0.673** (0.108)	---	7471B	---	5	BJV	03/11/25 14:18	2.01 40	DC51008
Selenium	ND (4.10)	---	6010D	---	1	CEV	03/10/25 18:57	5.33 100	DC51007
Silver	ND (0.41)	---	6010D	---	1	CEV	03/10/25 18:57	5.33 100	DC51007

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6
Date Sampled: 03/05/25 12:30
Percent Solids: 46

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-06
Sample Matrix: Sediment
Units: mg/L

Extraction Method: 3005A

1311 TCLP Metals

Analyte	Results (MRL)	MDL	Method	TCLP Limit	DF	Analyst	Analyzed	IV / FV	Batch
Lead	**0.18** (0.05)	---	1311/6010D	5	1	CEV	04/11/25 23:54	50 50	DD51127

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6
Date Sampled: 03/05/25 12:30
Percent Solids: 46
Initial Volume: 19.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-06
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.056)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
1,2,4-Trichlorobenzene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
1,2-Dichlorobenzene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
1,3-Dichlorobenzene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
1,4-Dichlorobenzene	ND (0.282)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
2,4,5-Trichlorophenol	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
2,4,6-Trichlorophenol	ND (0.282)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
2,4-Dichlorophenol	ND (0.282)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
2,4-Dimethylphenol	ND (0.395)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
2,4-Dinitrophenol	ND (1.13)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
2,4-Dinitrotoluene	ND (0.282)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
2,6-Dinitrotoluene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
2-Chloronaphthalene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
2-Chlorophenol	ND (0.282)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
2-Methylnaphthalene	ND (0.282)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
2-Methylphenol	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
2-Nitrophenol	ND (1.13)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
3,3′-Dichlorobenzidine	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
3+4-Methylphenol	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
4-Bromophenyl-phenylether	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
4-Chloroaniline	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
4-Nitrophenol	ND (2.26)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Acenaphthene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Acenaphthylene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Acetophenone	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Aniline	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Anthracene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6
Date Sampled: 03/05/25 12:30
Percent Solids: 46
Initial Volume: 19.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-06
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Benzo(a)anthracene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Benzo(a)pyrene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Benzo(b)fluoranthene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Benzo(g,h,i)perylene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Benzo(k)fluoranthene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
bis(2-Chloroethoxy)methane	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
bis(2-Chloroethyl)ether	ND (0.282)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
bis(2-chloroisopropyl)Ether	ND (0.282)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
bis(2-Ethylhexyl)phthalate	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Butylbenzylphthalate	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Chrysene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Dibenzo(a,h)Anthracene	ND (0.282)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Dibenzofuran	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Diethylphthalate	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Dimethylphthalate	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Di-n-butylphthalate	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Di-n-octylphthalate	ND (1.13)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Fluoranthene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Fluorene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Hexachlorobenzene	ND (0.282)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Hexachlorobutadiene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Hexachloroethane	ND (0.282)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Indeno(1,2,3-cd)Pyrene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Isophorone	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Naphthalene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Nitrobenzene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6
Date Sampled: 03/05/25 12:30
Percent Solids: 46
Initial Volume: 19.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-06
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Pentachlorophenol	ND (1.13)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Phenanthrene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Phenol	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743
Pyrene	ND (0.564)	---	8270E	---	1	TJ	03/10/25 22:56	D5C0182	DC50743

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*84 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*90 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*78 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*81 %*		*30-130*
Surrogate: 2-Fluorophenol	*82 %*		*30-130*
Surrogate: Nitrobenzene-d5	*70 %*		*30-130*
Surrogate: Phenol-d6	*75 %*		*30-130*
Surrogate: p-Terphenyl-d14	*90 %*		*30-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6
Date Sampled: 03/05/25 12:30
Percent Solids: 46
Initial Volume: 24.8g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-06
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 3/10/25 16:33

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (22.1)	---	MADEP-EPH	---	1	JDN	03/12/25 3:50	D5C0218	DC51006
C19-C36 Aliphatics1	ND (22.1)	---	MADEP-EPH	---	1	JDN	03/12/25 3:50	D5C0218	DC51006
C11-C22 Unadjusted Aromatics1	ND (22.1)	---	EPH8270	---	1	DMC	03/11/25 17:57	D5C0203	DC51006
C11-C22 Aromatics1,2	ND (22.4)	---	EPH8270	---		TJ	03/13/25 8:36	---	[CALC]
2-Methylnaphthalene	ND (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Acenaphthene	ND (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Naphthalene	**0.045** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Phenanthrene	**0.425** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Acenaphthylene	**0.046** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Anthracene	**0.074** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Benzo(a)anthracene	**0.512** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Benzo(a)pyrene	**0.539** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Benzo(b)fluoranthene	**0.453** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Benzo(g,h,i)perylene	**0.326** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Benzo(k)fluoranthene	**0.416** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Chrysene	**0.521** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Dibenzo(a,h)Anthracene	**0.155** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Fluoranthene	**1.02** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Fluorene	**0.026** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Indeno(1,2,3-cd)Pyrene	**0.282** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006
Pyrene	**1.01** (0.018)	---	EPH8270SIM	---	1	TJ	03/13/25 8:36	D5C0256	DC51006

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*65 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*103 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*99 %*		*40-140*
Surrogate: O-Terphenyl	*81 %*		*40-140*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6
Date Sampled: 03/05/25 12:30
Percent Solids: 46
Initial Volume: 20.5g
Final Volume: 5ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-06
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/10/25 10:18

8081B Organochlorine Pesticides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
4,4´-DDD	**0.0263** (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
4,4´-DDE	**0.0847** (0.0267)	---	8081B	---	5	03/12/25 15:30	D5C0200	DC51003
4,4´-DDT [2C]	**0.0298** (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
Aldrin	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
alpha-BHC	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
alpha-Chlordane	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
beta-BHC	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
Chlordane (Total)	ND (0.0427)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
delta-BHC	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
Dieldrin	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
Endosulfan I	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
Endosulfan II	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
Endosulfan Sulfate	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
Endrin	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
Endrin Ketone	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
gamma-BHC (Lindane)	ND (0.0032)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
gamma-Chlordane	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
Heptachlor	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
Heptachlor Epoxide	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
Hexachlorobenzene	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003
Methoxychlor	ND (0.0053)	---	8081B	---	1	03/11/25 19:57	D5C0200	DC51003

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*68 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*71 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*68 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*60 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6
Date Sampled: 03/05/25 12:30
Percent Solids: 46
Initial Volume: 10.1g
Final Volume: 4ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-06
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/11/25 18:00

8151A Chlorinated Herbicides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2,4,5-T	ND (0.021)	---	8151A	---	1	03/14/25 8:09	D5C0281	DC51147
2,4,5-TP (Silvex)	ND (0.021)	---	8151A	---	1	03/14/25 8:09	D5C0281	DC51147
2,4-D	ND (0.102)	---	8151A	---	1	03/14/25 8:09	D5C0281	DC51147
2,4-DB	ND (0.103)	---	8151A	---	1	03/14/25 8:09	D5C0281	DC51147
Dalapon	ND (0.099)	---	8151A	---	1	03/14/25 8:09	D5C0281	DC51147
Dicamba	ND (0.020)	---	8151A	---	1	03/14/25 8:09	D5C0281	DC51147
Dichlorprop	ND (0.102)	---	8151A	---	1	03/14/25 8:09	D5C0281	DC51147
MCPA	ND (5.04)	---	8151A	---	1	03/14/25 8:09	D5C0281	DC51147
MCPP	ND (5.09)	---	8151A	---	1	03/14/25 8:09	D5C0281	DC51147

	%Recovery	Qualifier	Limits
Surrogate: DCAA	*63 %*		*30-150*
Surrogate: DCAA [2C]	*57 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6
Date Sampled: 03/05/25 12:30
Percent Solids: 46
Initial Volume: 20.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-06
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JDN
Prepared: 3/7/25 22:15

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons (C9-C36)	**59.6** (21.8)	---	8100M	---	1	03/10/25 22:07	---	DC50744

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	71 %		40-140

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6
Date Sampled: 03/05/25 12:30
Percent Solids: 46

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-06
Sample Matrix: Sediment

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 60** (5)	---	9050A	---	1	JLK	03/07/25 21:26	umhos/cm	DC50736
Corrosivity (pH)	**5.87** (N/A)	---	9045	---	1	CCP	03/07/25 20:17	S.U.	DC50725
Corrosivity (pH) Sample Temp	**19.3**	---	2550B	---	1	CCP	03/07/25 20:17	°C	DC50725
Flashpoint	**> 200** (N/A)	---	1010A	---	1	CCP	03/10/25 15:30	°F	DC51036
Percent Moisture	**54** (1)	---	2540G	---	1	CCP	03/07/25 20:00	%	DC50727
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Total Organic Carbon (Average)	**72100** (500)	---	LK	---	1	CCP	03/20/25 14:48	mg/kg	[CALC]

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6
Date Sampled: 03/05/25 12:30

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-06
Sample Matrix: Sediment

Subcontracted Analysis

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Coal/Wood Ash Determination	**See Attached** (N/A)	---		---				%	
Grain Size	**See Attached** (N/A)	---		---				%	
Water Content	**See Attached** (N/A)	---		---				%	

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6
Date Sampled: 03/05/25 12:30
Percent Solids: 46

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-06
Sample Matrix: Sediment
Units: °C

Extraction Method: 1311

TCLP Extraction by 1311 - Metals

Analyte	Results (MRL)	MDL	Method	TCLP Limit	DF	Analyst	Analyzed	IV / FV	Batch
Temperature (Min C)	**20.0** (N/A)	---	1311	---	1	RAP	04/11/25 9:51		DD51030
Temperature (Max C)	**21.5** (N/A)	---	1311	---	1	RAP	04/11/25 9:51		DD51030
Temperature (Range)	**Temperature is not within 23 +/-2 °C.** (N/A)								

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6
Date Sampled: 03/05/25 12:30
Percent Solids: 46
Initial Volume: 30.2g
Final Volume: 2ml
Extraction Method: 3540C

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-06
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JLG
Prepared: 3/11/25 10:28

8082 Polychlorinated Biphenyls (PCB) / Congeners

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
BZ#8	ND (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#18	ND (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#28	ND (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#44	ND (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#52 [2C]	ND (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#66	ND (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#101	**P, LC 0.00078** (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#105	**P, LC 0.00062** (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#118 [2C]	**P, LC 0.00111** (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#128	ND (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#138	**P, LC 0.00106** (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#153 [2C]	**P, LC 0.00068** (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#170 [2C]	ND (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#180	ND (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#187	ND (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#195	ND (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#206	ND (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104
BZ#209	ND (0.00059)	---	8082A Cong	---	1	03/12/25 19:17	D5C0244	DC51104

	%Recovery	Qualifier	Limits
Surrogate: Tetrachloro-m-xylene	*68 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*64 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7
Date Sampled: 03/05/25 10:30
Percent Solids: 54

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-07
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**4.65** (1.70)	---	6010D	---	1	CEV	03/10/25 18:59	5.44 100	DC51007
Barium	**68.9** (0.68)	---	6010D	---	1	CEV	03/10/25 18:59	5.44 100	DC51007
Cadmium	ND (0.34)	---	6010D	---	1	CEV	03/10/25 18:59	5.44 100	DC51007
Chromium	**18.2** (0.68)	---	6010D	---	1	CEV	03/10/25 18:59	5.44 100	DC51007
Lead	**209** (3.40)	---	6010D	---	1	CEV	03/10/25 18:59	5.44 100	DC51007
Mercury	**0.088** (0.015)	---	7471B	---	1	BJV	03/11/25 12:57	2.44 40	DC51008
Selenium	ND (3.40)	---	6010D	---	1	CEV	03/10/25 18:59	5.44 100	DC51007
Silver	ND (0.34)	---	6010D	---	1	CEV	03/10/25 18:59	5.44 100	DC51007

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7
Date Sampled: 03/05/25 10:30
Percent Solids: 54
Initial Volume: 19.3g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-07
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.048)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
1,2,4-Trichlorobenzene	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
1,2-Dichlorobenzene	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
1,3-Dichlorobenzene	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
1,4-Dichlorobenzene	ND (0.240)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
2,4,5-Trichlorophenol	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
2,4,6-Trichlorophenol	ND (0.240)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
2,4-Dichlorophenol	ND (0.240)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
2,4-Dimethylphenol	ND (0.336)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
2,4-Dinitrophenol	ND (0.960)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
2,4-Dinitrotoluene	ND (0.240)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
2,6-Dinitrotoluene	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
2-Chloronaphthalene	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
2-Chlorophenol	ND (0.240)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
2-Methylnaphthalene	ND (0.240)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
2-Methylphenol	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
2-Nitrophenol	ND (0.960)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
3,3´-Dichlorobenzidine	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
3+4-Methylphenol	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
4-Bromophenyl-phenylether	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
4-Chloroaniline	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
4-Nitrophenol	ND (1.92)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Acenaphthene	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Acenaphthylene	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Acetophenone	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Aniline	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Anthracene	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7
Date Sampled: 03/05/25 10:30
Percent Solids: 54
Initial Volume: 19.3g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-07
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Benzo(a)anthracene	**0.901** (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Benzo(a)pyrene	**1.06** (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Benzo(b)fluoranthene	**1.25** (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Benzo(g,h,i)perylene	**0.652** (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Benzo(k)fluoranthene	**0.539** (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
bis(2-Chloroethoxy)methane	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
bis(2-Chloroethyl)ether	ND (0.240)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
bis(2-chloroisopropyl)Ether	ND (0.240)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
bis(2-Ethylhexyl)phthalate	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Butylbenzylphthalate	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Chrysene	**1.09** (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Dibenzo(a,h)Anthracene	ND (0.240)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Dibenzofuran	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Diethylphthalate	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Dimethylphthalate	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Di-n-butylphthalate	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Di-n-octylphthalate	ND (0.960)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Fluoranthene	**1.94** (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Fluorene	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Hexachlorobenzene	ND (0.240)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Hexachlorobutadiene	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Hexachloroethane	ND (0.240)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Indeno(1,2,3-cd)Pyrene	**0.683** (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Isophorone	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Naphthalene	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Nitrobenzene	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7
Date Sampled: 03/05/25 10:30
Percent Solids: 54
Initial Volume: 19.3g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-07
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Pentachlorophenol	ND (0.960)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Phenanthrene	**0.676** (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Phenol	ND (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743
Pyrene	**1.63** (0.480)	---	8270E	---	1	TJ	03/10/25 23:26	D5C0182	DC50743

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*83 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*85 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*78 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*81 %*		*30-130*
Surrogate: 2-Fluorophenol	*81 %*		*30-130*
Surrogate: Nitrobenzene-d5	*74 %*		*30-130*
Surrogate: Phenol-d6	*79 %*		*30-130*
Surrogate: p-Terphenyl-d14	*87 %*		*30-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7
Date Sampled: 03/05/25 10:30
Percent Solids: 54
Initial Volume: 25.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-07
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 3/10/25 16:33

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (18.4)	---	MADEP-EPH	---	1	JDN	03/12/25 4:25	D5C0218	DC51006
C19-C36 Aliphatics1	**19.6** (18.4)	---	MADEP-EPH	---	1	JDN	03/12/25 4:25	D5C0218	DC51006
C11-C22 Unadjusted Aromatics1	**43.7** (18.4)	---	EPH8270	---	1	DMC	03/11/25 18:35	D5C0203	DC51006
C11-C22 Aromatics1,2	**27.5** (18.6)	---	EPH8270	---		TJ	03/13/25 9:05	---	[CALC]
2-Methylnaphthalene	**0.039** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Acenaphthene	**0.035** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Naphthalene	**0.152** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Phenanthrene	**1.24** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Acenaphthylene	**0.162** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Anthracene	**0.238** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Benzo(a)anthracene	**1.40** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Benzo(a)pyrene	**1.32** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Benzo(b)fluoranthene	**1.16** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Benzo(g,h,i)perylene	**0.935** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Benzo(k)fluoranthene	**1.12** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Chrysene	**1.48** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Dibenzo(a,h)Anthracene	**0.438** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Fluoranthene	**2.83** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Fluorene	**0.080** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Indeno(1,2,3-cd)Pyrene	**0.812** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006
Pyrene	**2.74** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:05	D5C0256	DC51006

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*60 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*102 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*99 %*		*40-140*
Surrogate: O-Terphenyl	*81 %*		*40-140*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7
Date Sampled: 03/05/25 10:30
Percent Solids: 54
Initial Volume: 20.4g
Final Volume: 5ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-07
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/10/25 10:18

8081B Organochlorine Pesticides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
4,4´-DDD [2C]	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
4,4´-DDE [2C]	**0.0051** (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
4,4´-DDT [2C]	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
Aldrin	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
alpha-BHC	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
alpha-Chlordane	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
beta-BHC	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
Chlordane (Total)	ND (0.0363)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
delta-BHC	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
Dieldrin	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
Endosulfan I	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
Endosulfan II	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
Endosulfan Sulfate	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
Endrin	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
Endrin Ketone	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
gamma-BHC (Lindane)	ND (0.0027)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
gamma-Chlordane	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
Heptachlor	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
Heptachlor Epoxide	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
Hexachlorobenzene	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003
Methoxychlor	ND (0.0045)	---	8081B	---	1	03/11/25 20:25	D5C0200	DC51003

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*59 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*65 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*58 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*56 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7
Date Sampled: 03/05/25 10:30
Percent Solids: 54
Initial Volume: 10.2g
Final Volume: 4ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-07
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/11/25 18:00

8151A Chlorinated Herbicides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2,4,5-T	ND (0.017)	---	8151A	---	1	03/14/25 8:35	D5C0281	DC51147
2,4,5-TP (Silvex)	ND (0.017)	---	8151A	---	1	03/14/25 8:35	D5C0281	DC51147
2,4-D	ND (0.085)	---	8151A	---	1	03/14/25 8:35	D5C0281	DC51147
2,4-DB	ND (0.086)	---	8151A	---	1	03/14/25 8:35	D5C0281	DC51147
Dalapon	ND (0.083)	---	8151A	---	1	03/14/25 8:35	D5C0281	DC51147
Dicamba	ND (0.017)	---	8151A	---	1	03/14/25 8:35	D5C0281	DC51147
Dichlorprop	ND (0.085)	---	8151A	---	1	03/14/25 8:35	D5C0281	DC51147
MCPA	ND (4.22)	---	8151A	---	1	03/14/25 8:35	D5C0281	DC51147
MCPP	ND (4.27)	---	8151A	---	1	03/14/25 8:35	D5C0281	DC51147

	%Recovery	Qualifier	Limits
Surrogate: DCAA	*70 %*		*30-150*
Surrogate: DCAA [2C]	*63 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7
Date Sampled: 03/05/25 10:30
Percent Solids: 54
Initial Volume: 19.9g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-07
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JDN
Prepared: 3/7/25 22:15

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons (C9-C36)	ND (18.6)	---	8100M	---	1	03/10/25 20:34	---	DC50744

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	79 %		40-140

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7
Date Sampled: 03/05/25 10:30
Percent Solids: 54

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-07
Sample Matrix: Sediment

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 64** (5)	---	9050A	---	1	JLK	03/07/25 21:26	umhos/cm	DC50736
Corrosivity (pH)	**6.07** (N/A)	---	9045	---	1	CCP	03/07/25 20:17	S.U.	DC50725
Corrosivity (pH) Sample Temp	**19.3**	---	2550B	---	1	CCP	03/07/25 20:17	°C	DC50725
Flashpoint	**> 200** (N/A)	---	1010A	---	1	CCP	03/10/25 15:30	°F	DC51036
Percent Moisture	**46** (1)	---	2540G	---	1	CCP	03/07/25 20:00	%	DC50727
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Total Organic Carbon (Average)	**65400** (500)	---	LK	---	1	CCP	03/20/25 15:05	mg/kg	[CALC]

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7
Date Sampled: 03/05/25 10:30

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-07
Sample Matrix: Sediment

Subcontracted Analysis

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Grain Size	**See Attached** (N/A)	---		---				%	
Water Content	**See Attached** (N/A)	---		---				%	

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7
Date Sampled: 03/05/25 10:30
Percent Solids: 54
Initial Volume: 30.2g
Final Volume: 2ml
Extraction Method: 3540C

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-07
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JLG
Prepared: 3/11/25 10:28

8082 Polychlorinated Biphenyls (PCB) / Congeners

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
BZ#8	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#18	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#28	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#44	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#52	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#66	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#101	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#105 [2C]	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#118 [2C]	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#128	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#138	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#153 [2C]	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#170	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#180 [2C]	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#187	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#195	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#206	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104
BZ#209	ND (0.00050)	---	8082A Cong	---	1	03/12/25 19:47	D5C0244	DC51104

	%Recovery	Qualifier	Limits
Surrogate: Tetrachloro-m-xylene	*58 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*56 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8
Date Sampled: 03/05/25 09:15
Percent Solids: 54

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-08
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**3.49** (1.85)	---	6010D	---	1	CEV	03/10/25 19:01	5.03 100	DC51007
Barium	**56.2** (0.74)	---	6010D	---	1	CEV	03/10/25 19:01	5.03 100	DC51007
Cadmium	ND (0.37)	---	6010D	---	1	CEV	03/10/25 19:01	5.03 100	DC51007
Chromium	**10.1** (0.74)	---	6010D	---	1	CEV	03/10/25 19:01	5.03 100	DC51007
Lead	**180** (3.70)	---	6010D	---	1	CEV	03/10/25 19:01	5.03 100	DC51007
Mercury	**0.803** (0.084)	---	7471B	---	5	BJV	03/11/25 14:20	2.2 40	DC51008
Selenium	ND (3.70)	---	6010D	---	1	CEV	03/10/25 19:01	5.03 100	DC51007
Silver	ND (0.37)	---	6010D	---	1	CEV	03/10/25 19:01	5.03 100	DC51007

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8
Date Sampled: 03/05/25 09:15
Percent Solids: 54
Initial Volume: 19.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-08
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.049)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
1,2,4-Trichlorobenzene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
1,2-Dichlorobenzene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
1,3-Dichlorobenzene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
1,4-Dichlorobenzene	ND (0.243)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
2,4,5-Trichlorophenol	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
2,4,6-Trichlorophenol	ND (0.243)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
2,4-Dichlorophenol	ND (0.243)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
2,4-Dimethylphenol	ND (0.340)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
2,4-Dinitrophenol	ND (0.970)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
2,4-Dinitrotoluene	ND (0.243)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
2,6-Dinitrotoluene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
2-Chloronaphthalene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
2-Chlorophenol	ND (0.243)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
2-Methylnaphthalene	ND (0.243)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
2-Methylphenol	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
2-Nitrophenol	ND (0.970)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
3,3´-Dichlorobenzidine	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
3+4-Methylphenol	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
4-Bromophenyl-phenylether	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
4-Chloroaniline	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
4-Nitrophenol	ND (1.94)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Acenaphthene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Acenaphthylene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Acetophenone	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Aniline	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Anthracene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8
Date Sampled: 03/05/25 09:15
Percent Solids: 54
Initial Volume: 19.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-08
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Benzo(a)anthracene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Benzo(a)pyrene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Benzo(b)fluoranthene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Benzo(g,h,i)perylene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Benzo(k)fluoranthene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
bis(2-Chloroethoxy)methane	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
bis(2-Chloroethyl)ether	ND (0.243)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
bis(2-chloroisopropyl)Ether	ND (0.243)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
bis(2-Ethylhexyl)phthalate	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Butylbenzylphthalate	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Chrysene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Dibenzo(a,h)Anthracene	ND (0.243)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Dibenzofuran	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Diethylphthalate	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Dimethylphthalate	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Di-n-butylphthalate	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Di-n-octylphthalate	ND (0.970)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Fluoranthene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Fluorene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Hexachlorobenzene	ND (0.243)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Hexachlorobutadiene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Hexachloroethane	ND (0.243)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Indeno(1,2,3-cd)Pyrene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Isophorone	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Naphthalene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Nitrobenzene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8
Date Sampled: 03/05/25 09:15
Percent Solids: 54
Initial Volume: 19.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-08
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Pentachlorophenol	ND (0.970)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Phenanthrene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Phenol	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743
Pyrene	ND (0.485)	---	8270E	---	1	TJ	03/10/25 23:57	D5C0182	DC50743

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*80 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*82 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*76 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*78 %*		*30-130*
Surrogate: 2-Fluorophenol	*74 %*		*30-130*
Surrogate: Nitrobenzene-d5	*71 %*		*30-130*
Surrogate: Phenol-d6	*77 %*		*30-130*
Surrogate: p-Terphenyl-d14	*84 %*		*30-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8
Date Sampled: 03/05/25 09:15
Percent Solids: 54
Initial Volume: 25g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-08
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 3/10/25 16:33

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (18.6)	---	MADEP-EPH	---	1	JDN	03/12/25 5:00	D5C0218	DC51006
C19-C36 Aliphatics1	ND (18.6)	---	MADEP-EPH	---	1	JDN	03/12/25 5:00	D5C0218	DC51006
C11-C22 Unadjusted Aromatics1	ND (18.6)	---	EPH8270	---	1	DMC	03/11/25 19:12	D5C0203	DC51006
C11-C22 Aromatics1,2	ND (18.9)	---	EPH8270	---		TJ	03/13/25 9:34	---	[CALC]
2-Methylnaphthalene	ND (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Acenaphthene	ND (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Naphthalene	**0.048** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Phenanthrene	**0.407** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Acenaphthylene	**0.056** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Anthracene	**0.062** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Benzo(a)anthracene	**0.546** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Benzo(a)pyrene	**0.602** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Benzo(b)fluoranthene	**0.549** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Benzo(g,h,i)perylene	**0.401** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Benzo(k)fluoranthene	**0.467** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Chrysene	**0.615** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Dibenzo(a,h)Anthracene	**0.208** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Fluoranthene	**1.08** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Fluorene	**0.022** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Indeno(1,2,3-cd)Pyrene	**0.367** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006
Pyrene	**1.05** (0.015)	---	EPH8270SIM	---	1	TJ	03/13/25 9:34	D5C0256	DC51006

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*74 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*101 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*99 %*		*40-140*
Surrogate: O-Terphenyl	*82 %*		*40-140*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8
Date Sampled: 03/05/25 09:15
Percent Solids: 54
Initial Volume: 20.5g
Final Volume: 5ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-08
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/10/25 10:18

8081B Organochlorine Pesticides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
4,4´-DDD [2C]	**P, LC 0.0086** (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
4,4´-DDE [2C]	**0.0189** (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
4,4´-DDT [2C]	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
Aldrin	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
alpha-BHC	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
alpha-Chlordane	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
beta-BHC	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
Chlordane (Total)	ND (0.0363)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
delta-BHC	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
Dieldrin	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
Endosulfan I	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
Endosulfan II	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
Endosulfan Sulfate	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
Endrin	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
Endrin Ketone	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
gamma-BHC (Lindane)	ND (0.0027)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
gamma-Chlordane	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
Heptachlor	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
Heptachlor Epoxide	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
Hexachlorobenzene	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003
Methoxychlor [2C]	ND (0.0045)	---	8081B	---	1	03/11/25 20:52	D5C0200	DC51003

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*70 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*76 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*60 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*53 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8
Date Sampled: 03/05/25 09:15
Percent Solids: 54
Initial Volume: 10.3g
Final Volume: 4ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-08
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/11/25 18:00

8151A Chlorinated Herbicides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2,4,5-T	ND (0.017)	---	8151A	---	1	03/14/25 9:02	D5C0281	DC51147
2,4,5-TP (Silvex)	ND (0.017)	---	8151A	---	1	03/14/25 9:02	D5C0281	DC51147
2,4-D	ND (0.085)	---	8151A	---	1	03/14/25 9:02	D5C0281	DC51147
2,4-DB	ND (0.086)	---	8151A	---	1	03/14/25 9:02	D5C0281	DC51147
Dalapon	ND (0.082)	---	8151A	---	1	03/14/25 9:02	D5C0281	DC51147
Dicamba	ND (0.017)	---	8151A	---	1	03/14/25 9:02	D5C0281	DC51147
Dichlorprop	ND (0.085)	---	8151A	---	1	03/14/25 9:02	D5C0281	DC51147
MCPA	ND (4.20)	---	8151A	---	1	03/14/25 9:02	D5C0281	DC51147
MCPP	ND (4.25)	---	8151A	---	1	03/14/25 9:02	D5C0281	DC51147

	%Recovery	Qualifier	Limits
Surrogate: DCAA	*72 %*		*30-150*
Surrogate: DCAA [2C]	*66 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8
Date Sampled: 03/05/25 09:15
Percent Solids: 54
Initial Volume: 19.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-08
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JDN
Prepared: 3/7/25 22:15

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons (C9-C36)	ND (19.2)	---	8100M	---	1	03/10/25 21:05	---	DC50744

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	72 %		40-140

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8
Date Sampled: 03/05/25 09:15
Percent Solids: 54

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-08
Sample Matrix: Sediment

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 63** (5)	---	9050A	---	1	JLK	03/07/25 21:26	umhos/cm	DC50736
Corrosivity (pH)	**5.85** (N/A)	---	9045	---	1	CCP	03/07/25 20:17	S.U.	DC50725
Corrosivity (pH) Sample Temp	**19.1**	---	2550B	---	1	CCP	03/07/25 20:17	°C	DC50725
Flashpoint	**> 200** (N/A)	---	1010A	---	1	CCP	03/10/25 15:30	°F	DC51036
Percent Moisture	**46** (1)	---	2540G	---	1	CCP	03/07/25 20:00	%	DC50727
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Total Organic Carbon (Average)	**78500** (500)	---	LK	---	1	CCP	03/20/25 15:55	mg/kg	[CALC]

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8
Date Sampled: 03/05/25 09:15

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-08
Sample Matrix: Sediment

Subcontracted Analysis

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Grain Size	**See Attached** (N/A)	---		---				%	
Water Content	**See Attached** (N/A)	---		---				%	

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8
Date Sampled: 03/05/25 09:15
Percent Solids: 54
Initial Volume: 29.9g
Final Volume: 2ml
Extraction Method: 3540C

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-08
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JLG
Prepared: 3/11/25 10:28

8082 Polychlorinated Biphenyls (PCB) / Congeners

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
BZ#8	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#18	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#28	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#44	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#52	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#66	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#101	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#105	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#118	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#128	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#138	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#153 [2C]	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#170	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#180	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#187	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#195	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#206	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104
BZ#209	ND (0.00050)	---	8082A Cong	---	1	03/12/25 20:18	D5C0244	DC51104

	%Recovery	Qualifier	Limits
Surrogate: Tetrachloro-m-xylene	*44 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*41 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9
Date Sampled: 03/05/25 09:50
Percent Solids: 75

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-09
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**2.59** (1.31)	---	6010D	---	1	CEV	03/10/25 19:04	5.1 100	DC51007
Barium	**19.9** (0.52)	---	6010D	---	1	CEV	03/10/25 19:04	5.1 100	DC51007
Cadmium	ND (0.26)	---	6010D	---	1	CEV	03/10/25 19:04	5.1 100	DC51007
Chromium	**14.3** (0.52)	---	6010D	---	1	CEV	03/10/25 19:04	5.1 100	DC51007
Lead	**21.6** (2.61)	---	6010D	---	1	CEV	03/10/25 19:04	5.1 100	DC51007
Mercury	**0.065** (0.012)	---	7471B	---	1	BJV	03/11/25 14:09	2.26 40	DC51008
Selenium	ND (2.61)	---	6010D	---	1	CEV	03/10/25 19:04	5.1 100	DC51007
Silver	ND (0.26)	---	6010D	---	1	CEV	03/10/25 19:04	5.1 100	DC51007

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9
Date Sampled: 03/05/25 09:50
Percent Solids: 75
Initial Volume: 20g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-09
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.033)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
1,2,4-Trichlorobenzene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
1,2-Dichlorobenzene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
1,3-Dichlorobenzene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
1,4-Dichlorobenzene	ND (0.167)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
2,4,5-Trichlorophenol	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
2,4,6-Trichlorophenol	ND (0.167)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
2,4-Dichlorophenol	ND (0.167)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
2,4-Dimethylphenol	ND (0.233)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
2,4-Dinitrophenol	ND (0.667)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
2,4-Dinitrotoluene	ND (0.167)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
2,6-Dinitrotoluene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
2-Chloronaphthalene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
2-Chlorophenol	ND (0.167)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
2-Methylnaphthalene	ND (0.167)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
2-Methylphenol	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
2-Nitrophenol	ND (0.667)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
3,3´-Dichlorobenzidine	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
3+4-Methylphenol	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
4-Bromophenyl-phenylether	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
4-Chloroaniline	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
4-Nitrophenol	ND (1.33)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Acenaphthene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Acenaphthylene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Acetophenone	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Aniline	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Anthracene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9
Date Sampled: 03/05/25 09:50
Percent Solids: 75
Initial Volume: 20g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-09
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Benzo(a)anthracene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Benzo(a)pyrene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Benzo(b)fluoranthene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Benzo(g,h,i)perylene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Benzo(k)fluoranthene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
bis(2-Chloroethoxy)methane	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
bis(2-Chloroethyl)ether	ND (0.167)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
bis(2-chloroisopropyl)Ether	ND (0.167)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
bis(2-Ethylhexyl)phthalate	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Butylbenzylphthalate	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Chrysene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Dibenzo(a,h)Anthracene	ND (0.167)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Dibenzofuran	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Diethylphthalate	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Dimethylphthalate	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Di-n-butylphthalate	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Di-n-octylphthalate	ND (0.667)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Fluoranthene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Fluorene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Hexachlorobenzene	ND (0.167)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Hexachlorobutadiene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Hexachloroethane	ND (0.167)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Indeno(1,2,3-cd)Pyrene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Isophorone	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Naphthalene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Nitrobenzene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9
Date Sampled: 03/05/25 09:50
Percent Solids: 75
Initial Volume: 20g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-09
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Pentachlorophenol	ND (0.667)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Phenanthrene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Phenol	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743
Pyrene	ND (0.333)	---	8270E	---	1	TJ	03/11/25 0:28	D5C0182	DC50743

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*81 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*86 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*78 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*80 %*		*30-130*
Surrogate: 2-Fluorophenol	*79 %*		*30-130*
Surrogate: Nitrobenzene-d5	*65 %*		*30-130*
Surrogate: Phenol-d6	*80 %*		*30-130*
Surrogate: p-Terphenyl-d14	*85 %*		*30-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9
Date Sampled: 03/05/25 09:50
Percent Solids: 75
Initial Volume: 25.1g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-09
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 3/10/25 16:33

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (13.3)	---	MADEP-EPH	---	1	JDN	03/11/25 23:14	D5C0216	DC51006
C19-C36 Aliphatics1	ND (13.3)	---	MADEP-EPH	---	1	JDN	03/11/25 23:14	D5C0216	DC51006
C11-C22 Unadjusted Aromatics1	ND (13.3)	---	EPH8270	---	1	DMC	03/11/25 22:20	D5C0203	DC51006
C11-C22 Aromatics1,2	ND (13.5)	---	EPH8270	---		TJ	03/13/25 10:03	---	[CALC]
2-Methylnaphthalene	ND (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Acenaphthene	ND (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Naphthalene	ND (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Phenanthrene	**0.050** (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Acenaphthylene	ND (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Anthracene	ND (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Benzo(a)anthracene	**0.075** (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Benzo(a)pyrene	**0.091** (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Benzo(b)fluoranthene	**0.084** (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Benzo(g,h,i)perylene	**0.059** (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Benzo(k)fluoranthene	**0.071** (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Chrysene	**0.084** (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Dibenzo(a,h)Anthracene	**0.032** (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Fluoranthene	**0.149** (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Fluorene	ND (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Indeno(1,2,3-cd)Pyrene	**0.057** (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006
Pyrene	**0.140** (0.011)	---	EPH8270SIM	---	1	TJ	03/13/25 10:03	D5C0256	DC51006

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*76 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*90 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*88 %*		*40-140*
Surrogate: O-Terphenyl	*74 %*		*40-140*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9
Date Sampled: 03/05/25 09:50
Percent Solids: 75
Initial Volume: 20.1g
Final Volume: 5ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-09
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/10/25 10:18

8081B Organochlorine Pesticides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
4,4´-DDD	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
4,4´-DDE [2C]	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
4,4´-DDT	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
Aldrin	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
alpha-BHC	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
alpha-Chlordane	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
beta-BHC	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
Chlordane (Total)	ND (0.0265)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
delta-BHC	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
Dieldrin	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
Endosulfan I [2C]	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
Endosulfan II	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
Endosulfan Sulfate	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
Endrin	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
Endrin Ketone	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
gamma-BHC (Lindane)	ND (0.0020)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
gamma-Chlordane	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
Heptachlor	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
Heptachlor Epoxide	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
Hexachlorobenzene	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003
Methoxychlor	ND (0.0033)	---	8081B	---	1	03/11/25 21:20	D5C0200	DC51003

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*62 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*69 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*48 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*44 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9
Date Sampled: 03/05/25 09:50
Percent Solids: 75
Initial Volume: 10.3g
Final Volume: 4ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-09
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/11/25 18:00

8151A Chlorinated Herbicides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2,4,5-T	ND (0.012)	---	8151A	---	1	03/14/25 9:28	D5C0281	DC51147
2,4,5-TP (Silvex)	ND (0.012)	---	8151A	---	1	03/14/25 9:28	D5C0281	DC51147
2,4-D	ND (0.061)	---	8151A	---	1	03/14/25 9:28	D5C0281	DC51147
2,4-DB	ND (0.061)	---	8151A	---	1	03/14/25 9:28	D5C0281	DC51147
Dalapon	ND (0.059)	---	8151A	---	1	03/14/25 9:28	D5C0281	DC51147
Dicamba	ND (0.012)	---	8151A	---	1	03/14/25 9:28	D5C0281	DC51147
Dichlorprop	ND (0.061)	---	8151A	---	1	03/14/25 9:28	D5C0281	DC51147
MCPA	ND (3.01)	---	8151A	---	1	03/14/25 9:28	D5C0281	DC51147
MCPP	ND (3.04)	---	8151A	---	1	03/14/25 9:28	D5C0281	DC51147

	%Recovery	Qualifier	Limits
Surrogate: DCAA	*61 %*		*30-150*
Surrogate: DCAA [2C]	*52 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9
Date Sampled: 03/05/25 09:50
Percent Solids: 75
Initial Volume: 19.6g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-09
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JDN
Prepared: 3/7/25 22:15

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons (C9-C36)	**51.2** (13.6)	---	8100M	---	1	03/10/25 21:36	---	DC50744

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	74 %		40-140

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9
Date Sampled: 03/05/25 09:50
Percent Solids: 75

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-09
Sample Matrix: Sediment

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 33** (5)	---	9050A	---	1	JLK	03/07/25 21:26	umhos/cm	DC50736
Corrosivity (pH)	**6.03** (N/A)	---	9045	---	1	CCP	03/07/25 20:17	S.U.	DC50725
Corrosivity (pH) Sample Temp	**19.3**	---	2550B	---	1	CCP	03/07/25 20:17	°C	DC50725
Flashpoint	**> 200** (N/A)	---	1010A	---	1	CCP	03/10/25 15:30	°F	DC51036
Percent Moisture	**25** (1)	---	2540G	---	1	CCP	03/07/25 20:00	%	DC50727
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Total Organic Carbon (Average)	**14300** (500)	---	LK	---	1	CCP	03/20/25 16:11	mg/kg	[CALC]

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9
Date Sampled: 03/05/25 09:50

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-09
Sample Matrix: Sediment

Subcontracted Analysis

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Grain Size	**See Attached** (N/A)	---		---				%	
Water Content	**See Attached** (N/A)	---		---				%	

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9
Date Sampled: 03/05/25 09:50
Percent Solids: 75
Initial Volume: 30.4g
Final Volume: 2ml
Extraction Method: 3540C

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-09
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JLG
Prepared: 3/11/25 10:28

8082 Polychlorinated Biphenyls (PCB) / Congeners

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
BZ#8	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#18	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#28	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#44	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#52	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#66	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#101	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#105	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#118	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#128	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#138	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#153	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#170	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#180	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#187	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#195	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#206	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104
BZ#209	ND (0.00036)	---	8082A Cong	---	1	03/12/25 20:48	D5C0244	DC51104

	%Recovery	Qualifier	Limits
Surrogate: Tetrachloro-m-xylene	*74 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*70 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10
Date Sampled: 03/05/25 09:00
Percent Solids: 80

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-10
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**2.16** (1.22)	---	6010D	---	1	CEV	03/10/25 19:06	5.11 100	DC51007
Barium	**11.4** (0.49)	---	6010D	---	1	CEV	03/10/25 19:06	5.11 100	DC51007
Cadmium	ND (0.24)	---	6010D	---	1	CEV	03/10/25 19:06	5.11 100	DC51007
Chromium	**5.63** (0.49)	---	6010D	---	1	CEV	03/10/25 19:06	5.11 100	DC51007
Lead	**35.9** (2.45)	---	6010D	---	1	CEV	03/10/25 19:06	5.11 100	DC51007
Mercury	**0.054** (0.012)	---	7471B	---	1	BJV	03/11/25 14:11	2.12 40	DC51008
Selenium	ND (2.45)	---	6010D	---	1	CEV	03/10/25 19:06	5.11 100	DC51007
Silver	ND (0.24)	---	6010D	---	1	CEV	03/10/25 19:06	5.11 100	DC51007

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10
Date Sampled: 03/05/25 09:00
Percent Solids: 80
Initial Volume: 20.6g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-10
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Last Modified: 06/24/2026 at 9:48AM EDT

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.030)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
1,2,4-Trichlorobenzene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
1,2-Dichlorobenzene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
1,3-Dichlorobenzene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
1,4-Dichlorobenzene	ND (0.152)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
2,4,5-Trichlorophenol	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
2,4,6-Trichlorophenol	ND (0.152)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
2,4-Dichlorophenol	ND (0.152)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
2,4-Dimethylphenol	ND (0.212)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
2,4-Dinitrophenol	ND (0.607)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
2,4-Dinitrotoluene	ND (0.152)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
2,6-Dinitrotoluene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
2-Chloronaphthalene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
2-Chlorophenol	ND (0.152)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
2-Methylnaphthalene	ND (0.152)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
2-Methylphenol	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
2-Nitrophenol	ND (0.607)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
3,3´-Dichlorobenzidine	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
3+4-Methylphenol	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
4-Bromophenyl-phenylether	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
4-Chloroaniline	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
4-Nitrophenol	ND (1.21)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Acenaphthene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Acenaphthylene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Acetophenone	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Aniline	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Anthracene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10
Date Sampled: 03/05/25 09:00
Percent Solids: 80
Initial Volume: 20.6g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-10
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Benzo(a)anthracene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Benzo(a)pyrene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Benzo(b)fluoranthene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Benzo(g,h,i)perylene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Benzo(k)fluoranthene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
bis(2-Chloroethoxy)methane	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
bis(2-Chloroethyl)ether	ND (0.152)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
bis(2-chloroisopropyl)Ether	ND (0.152)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
bis(2-Ethylhexyl)phthalate	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Butylbenzylphthalate	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Chrysene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Dibenzo(a,h)Anthracene	ND (0.152)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Dibenzofuran	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Diethylphthalate	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Dimethylphthalate	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Di-n-butylphthalate	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Di-n-octylphthalate	ND (0.607)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Fluoranthene	**0.392** (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Fluorene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Hexachlorobenzene	ND (0.152)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Hexachlorobutadiene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Hexachloroethane	ND (0.152)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Indeno(1,2,3-cd)Pyrene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Isophorone	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Naphthalene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Nitrobenzene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10
Date Sampled: 03/05/25 09:00
Percent Solids: 80
Initial Volume: 20.6g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-10
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Pentachlorophenol	ND (0.607)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Phenanthrene	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Phenol	ND (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743
Pyrene	**0.304** (0.303)	---	8270E	---	1	TJ	03/11/25 0:59	D5C0182	DC50743

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*91 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*105 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*89 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*89 %*		*30-130*
Surrogate: 2-Fluorophenol	*88 %*		*30-130*
Surrogate: Nitrobenzene-d5	*82 %*		*30-130*
Surrogate: Phenol-d6	*88 %*		*30-130*
Surrogate: p-Terphenyl-d14	*96 %*		*30-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10
Date Sampled: 03/05/25 09:00
Percent Solids: 80
Initial Volume: 25.2g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-10
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 3/10/25 16:33

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (12.4)	---	MADEP-EPH	---	1	JDN	03/11/25 23:49	D5C0216	DC51006
C19-C36 Aliphatics1	ND (12.4)	---	MADEP-EPH	---	1	JDN	03/11/25 23:49	D5C0216	DC51006
C11-C22 Unadjusted Aromatics1	ND (12.4)	---	EPH8270	---	1	DMC	03/11/25 22:57	D5C0203	DC51006
C11-C22 Aromatics1,2	ND (12.6)	---	EPH8270	---		TJ	03/13/25 10:33	---	[CALC]
2-Methylnaphthalene	**0.014** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Acenaphthene	ND (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Naphthalene	**0.115** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Phenanthrene	**0.173** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Acenaphthylene	**0.019** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Anthracene	**0.029** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Benzo(a)anthracene	**0.235** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Benzo(a)pyrene	**0.238** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Benzo(b)fluoranthene	**0.201** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Benzo(g,h,i)perylene	**0.146** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Benzo(k)fluoranthene	**0.194** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Chrysene	**0.238** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Dibenzo(a,h)Anthracene	**0.075** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Fluoranthene	**0.450** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Fluorene	ND (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Indeno(1,2,3-cd)Pyrene	**0.137** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006
Pyrene	**0.409** (0.010)	---	EPH8270SIM	---	1	TJ	03/13/25 10:33	D5C0256	DC51006

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*55 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*102 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*99 %*		*40-140*
Surrogate: O-Terphenyl	*66 %*		*40-140*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10
Date Sampled: 03/05/25 09:00
Percent Solids: 80
Initial Volume: 20.5g
Final Volume: 5ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-10
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/10/25 10:18

8081B Organochlorine Pesticides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
4,4´-DDD [2C]	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
4,4´-DDE	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
4,4´-DDT [2C]	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
Aldrin	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
alpha-BHC	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
alpha-Chlordane	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
beta-BHC	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
Chlordane (Total)	ND (0.0244)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
delta-BHC	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
Dieldrin	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
Endosulfan I	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
Endosulfan II	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
Endosulfan Sulfate	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
Endrin	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
Endrin Ketone	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
gamma-BHC (Lindane)	ND (0.0018)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
gamma-Chlordane	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
Heptachlor	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
Heptachlor Epoxide	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
Hexachlorobenzene	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003
Methoxychlor	ND (0.0030)	---	8081B	---	1	03/11/25 21:48	D5C0200	DC51003

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*56 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*61 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*46 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*44 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10
Date Sampled: 03/05/25 09:00
Percent Solids: 80
Initial Volume: 10.2g
Final Volume: 4ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-10
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/11/25 18:00

8151A Chlorinated Herbicides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2,4,5-T	ND (0.012)	---	8151A	---	1	03/14/25 9:54	D5C0281	DC51147
2,4,5-TP (Silvex)	ND (0.012)	---	8151A	---	1	03/14/25 9:54	D5C0281	DC51147
2,4-D	ND (0.058)	---	8151A	---	1	03/14/25 9:54	D5C0281	DC51147
2,4-DB	ND (0.058)	---	8151A	---	1	03/14/25 9:54	D5C0281	DC51147
Dalapon	ND (0.056)	---	8151A	---	1	03/14/25 9:54	D5C0281	DC51147
Dicamba	ND (0.012)	---	8151A	---	1	03/14/25 9:54	D5C0281	DC51147
Dichlorprop	ND (0.058)	---	8151A	---	1	03/14/25 9:54	D5C0281	DC51147
MCPA	ND (2.85)	---	8151A	---	1	03/14/25 9:54	D5C0281	DC51147
MCPP	ND (2.88)	---	8151A	---	1	03/14/25 9:54	D5C0281	DC51147

	%Recovery	Qualifier	Limits
Surrogate: DCAA	*90 %*		*30-150*
Surrogate: DCAA [2C]	*77 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10
Date Sampled: 03/05/25 09:00
Percent Solids: 80
Initial Volume: 19.5g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-10
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JDN
Prepared: 3/7/25 22:15

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons (C9-C36)	ND (12.8)	---	8100M	---	1	03/10/25 22:07	---	DC50744

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*79 %*		*40-140*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10
Date Sampled: 03/05/25 09:00
Percent Solids: 80

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-10
Sample Matrix: Sediment

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 44** (5)	---	9050A	---	1	JLK	03/07/25 21:26	umhos/cm	DC50736
Corrosivity (pH)	**5.73** (N/A)	---	9045	---	1	CCP	03/07/25 20:17	S.U.	DC50725
Corrosivity (pH) Sample Temp	**19.5**	---	2550B	---	1	CCP	03/07/25 20:17	°C	DC50725
Flashpoint	**> 200** (N/A)	---	1010A	---	1	CCP	03/10/25 15:30	°F	DC51036
Percent Moisture	**20** (1)	---	2540G	---	1	CCP	03/07/25 20:00	%	DC50727
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Total Organic Carbon (Average)	**17900** (500)	---	LK	---	1	CCP	03/20/25 16:28	mg/kg	[CALC]

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10
Date Sampled: 03/05/25 09:00

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-10
Sample Matrix: Sediment

Subcontracted Analysis

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Grain Size	**See Attached** (N/A)	---		---				%	
Water Content	**See Attached** (N/A)	---		---				%	

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10
Date Sampled: 03/05/25 09:00
Percent Solids: 80
Initial Volume: 29.6g
Final Volume: 2ml
Extraction Method: 3540C

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-10
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JLG
Prepared: 3/11/25 10:28

8082 Polychlorinated Biphenyls (PCB) / Congeners

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
BZ#8	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#18	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#28	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#44	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#52	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#66	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#101	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#105	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#118	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#128	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#138	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#153	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#170	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#180	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#187	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#195	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#206	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104
BZ#209	ND (0.00034)	---	8082A Cong	---	1	03/12/25 21:19	D5C0244	DC51104

	%Recovery	Qualifier	Limits
Surrogate: Tetrachloro-m-xylene	*77 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*74 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1A
Date Sampled: 03/05/25 13:20
Percent Solids: 37
Initial Volume: 5.2g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-11
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,1,1-Trichloroethane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,1,2,2-Tetrachloroethane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,1,2-Trichloroethane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,1-Dichloroethane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,1-Dichloroethene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,1-Dichloropropene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,2,3-Trichlorobenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,2,3-Trichloropropane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,2,4-Trichlorobenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,2,4-Trimethylbenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,2-Dibromo-3-Chloropropane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,2-Dibromoethane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,2-Dichlorobenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,2-Dichloroethane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,2-Dichloropropane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,3,5-Trimethylbenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,3-Dichlorobenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,3-Dichloropropane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,4-Dichlorobenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
1,4-Dioxane	ND (0.262)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
2,2-Dichloropropane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
2-Butanone	ND (0.131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
2-Chlorotoluene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
2-Hexanone	ND (0.131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
4-Chlorotoluene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
4-Isopropyltoluene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1A
Date Sampled: 03/05/25 13:20
Percent Solids: 37
Initial Volume: 5.2g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-11
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Acetone	ND (0.131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Benzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Bromobenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Bromochloromethane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Bromodichloromethane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Bromoform	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Bromomethane	ND (0.0262)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Carbon Disulfide	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Carbon Tetrachloride	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Chlorobenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Chloroethane	ND (0.0262)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Chloroform	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Chloromethane	ND (0.0262)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
cis-1,2-Dichloroethene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
cis-1,3-Dichloropropene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Dibromochloromethane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Dibromomethane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Dichlorodifluoromethane	ND (0.0262)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Diethyl Ether	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Di-isopropyl ether	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Ethyl tertiary-butyl ether	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Ethylbenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Hexachlorobutadiene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Isopropylbenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Methyl tert-Butyl Ether	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Methylene Chloride	ND (0.0654)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1A
Date Sampled: 03/05/25 13:20
Percent Solids: 37
Initial Volume: 5.2g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-11
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
n-Butylbenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
n-Propylbenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
sec-Butylbenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Styrene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
tert-Butylbenzene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Tertiary-amyl methyl ether	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Tetrachloroethene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Tetrahydrofuran	ND (0.0523)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Toluene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
trans-1,2-Dichloroethene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
trans-1,3-Dichloropropene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Trichloroethene	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Trichlorofluoromethane	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Vinyl Chloride	ND (0.0262)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Xylene O	ND (0.0131)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Xylene P,M	ND (0.0262)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032
Xylenes (Total)	ND (0.0262)	---	8260D Low	---	1	MEK	03/10/25 12:32	D5C0185	DC51032

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*98 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*93 %*		*70-130*
Surrogate: Dibromofluoromethane	*95 %*		*70-130*
Surrogate: Toluene-d8	*102 %*		*70-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2C
Date Sampled: 03/05/25 11:15
Percent Solids: 41
Initial Volume: 5.2g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-12
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,1,1-Trichloroethane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,1,2,2-Tetrachloroethane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,1,2-Trichloroethane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,1-Dichloroethane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,1-Dichloroethene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,1-Dichloropropene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,2,3-Trichlorobenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,2,3-Trichloropropane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,2,4-Trichlorobenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,2,4-Trimethylbenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,2-Dibromo-3-Chloropropane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,2-Dibromoethane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,2-Dichlorobenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,2-Dichloroethane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,2-Dichloropropane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,3,5-Trimethylbenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,3-Dichlorobenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,3-Dichloropropane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,4-Dichlorobenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
1,4-Dioxane	ND (0.236)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
2,2-Dichloropropane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
2-Butanone	ND (0.118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
2-Chlorotoluene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
2-Hexanone	ND (0.118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
4-Chlorotoluene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
4-Isopropyltoluene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2C
Date Sampled: 03/05/25 11:15
Percent Solids: 41
Initial Volume: 5.2g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-12
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Acetone	**0.352** (0.118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Benzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Bromobenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Bromochloromethane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Bromodichloromethane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Bromoform	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Bromomethane	ND (0.0236)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Carbon Disulfide	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Carbon Tetrachloride	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Chlorobenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Chloroethane	ND (0.0236)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Chloroform	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Chloromethane	ND (0.0236)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
cis-1,2-Dichloroethene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
cis-1,3-Dichloropropene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Dibromochloromethane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Dibromomethane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Dichlorodifluoromethane	ND (0.0236)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Diethyl Ether	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Di-isopropyl ether	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Ethyl tertiary-butyl ether	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Ethylbenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Hexachlorobutadiene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Isopropylbenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Methyl tert-Butyl Ether	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Methylene Chloride	ND (0.0591)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2C
Date Sampled: 03/05/25 11:15
Percent Solids: 41
Initial Volume: 5.2g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-12
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
n-Butylbenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
n-Propylbenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
sec-Butylbenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Styrene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
tert-Butylbenzene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Tertiary-amyl methyl ether	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Tetrachloroethene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Tetrahydrofuran	ND (0.0473)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Toluene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
trans-1,2-Dichloroethene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
trans-1,3-Dichloropropene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Trichloroethene	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Trichlorofluoromethane	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Vinyl Chloride	ND (0.0236)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Xylene O	ND (0.0118)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Xylene P,M	ND (0.0236)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032
Xylenes (Total)	ND (0.0236)	---	8260D Low	---	1	MEK	03/10/25 12:58	D5C0185	DC51032

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*101 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*85 %*		*70-130*
Surrogate: Dibromofluoromethane	*97 %*		*70-130*
Surrogate: Toluene-d8	*110 %*		*70-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3A
Date Sampled: 03/05/25 10:45
Percent Solids: 41
Initial Volume: 3.2g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-13
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,1,1-Trichloroethane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,1,2,2-Tetrachloroethane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,1,2-Trichloroethane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,1-Dichloroethane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,1-Dichloroethene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,1-Dichloropropene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,2,3-Trichlorobenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,2,3-Trichloropropane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,2,4-Trichlorobenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,2,4-Trimethylbenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,2-Dibromo-3-Chloropropane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,2-Dibromoethane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,2-Dichlorobenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,2-Dichloroethane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,2-Dichloropropane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,3,5-Trimethylbenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,3-Dichlorobenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,3-Dichloropropane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,4-Dichlorobenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
1,4-Dioxane	ND (0.382)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
2,2-Dichloropropane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
2-Butanone	ND (0.191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
2-Chlorotoluene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
2-Hexanone	ND (0.191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
4-Chlorotoluene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
4-Isopropyltoluene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3A
Date Sampled: 03/05/25 10:45
Percent Solids: 41
Initial Volume: 3.2g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-13
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Acetone	**0.327** (0.191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Benzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Bromobenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Bromochloromethane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Bromodichloromethane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Bromoform	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Bromomethane	ND (0.0382)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Carbon Disulfide	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Carbon Tetrachloride	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Chlorobenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Chloroethane	ND (0.0382)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Chloroform	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Chloromethane	ND (0.0382)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
cis-1,2-Dichloroethene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
cis-1,3-Dichloropropene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Dibromochloromethane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Dibromomethane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Dichlorodifluoromethane	ND (0.0382)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Diethyl Ether	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Di-isopropyl ether	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Ethyl tertiary-butyl ether	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Ethylbenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Hexachlorobutadiene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Isopropylbenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Methyl tert-Butyl Ether	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Methylene Chloride	ND (0.0956)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3A
Date Sampled: 03/05/25 10:45
Percent Solids: 41
Initial Volume: 3.2g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-13
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
n-Butylbenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
n-Propylbenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
sec-Butylbenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Styrene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
tert-Butylbenzene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Tertiary-amyl methyl ether	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Tetrachloroethene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Tetrahydrofuran	ND (0.0765)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Toluene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
trans-1,2-Dichloroethene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
trans-1,3-Dichloropropene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Trichloroethene	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Trichlorofluoromethane	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Vinyl Chloride	ND (0.0382)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Xylene O	ND (0.0191)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Xylene P,M	ND (0.0382)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032
Xylenes (Total)	ND (0.0382)	---	8260D Low	---	1	MEK	03/10/25 13:23	D5C0185	DC51032

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*99 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*85 %*		*70-130*
Surrogate: Dibromofluoromethane	*97 %*		*70-130*
Surrogate: Toluene-d8	*110 %*		*70-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4B
Date Sampled: 03/05/25 12:00
Percent Solids: 54
Initial Volume: 4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-14
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,1,1-Trichloroethane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,1,2,2-Tetrachloroethane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,1,2-Trichloroethane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,1-Dichloroethane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,1-Dichloroethene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,1-Dichloropropene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,2,3-Trichlorobenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,2,3-Trichloropropane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,2,4-Trichlorobenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,2,4-Trimethylbenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,2-Dibromo-3-Chloropropane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,2-Dibromoethane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,2-Dichlorobenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,2-Dichloroethane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,2-Dichloropropane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,3,5-Trimethylbenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,3-Dichlorobenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,3-Dichloropropane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,4-Dichlorobenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
1,4-Dioxane	ND (0.233)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
2,2-Dichloropropane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
2-Butanone	ND (0.116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
2-Chlorotoluene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
2-Hexanone	ND (0.116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
4-Chlorotoluene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
4-Isopropyltoluene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4B
Date Sampled: 03/05/25 12:00
Percent Solids: 54
Initial Volume: 4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-14
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Acetone	**0.371** (0.116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Benzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Bromobenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Bromochloromethane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Bromodichloromethane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Bromoform	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Bromomethane	ND (0.0233)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Carbon Disulfide	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Carbon Tetrachloride	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Chlorobenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Chloroethane	ND (0.0233)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Chloroform	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Chloromethane	ND (0.0233)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
cis-1,2-Dichloroethene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
cis-1,3-Dichloropropene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Dibromochloromethane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Dibromomethane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Dichlorodifluoromethane	ND (0.0233)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Diethyl Ether	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Di-isopropyl ether	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Ethyl tertiary-butyl ether	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Ethylbenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Hexachlorobutadiene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Isopropylbenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Methyl tert-Butyl Ether	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Methylene Chloride	ND (0.0582)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4B
Date Sampled: 03/05/25 12:00
Percent Solids: 54
Initial Volume: 4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-14
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
n-Butylbenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
n-Propylbenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
sec-Butylbenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Styrene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
tert-Butylbenzene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Tertiary-amyl methyl ether	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Tetrachloroethene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Tetrahydrofuran	ND (0.0466)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Toluene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
trans-1,2-Dichloroethene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
trans-1,3-Dichloropropene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Trichloroethene	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Trichlorofluoromethane	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Vinyl Chloride	ND (0.0233)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Xylene O	ND (0.0116)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Xylene P,M	ND (0.0233)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032
Xylenes (Total)	ND (0.0233)	---	8260D Low	---	1	MEK	03/10/25 13:49	D5C0185	DC51032

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*100 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*83 %*		*70-130*
Surrogate: Dibromofluoromethane	*98 %*		*70-130*
Surrogate: Toluene-d8	*113 %*		*70-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5C
Date Sampled: 03/05/25 13:15
Percent Solids: 68
Initial Volume: 5.6g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-15
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/11/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,1,1-Trichloroethane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,1,2,2-Tetrachloroethane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,1,2-Trichloroethane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,1-Dichloroethane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,1-Dichloroethene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,1-Dichloropropene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,2,3-Trichlorobenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,2,3-Trichloropropane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,2,4-Trichlorobenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,2,4-Trimethylbenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,2-Dibromo-3-Chloropropane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,2-Dibromoethane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,2-Dichlorobenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,2-Dichloroethane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,2-Dichloropropane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,3,5-Trimethylbenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,3-Dichlorobenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,3-Dichloropropane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,4-Dichlorobenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
1,4-Dioxane	ND (0.132)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
2,2-Dichloropropane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
2-Butanone	ND (0.0659)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
2-Chlorotoluene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
2-Hexanone	ND (0.0659)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
4-Chlorotoluene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
4-Isopropyltoluene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5C
Date Sampled: 03/05/25 13:15
Percent Solids: 68
Initial Volume: 5.6g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-15
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/11/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0659)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Acetone	ND (0.0659)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Benzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Bromobenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Bromochloromethane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Bromodichloromethane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Bromoform	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Bromomethane	ND (0.0132)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Carbon Disulfide	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Carbon Tetrachloride	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Chlorobenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Chloroethane	ND (0.0132)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Chloroform	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Chloromethane	ND (0.0132)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
cis-1,2-Dichloroethene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
cis-1,3-Dichloropropene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Dibromochloromethane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Dibromomethane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Dichlorodifluoromethane	ND (0.0132)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Diethyl Ether	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Di-isopropyl ether	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Ethyl tertiary-butyl ether	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Ethylbenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Hexachlorobutadiene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Isopropylbenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Methyl tert-Butyl Ether	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Methylene Chloride	ND (0.0329)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5C
Date Sampled: 03/05/25 13:15
Percent Solids: 68
Initial Volume: 5.6g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-15
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/11/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
n-Butylbenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
n-Propylbenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
sec-Butylbenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Styrene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
tert-Butylbenzene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Tertiary-amyl methyl ether	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Tetrachloroethene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Tetrahydrofuran	ND (0.0264)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Toluene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
trans-1,2-Dichloroethene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
trans-1,3-Dichloropropene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Trichloroethene	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Trichlorofluoromethane	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Vinyl Chloride	ND (0.0132)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Xylene O	ND (0.0066)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Xylene P,M	ND (0.0132)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123
Xylenes (Total)	ND (0.0132)	---	8260D Low	---	1	MEK	03/11/25 14:20	D5C0208	DC51123

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*109 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*86 %*		*70-130*
Surrogate: Dibromofluoromethane	*102 %*		*70-130*
Surrogate: Toluene-d8	*110 %*		*70-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6A
Date Sampled: 03/05/25 12:30
Percent Solids: 57
Initial Volume: 3.6g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-16
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,1,1-Trichloroethane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,1,2,2-Tetrachloroethane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,1,2-Trichloroethane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,1-Dichloroethane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,1-Dichloroethene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,1-Dichloropropene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,2,3-Trichlorobenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,2,3-Trichloropropane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,2,4-Trichlorobenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,2,4-Trimethylbenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,2-Dibromo-3-Chloropropane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,2-Dibromoethane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,2-Dichlorobenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,2-Dichloroethane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,2-Dichloropropane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,3,5-Trimethylbenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,3-Dichlorobenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,3-Dichloropropane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,4-Dichlorobenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
1,4-Dioxane	ND (0.246)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
2,2-Dichloropropane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
2-Butanone	**0.279** (0.123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
2-Chlorotoluene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
2-Hexanone	ND (0.123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
4-Chlorotoluene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
4-Isopropyltoluene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6A
Date Sampled: 03/05/25 12:30
Percent Solids: 57
Initial Volume: 3.6g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-16
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Acetone	**0.368** (0.123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Benzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Bromobenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Bromochloromethane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Bromodichloromethane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Bromoform	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Bromomethane	ND (0.0246)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Carbon Disulfide	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Carbon Tetrachloride	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Chlorobenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Chloroethane	ND (0.0246)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Chloroform	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Chloromethane	ND (0.0246)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
cis-1,2-Dichloroethene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
cis-1,3-Dichloropropene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Dibromochloromethane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Dibromomethane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Dichlorodifluoromethane	ND (0.0246)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Diethyl Ether	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Di-isopropyl ether	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Ethyl tertiary-butyl ether	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Ethylbenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Hexachlorobutadiene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Isopropylbenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Methyl tert-Butyl Ether	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Methylene Chloride	ND (0.0614)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6A
Date Sampled: 03/05/25 12:30
Percent Solids: 57
Initial Volume: 3.6g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-16
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
n-Butylbenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
n-Propylbenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
sec-Butylbenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Styrene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
tert-Butylbenzene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Tertiary-amyl methyl ether	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Tetrachloroethene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Tetrahydrofuran	ND (0.0491)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Toluene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
trans-1,2-Dichloroethene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
trans-1,3-Dichloropropene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Trichloroethene	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Trichlorofluoromethane	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Vinyl Chloride	ND (0.0246)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Xylene O	ND (0.0123)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Xylene P,M	ND (0.0246)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032
Xylenes (Total)	ND (0.0246)	---	8260D Low	---	1	MEK	03/10/25 14:41	D5C0185	DC51032

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*101 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*83 %*		*70-130*
Surrogate: Dibromofluoromethane	*98 %*		*70-130*
Surrogate: Toluene-d8	*112 %*		*70-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7B
Date Sampled: 03/05/25 10:30
Percent Solids: 45
Initial Volume: 4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-17
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,1,1-Trichloroethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,1,2,2-Tetrachloroethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,1,2-Trichloroethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,1-Dichloroethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,1-Dichloroethene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,1-Dichloropropene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,2,3-Trichlorobenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,2,3-Trichloropropane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,2,4-Trichlorobenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,2,4-Trimethylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,2-Dibromo-3-Chloropropane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,2-Dibromoethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,2-Dichlorobenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,2-Dichloroethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,2-Dichloropropane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,3,5-Trimethylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,3-Dichlorobenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,3-Dichloropropane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,4-Dichlorobenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
1,4-Dioxane	ND (0.276)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
2,2-Dichloropropane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
2-Butanone	ND (0.138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
2-Chlorotoluene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
2-Hexanone	ND (0.138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
4-Chlorotoluene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
4-Isopropyltoluene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7B
Date Sampled: 03/05/25 10:30
Percent Solids: 45
Initial Volume: 4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-17
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Acetone	**0.445** (0.138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Benzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Bromobenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Bromochloromethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Bromodichloromethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Bromoform	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Bromomethane	ND (0.0276)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Carbon Disulfide	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Carbon Tetrachloride	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Chlorobenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Chloroethane	ND (0.0276)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Chloroform	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Chloromethane	ND (0.0276)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
cis-1,2-Dichloroethene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
cis-1,3-Dichloropropene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Dibromochloromethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Dibromomethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Dichlorodifluoromethane	ND (0.0276)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Diethyl Ether	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Di-isopropyl ether	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Ethyl tertiary-butyl ether	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Ethylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Hexachlorobutadiene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Isopropylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Methyl tert-Butyl Ether	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Methylene Chloride	ND (0.0689)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7B
Date Sampled: 03/05/25 10:30
Percent Solids: 45
Initial Volume: 4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-17
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
n-Butylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
n-Propylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
sec-Butylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Styrene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
tert-Butylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Tertiary-amyl methyl ether	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Tetrachloroethene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Tetrahydrofuran	ND (0.0551)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Toluene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
trans-1,2-Dichloroethene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
trans-1,3-Dichloropropene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Trichloroethene	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Trichlorofluoromethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Vinyl Chloride	ND (0.0276)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Xylene O	ND (0.0138)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Xylene P,M	ND (0.0276)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032
Xylenes (Total)	ND (0.0276)	---	8260D Low	---	1	MEK	03/10/25 15:07	D5C0185	DC51032

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*103 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*82 %*		*70-130*
Surrogate: Dibromofluoromethane	*99 %*		*70-130*
Surrogate: Toluene-d8	*115 %*		*70-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7B
Date Sampled: 03/05/25 10:30
Percent Solids: 45
Initial Volume: 4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-17RE1
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/11/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,1,1-Trichloroethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,1,2,2-Tetrachloroethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,1,2-Trichloroethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,1-Dichloroethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,1-Dichloroethene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,1-Dichloropropene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,2,3-Trichlorobenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,2,3-Trichloropropane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,2,4-Trichlorobenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,2,4-Trimethylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,2-Dibromo-3-Chloropropane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,2-Dibromoethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,2-Dichlorobenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,2-Dichloroethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,2-Dichloropropane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,3,5-Trimethylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,3-Dichlorobenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,3-Dichloropropane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,4-Dichlorobenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
1,4-Dioxane	ND (0.276)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
2,2-Dichloropropane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
2-Butanone	ND (0.138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
2-Chlorotoluene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
2-Hexanone	ND (0.138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
4-Chlorotoluene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
4-Isopropyltoluene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7B
Date Sampled: 03/05/25 10:30
Percent Solids: 45
Initial Volume: 4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-17RE1
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/11/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Acetone	**0.391** (0.138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Benzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Bromobenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Bromochloromethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Bromodichloromethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Bromoform	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Bromomethane	ND (0.0276)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Carbon Disulfide	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Carbon Tetrachloride	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Chlorobenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Chloroethane	ND (0.0276)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Chloroform	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Chloromethane	ND (0.0276)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
cis-1,2-Dichloroethene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
cis-1,3-Dichloropropene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Dibromochloromethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Dibromomethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Dichlorodifluoromethane	ND (0.0276)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Diethyl Ether	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Di-isopropyl ether	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Ethyl tertiary-butyl ether	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Ethylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Hexachlorobutadiene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Isopropylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Methyl tert-Butyl Ether	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Methylene Chloride	ND (0.0689)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7B
Date Sampled: 03/05/25 10:30
Percent Solids: 45
Initial Volume: 4g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-17RE1
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/11/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
n-Butylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
n-Propylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
sec-Butylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Styrene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
tert-Butylbenzene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Tertiary-amyl methyl ether	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Tetrachloroethene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Tetrahydrofuran	ND (0.0551)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Toluene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
trans-1,2-Dichloroethene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
trans-1,3-Dichloropropene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Trichloroethene	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Trichlorofluoromethane	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Vinyl Chloride	ND (0.0276)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Xylene O	ND (0.0138)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Xylene P,M	ND (0.0276)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123
Xylenes (Total)	ND (0.0276)	---	8260D Low	---	1	MEK	03/11/25 14:48	D5C0208	DC51123

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*106 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*82 %*		*70-130*
Surrogate: Dibromofluoromethane	*106 %*		*70-130*
Surrogate: Toluene-d8	*117 %*		*70-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8C
Date Sampled: 03/05/25 09:15
Percent Solids: 54
Initial Volume: 2.8g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-18
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,1,1-Trichloroethane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,1,2,2-Tetrachloroethane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,1,2-Trichloroethane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,1-Dichloroethane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,1-Dichloroethene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,1-Dichloropropene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,2,3-Trichlorobenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,2,3-Trichloropropane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,2,4-Trichlorobenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,2,4-Trimethylbenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,2-Dibromo-3-Chloropropane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,2-Dibromoethane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,2-Dichlorobenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,2-Dichloroethane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,2-Dichloropropane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,3,5-Trimethylbenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,3-Dichlorobenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,3-Dichloropropane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,4-Dichlorobenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
1,4-Dioxane	ND (0.334)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
2,2-Dichloropropane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
2-Butanone	ND (0.167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
2-Chlorotoluene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
2-Hexanone	ND (0.167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
4-Chlorotoluene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
4-Isopropyltoluene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8C
Date Sampled: 03/05/25 09:15
Percent Solids: 54
Initial Volume: 2.8g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-18
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Acetone	**0.443** (0.167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Benzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Bromobenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Bromochloromethane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Bromodichloromethane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Bromoform	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Bromomethane	ND (0.0334)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Carbon Disulfide	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Carbon Tetrachloride	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Chlorobenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Chloroethane	ND (0.0334)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Chloroform	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Chloromethane	ND (0.0334)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
cis-1,2-Dichloroethene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
cis-1,3-Dichloropropene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Dibromochloromethane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Dibromomethane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Dichlorodifluoromethane	ND (0.0334)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Diethyl Ether	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Di-isopropyl ether	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Ethyl tertiary-butyl ether	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Ethylbenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Hexachlorobutadiene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Isopropylbenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Methyl tert-Butyl Ether	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Methylene Chloride	ND (0.0834)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8C
Date Sampled: 03/05/25 09:15
Percent Solids: 54
Initial Volume: 2.8g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-18
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
n-Butylbenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
n-Propylbenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
sec-Butylbenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Styrene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
tert-Butylbenzene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Tertiary-amyl methyl ether	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Tetrachloroethene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Tetrahydrofuran	ND (0.0667)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Toluene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
trans-1,2-Dichloroethene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
trans-1,3-Dichloropropene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Trichloroethene	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Trichlorofluoromethane	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Vinyl Chloride	ND (0.0334)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Xylene O	ND (0.0167)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Xylene P,M	ND (0.0334)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032
Xylenes (Total)	ND (0.0334)	---	8260D Low	---	1	MEK	03/10/25 15:32	D5C0185	DC51032

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*103 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*79 %*		*70-130*
Surrogate: Dibromofluoromethane	*99 %*		*70-130*
Surrogate: Toluene-d8	*118 %*		*70-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8C
Date Sampled: 03/05/25 09:15
Percent Solids: 54
Initial Volume: 3.1g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-18RE1
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/11/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,1,1-Trichloroethane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,1,2,2-Tetrachloroethane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,1,2-Trichloroethane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,1-Dichloroethane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,1-Dichloroethene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,1-Dichloropropene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,2,3-Trichlorobenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,2,3-Trichloropropane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,2,4-Trichlorobenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,2,4-Trimethylbenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,2-Dibromo-3-Chloropropane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,2-Dibromoethane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,2-Dichlorobenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,2-Dichloroethane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,2-Dichloropropane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,3,5-Trimethylbenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,3-Dichlorobenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,3-Dichloropropane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,4-Dichlorobenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
1,4-Dioxane	ND (0.301)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
2,2-Dichloropropane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
2-Butanone	ND (0.151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
2-Chlorotoluene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
2-Hexanone	ND (0.151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
4-Chlorotoluene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
4-Isopropyltoluene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8C
Date Sampled: 03/05/25 09:15
Percent Solids: 54
Initial Volume: 3.1g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-18RE1
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/11/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Acetone	**0.564** (0.151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Benzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Bromobenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Bromochloromethane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Bromodichloromethane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Bromoform	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Bromomethane	ND (0.0301)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Carbon Disulfide	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Carbon Tetrachloride	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Chlorobenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Chloroethane	ND (0.0301)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Chloroform	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Chloromethane	ND (0.0301)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
cis-1,2-Dichloroethene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
cis-1,3-Dichloropropene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Dibromochloromethane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Dibromomethane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Dichlorodifluoromethane	ND (0.0301)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Diethyl Ether	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Di-isopropyl ether	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Ethyl tertiary-butyl ether	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Ethylbenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Hexachlorobutadiene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Isopropylbenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Methyl tert-Butyl Ether	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Methylene Chloride	ND (0.0754)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8C
Date Sampled: 03/05/25 09:15
Percent Solids: 54
Initial Volume: 3.1g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-18RE1
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/11/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
n-Butylbenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
n-Propylbenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
sec-Butylbenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Styrene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
tert-Butylbenzene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Tertiary-amyl methyl ether	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Tetrachloroethene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Tetrahydrofuran	ND (0.0603)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Toluene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
trans-1,2-Dichloroethene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
trans-1,3-Dichloropropene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Trichloroethene	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Trichlorofluoromethane	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Vinyl Chloride	ND (0.0301)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Xylene O	ND (0.0151)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Xylene P,M	ND (0.0301)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123
Xylenes (Total)	ND (0.0301)	---	8260D Low	---	1	MEK	03/11/25 15:13	D5C0208	DC51123

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*107 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*78 %*		*70-130*
Surrogate: Dibromofluoromethane	*107 %*		*70-130*
Surrogate: Toluene-d8	*116 %*		*70-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9A
Date Sampled: 03/05/25 09:50
Percent Solids: 60
Initial Volume: 5.7g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-19
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,1,1-Trichloroethane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,1,2,2-Tetrachloroethane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,1,2-Trichloroethane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,1-Dichloroethane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,1-Dichloroethene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,1-Dichloropropene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,2,3-Trichlorobenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,2,3-Trichloropropane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,2,4-Trichlorobenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,2,4-Trimethylbenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,2-Dibromo-3-Chloropropane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,2-Dibromoethane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,2-Dichlorobenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,2-Dichloroethane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,2-Dichloropropane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,3,5-Trimethylbenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,3-Dichlorobenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,3-Dichloropropane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,4-Dichlorobenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
1,4-Dioxane	ND (0.146)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
2,2-Dichloropropane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
2-Butanone	ND (0.0731)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
2-Chlorotoluene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
2-Hexanone	ND (0.0731)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
4-Chlorotoluene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
4-Isopropyltoluene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9A
Date Sampled: 03/05/25 09:50
Percent Solids: 60
Initial Volume: 5.7g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-19
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0731)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Acetone	**0.113** (0.0731)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Benzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Bromobenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Bromochloromethane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Bromodichloromethane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Bromoform	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Bromomethane	ND (0.0146)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Carbon Disulfide	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Carbon Tetrachloride	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Chlorobenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Chloroethane	ND (0.0146)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Chloroform	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Chloromethane	ND (0.0146)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
cis-1,2-Dichloroethene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
cis-1,3-Dichloropropene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Dibromochloromethane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Dibromomethane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Dichlorodifluoromethane	ND (0.0146)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Diethyl Ether	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Di-isopropyl ether	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Ethyl tertiary-butyl ether	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Ethylbenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Hexachlorobutadiene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Isopropylbenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Methyl tert-Butyl Ether	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Methylene Chloride	ND (0.0365)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9A
Date Sampled: 03/05/25 09:50
Percent Solids: 60
Initial Volume: 5.7g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-19
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
n-Butylbenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
n-Propylbenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
sec-Butylbenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Styrene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
tert-Butylbenzene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Tertiary-amyl methyl ether	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Tetrachloroethene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Tetrahydrofuran	ND (0.0292)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Toluene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
trans-1,2-Dichloroethene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
trans-1,3-Dichloropropene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Trichloroethene	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Trichlorofluoromethane	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Vinyl Chloride	ND (0.0146)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Xylene O	ND (0.0073)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Xylene P,M	ND (0.0146)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032
Xylenes (Total)	ND (0.0146)	---	8260D Low	---	1	MEK	03/10/25 15:58	D5C0185	DC51032

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*102 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*86 %*		*70-130*
Surrogate: Dibromofluoromethane	*98 %*		*70-130*
Surrogate: Toluene-d8	*109 %*		*70-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10C
Date Sampled: 03/05/25 09:00
Percent Solids: 79
Initial Volume: 5g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-20
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,1,1-Trichloroethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,1,2,2-Tetrachloroethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,1,2-Trichloroethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,1-Dichloroethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,1-Dichloroethene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,1-Dichloropropene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,2,3-Trichlorobenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,2,3-Trichloropropane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,2,4-Trichlorobenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,2,4-Trimethylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,2-Dibromo-3-Chloropropane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,2-Dibromoethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,2-Dichlorobenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,2-Dichloroethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,2-Dichloropropane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,3,5-Trimethylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,3-Dichlorobenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,3-Dichloropropane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,4-Dichlorobenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
1,4-Dioxane	ND (0.127)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
2,2-Dichloropropane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
2-Butanone	ND (0.0636)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
2-Chlorotoluene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
2-Hexanone	ND (0.0636)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
4-Chlorotoluene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
4-Isopropyltoluene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10C
Date Sampled: 03/05/25 09:00
Percent Solids: 79
Initial Volume: 5g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-20
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0636)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Acetone	ND (0.0636)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Benzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Bromobenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Bromochloromethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Bromodichloromethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Bromoform	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Bromomethane	ND (0.0127)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Carbon Disulfide	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Carbon Tetrachloride	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Chlorobenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Chloroethane	ND (0.0127)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Chloroform	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Chloromethane	ND (0.0127)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
cis-1,2-Dichloroethene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
cis-1,3-Dichloropropene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Dibromochloromethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Dibromomethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Dichlorodifluoromethane	ND (0.0127)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Diethyl Ether	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Di-isopropyl ether	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Ethyl tertiary-butyl ether	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Ethylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Hexachlorobutadiene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Isopropylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Methyl tert-Butyl Ether	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Methylene Chloride	ND (0.0318)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10C
Date Sampled: 03/05/25 09:00
Percent Solids: 79
Initial Volume: 5g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-20
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
n-Butylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
n-Propylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
sec-Butylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Styrene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
tert-Butylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Tertiary-amyl methyl ether	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Tetrachloroethene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Tetrahydrofuran	ND (0.0255)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Toluene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
trans-1,2-Dichloroethene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
trans-1,3-Dichloropropene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Trichloroethene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Trichlorofluoromethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Vinyl Chloride	ND (0.0127)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Xylene O	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Xylene P,M	ND (0.0127)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032
Xylenes (Total)	ND (0.0127)	---	8260D Low	---	1	MEK	03/10/25 16:24	D5C0185	DC51032

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*107 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*95 %*		*70-130*
Surrogate: Dibromofluoromethane	*101 %*		*70-130*
Surrogate: Toluene-d8	*101 %*		*70-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1 - Oven Dried
Date Sampled: 03/05/25 13:20
Percent Solids: 100

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-21
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**3.58** (0.39)	---	6010D	---	1	CEV	03/12/25 12:46	5.16 100	DC51107
Cadmium	**0.25** (0.10)	---	6010D	---	1	CEV	03/12/25 12:46	5.16 100	DC51107
Chromium	**11.7** (0.39)	---	6010D	---	1	CEV	03/12/25 12:46	5.16 100	DC51107
Copper	**56.4** (0.97)	---	6010D	---	1	CEV	03/12/25 12:46	5.16 100	DC51107
Lead	**368** (1.94)	---	6010D	---	1	CEV	03/12/25 12:46	5.16 100	DC51107
Mercury	**0.171** (0.010)	---	7471B	---	1	BJV	03/11/25 14:59	2.01 40	DC51121
Nickel	**7.33** (0.97)	---	6010D	---	1	CEV	03/12/25 12:46	5.16 100	DC51107
Zinc	**140** (0.97)	---	6010D	---	1	CEV	03/12/25 12:46	5.16 100	DC51107

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1 - Oven Dried
Date Sampled: 03/05/25 13:20
Percent Solids: 100

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-21RE1
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Lead	**191** (4.78)	---	6010D	---	1	CEV	04/14/25 13:33	2.09 100	DD51117

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-1 - Oven Dried
Date Sampled: 03/05/25 13:20
Percent Solids: 100

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-21RE2
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Lead	**211** (4.74)	---	6010D	---	1	CEV	04/14/25 13:35	2.11 100	DD51117

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-2 - Oven Dried
Date Sampled: 03/05/25 11:15
Percent Solids: 99

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-22
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**6.78** (0.39)	---	6010D	---	1	CEV	03/12/25 12:49	5.14 100	DC51107
Cadmium	**2.90** (0.10)	---	6010D	---	1	CEV	03/12/25 12:49	5.14 100	DC51107
Chromium	**19.0** (0.39)	---	6010D	---	1	CEV	03/12/25 12:49	5.14 100	DC51107
Copper	**10800** (49.2)	---	6010D	---	50	CEV	03/13/25 11:44	5.14 100	DC51107
Lead	**278** (1.97)	---	6010D	---	1	CEV	03/12/25 12:49	5.14 100	DC51107
Mercury	**0.364** (0.094)	---	7471B	---	10	BJV	03/11/25 16:32	2.14 40	DC51121
Nickel	**12.9** (0.98)	---	6010D	---	1	CEV	03/12/25 12:49	5.14 100	DC51107
Zinc	**1790** (49.2)	---	6010D	---	50	CEV	03/13/25 11:44	5.14 100	DC51107

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-3 - Oven Dried
Date Sampled: 03/05/25 11:00
Percent Solids: 100

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-23
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**0.82** (0.38)	---	6010D	---	1	CEV	03/12/25 12:51	5.24 100	DC51107
Cadmium	ND (0.10)	---	6010D	---	1	CEV	03/12/25 12:51	5.24 100	DC51107
Chromium	**4.68** (0.38)	---	6010D	---	1	CEV	03/12/25 12:51	5.24 100	DC51107
Copper	**8.50** (0.95)	---	6010D	---	1	CEV	03/12/25 12:51	5.24 100	DC51107
Lead	**33.3** (1.91)	---	6010D	---	1	CEV	03/12/25 12:51	5.24 100	DC51107
Mercury	**0.049** (0.009)	---	7471B	---	1	BJV	03/11/25 15:03	2.18 40	DC51121
Nickel	**2.63** (0.95)	---	6010D	---	1	CEV	03/12/25 12:51	5.24 100	DC51107
Zinc	**16.5** (0.95)	---	6010D	---	1	CEV	03/12/25 12:51	5.24 100	DC51107

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-4 - Oven Dried
Date Sampled: 03/05/25 12:00
Percent Solids: 99

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-24
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**10.5** (0.40)	---	6010D	---	1	CEV	03/12/25 12:53	5.08 100	DC51107
Cadmium	**0.38** (0.10)	---	6010D	---	1	CEV	03/12/25 12:53	5.08 100	DC51107
Chromium	**14.1** (0.40)	---	6010D	---	1	CEV	03/12/25 12:53	5.08 100	DC51107
Copper	**70.5** (1.00)	---	6010D	---	1	CEV	03/12/25 12:53	5.08 100	DC51107
Lead	**383** (1.99)	---	6010D	---	1	CEV	03/12/25 12:53	5.08 100	DC51107
Mercury	**0.480** (0.189)	---	7471B	---	20	BJV	03/11/25 16:34	2.12 40	DC51121
Nickel	**10.3** (1.00)	---	6010D	---	1	CEV	03/12/25 12:53	5.08 100	DC51107
Zinc	**414** (9.96)	---	6010D	---	10	CEV	03/13/25 11:46	5.08 100	DC51107

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-5 - Oven Dried
Date Sampled: 03/05/25 13:15
Percent Solids: 100

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-25
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**5.68** (0.37)	---	6010D	---	1	CEV	03/12/25 12:55	5.39 100	DC51107
Cadmium	**0.11** (0.09)	---	6010D	---	1	CEV	03/12/25 12:55	5.39 100	DC51107
Chromium	**13.8** (0.37)	---	6010D	---	1	CEV	03/12/25 12:55	5.39 100	DC51107
Copper	**39.0** (0.93)	---	6010D	---	1	CEV	03/12/25 12:55	5.39 100	DC51107
Lead	**361** (1.86)	---	6010D	---	1	CEV	03/12/25 12:55	5.39 100	DC51107
Mercury	**0.354** (0.041)	---	7471B	---	5	BJV	03/11/25 16:37	2.41 40	DC51121
Nickel	**8.29** (0.93)	---	6010D	---	1	CEV	03/12/25 12:55	5.39 100	DC51107
Zinc	**126** (0.93)	---	6010D	---	1	CEV	03/12/25 12:55	5.39 100	DC51107

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-6 - Oven Dried
Date Sampled: 03/05/25 12:30
Percent Solids: 99

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-26
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**8.05** (0.39)	---	6010D	---	1	CEV	03/12/25 13:47	5.16 100	DC51107
Cadmium	ND (0.10)	---	6010D	---	1	CEV	03/12/25 13:47	5.16 100	DC51107
Chromium	**9.65** (0.39)	---	6010D	---	1	CEV	03/12/25 13:47	5.16 100	DC51107
Copper	**38.0** (0.98)	---	6010D	---	1	CEV	03/12/25 13:47	5.16 100	DC51107
Lead	**271** (1.96)	---	6010D	---	1	CEV	03/12/25 13:47	5.16 100	DC51107
Mercury	**0.453** (0.041)	---	7471B	---	5	BJV	03/11/25 16:39	2.42 40	DC51121
Nickel	**5.57** (0.98)	---	6010D	---	1	CEV	03/12/25 13:47	5.16 100	DC51107
Zinc	**94.4** (0.98)	---	6010D	---	1	CEV	03/12/25 13:47	5.16 100	DC51107

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-7 - Oven Dried
Date Sampled: 03/05/25 10:30
Percent Solids: 100

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-27
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**2.29** (0.37)	---	6010D	---	1	CEV	03/12/25 13:49	5.41 100	DC51107
Cadmium	ND (0.09)	---	6010D	---	1	CEV	03/12/25 13:49	5.41 100	DC51107
Chromium	**10.2** (0.37)	---	6010D	---	1	CEV	03/12/25 13:49	5.41 100	DC51107
Copper	**30.7** (0.92)	---	6010D	---	1	CEV	03/12/25 13:49	5.41 100	DC51107
Lead	**117** (1.85)	---	6010D	---	1	CEV	03/12/25 13:49	5.41 100	DC51107
Mercury	**0.132** (0.010)	---	7471B	---	1	BJV	03/11/25 16:09	2.05 40	DC51121
Nickel	**5.23** (0.92)	---	6010D	---	1	CEV	03/12/25 13:49	5.41 100	DC51107
Zinc	**65.2** (0.92)	---	6010D	---	1	CEV	03/12/25 13:49	5.41 100	DC51107

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-8 - Oven Dried
Date Sampled: 03/05/25 09:15
Percent Solids: 100

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-28
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**3.79** (0.37)	---	6010D	---	1	CEV	03/12/25 13:51	5.45 100	DC51107
Cadmium	**0.22** (0.09)	---	6010D	---	1	CEV	03/12/25 13:51	5.45 100	DC51107
Chromium	**10.1** (0.37)	---	6010D	---	1	CEV	03/12/25 13:51	5.45 100	DC51107
Copper	**26.6** (0.92)	---	6010D	---	1	CEV	03/12/25 13:51	5.45 100	DC51107
Lead	**189** (1.83)	---	6010D	---	1	CEV	03/12/25 13:51	5.45 100	DC51107
Mercury	**0.423** (0.046)	---	7471B	---	5	BJV	03/11/25 16:41	2.16 40	DC51121
Nickel	**6.03** (0.92)	---	6010D	---	1	CEV	03/12/25 13:51	5.45 100	DC51107
Zinc	**100** (0.92)	---	6010D	---	1	CEV	03/12/25 13:51	5.45 100	DC51107

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-9 - Oven Dried
Date Sampled: 03/05/25 09:50
Percent Solids: 100

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-29
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**1.28** (0.39)	---	6010D	---	1	CEV	03/12/25 13:54	5.16 100	DC51107
Cadmium	ND (0.10)	---	6010D	---	1	CEV	03/12/25 13:54	5.16 100	DC51107
Chromium	**5.42** (0.39)	---	6010D	---	1	CEV	03/12/25 13:54	5.16 100	DC51107
Copper	**4.91** (0.97)	---	6010D	---	1	CEV	03/12/25 13:54	5.16 100	DC51107
Lead	**43.6** (1.94)	---	6010D	---	1	CEV	03/12/25 13:54	5.16 100	DC51107
Mercury	**0.036** (0.009)	---	7471B	---	1	BJV	03/11/25 15:30	2.14 40	DC51121
Nickel	**2.77** (0.97)	---	6010D	---	1	CEV	03/12/25 13:54	5.16 100	DC51107
Zinc	**11.2** (0.97)	---	6010D	---	1	CEV	03/12/25 13:54	5.16 100	DC51107

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-10 - Oven Dried
Date Sampled: 03/05/25 09:00
Percent Solids: 99

ESS Laboratory Work Order: 25C0241
ESS Laboratory Sample ID: 25C0241-30
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**2.23** (0.38)	---	6010D	---	1	CEV	03/12/25 14:03	5.32 100	DC51107
Cadmium	ND (0.10)	---	6010D	---	1	CEV	03/12/25 14:03	5.32 100	DC51107
Chromium	**6.25** (0.38)	---	6010D	---	1	CEV	03/12/25 14:03	5.32 100	DC51107
Copper	**4.84** (0.95)	---	6010D	---	1	CEV	03/12/25 14:03	5.32 100	DC51107
Lead	**38.3** (1.90)	---	6010D	---	1	CEV	03/12/25 14:03	5.32 100	DC51107
Mercury	**0.063** (0.010)	---	7471B	---	1	BJV	03/11/25 15:32	2.09 40	DC51121
Nickel	**3.08** (0.95)	---	6010D	---	1	CEV	03/12/25 14:03	5.32 100	DC51107
Zinc	**14.1** (0.95)	---	6010D	---	1	CEV	03/12/25 14:03	5.32 100	DC51107

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DC51007 - 3050B										
Blank										
Arsenic	ND	2.34	mg/kg wet							
Barium	ND	0.93	mg/kg wet							
Cadmium	ND	0.47	mg/kg wet							
Chromium	ND	0.93	mg/kg wet							
Lead	ND	4.67	mg/kg wet							
Selenium	ND	4.67	mg/kg wet							
Silver	ND	0.47	mg/kg wet							
LCS										
Arsenic	132	7.81	mg/kg wet	280.0		47	32-110			
Barium	333	3.12	mg/kg wet	688.0		48	33-110			
Cadmium	93.2	1.56	mg/kg wet	210.0		44	33-110			
Chromium	157	3.12	mg/kg wet	225.0		70	50-110			
Lead	166	15.6	mg/kg wet	350.0		47	31-110			
Selenium	151	15.6	mg/kg wet	320.0		47	29-110			
Silver	43.8	1.56	mg/kg wet	95.00		46	30-111			
LCS Dup										
Arsenic	123	8.20	mg/kg wet	280.0		44	32-110	7	30	
Barium	298	3.28	mg/kg wet	688.0		43	33-110	11	30	
Cadmium	87.3	1.64	mg/kg wet	210.0		42	33-110	7	30	
Chromium	147	3.28	mg/kg wet	225.0		65	50-110	7	30	
Lead	155	16.4	mg/kg wet	350.0		44	31-110	7	30	
Selenium	136	16.4	mg/kg wet	320.0		43	29-110	10	30	
Silver	40.1	1.64	mg/kg wet	95.00		42	30-111	9	30	
Batch DC51008 - 7471B										
Blank										
Mercury	ND	0.029	mg/kg wet							
LCS										
Mercury	18.5	3.09	mg/kg wet	24.00		77	56-110			
LCS Dup										
Mercury	18.4	2.91	mg/kg wet	24.00		77	56-110	0.2	30	
Batch DC51107 - 3050B										
Blank										
Arsenic	ND	0.87	mg/kg wet							
Cadmium	ND	0.22	mg/kg wet							
Chromium	ND	0.87	mg/kg wet							
Copper	ND	2.18	mg/kg wet							
Lead	ND	4.37	mg/kg wet							
Nickel	ND	2.18	mg/kg wet							
Zinc	ND	2.18	mg/kg wet							
LCS										
Arsenic	124	3.03	mg/kg wet	280.0		44	32-110			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DC51107 - 3050B										
Cadmium	85.2	0.76	mg/kg wet	210.0		41	33-110			
Chromium	145	3.03	mg/kg wet	225.0		64	50-110			
Copper	127	7.58	mg/kg wet	290.0		44	33-110			
Lead	153	15.2	mg/kg wet	350.0		44	31-110			
Nickel	60.4	7.58	mg/kg wet	95.00		64	48-111			
Zinc	210	7.58	mg/kg wet	500.0		42	30-110			
LCS Dup										
Arsenic	127	2.99	mg/kg wet	280.0		45	32-110	2	30	
Cadmium	90.8	0.75	mg/kg wet	210.0		43	33-110	6	30	
Chromium	152	2.99	mg/kg wet	225.0		68	50-110	5	30	
Copper	135	7.46	mg/kg wet	290.0		47	33-110	6	30	
Lead	159	14.9	mg/kg wet	350.0		45	31-110	4	30	
Nickel	63.4	7.46	mg/kg wet	95.00		67	48-111	5	30	
Zinc	221	7.46	mg/kg wet	500.0		44	30-110	5	30	
Reference										
Lead	3470	169	mg/kg wet	4490		77	81-120			R-
Batch DC51121 - 7471A										
Blank										
Mercury	ND	0.030	mg/kg wet							
LCS										
Mercury	19.5	3.09	mg/kg wet	24.00		81	56-110			
LCS Dup										
Mercury	17.8	2.83	mg/kg wet	24.00		74	56-110	9	30	
Batch DD51014 - 3050B										
Blank										
Lead	ND	4.90	mg/kg wet							
LCS										
Lead	138	15.9	mg/kg wet	124.0		111	80-120			
LCS Dup										
Lead	144	15.2	mg/kg wet	124.0		116	80-120	4	30	
Batch DD51117 - 3050B										
Blank										
Lead	ND	4.74	mg/kg wet							
LCS										
Lead	127	16.4	mg/kg wet	124.0		103	80-120			
LCS Dup										
Lead	118	16.4	mg/kg wet	124.0		95	80-120	8	30	
1311 TCLP Metals										
Batch DD51127 - 3005A										
Blank										
Lead	ND	0.05	mg/L							

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
1311 TCLP Metals										
Batch DD51127 - 3005A										
LCS										
Lead	0.49	0.05	mg/L	0.5000		97	80-120			
LCS Dup										
Lead	0.51	0.05	mg/L	0.5000		102	80-120	4	20	
Volatile Organics Low Level										
Batch DC51032 - 5035										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0500	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0500	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0500	mg/kg wet							
Acetone	ND	0.0500	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51032 - 5035										
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0050	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0250	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0200	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*0.0470*		mg/kg wet	*0.05000*		*94*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0492*		mg/kg wet	*0.05000*		*98*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0472*		mg/kg wet	*0.05000*		*94*	*70-130*			
Surrogate: Toluene-d8	*0.0497*		mg/kg wet	*0.05000*		*99*	*70-130*			
LCS										
1,1,1,2-Tetrachloroethane	0.0524	0.0050	mg/kg wet	0.05000		105	70-130			
1,1,1-Trichloroethane	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
1,1,2,2-Tetrachloroethane	0.0430	0.0050	mg/kg wet	0.05000		86	40-160			
1,1,2-Trichloroethane	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
1,1-Dichloroethane	0.0482	0.0050	mg/kg wet	0.05000		96	70-130			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51032 - 5035										
1,1-Dichloroethene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
1,1-Dichloropropene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130			
1,2,3-Trichlorobenzene	0.0548	0.0050	mg/kg wet	0.05000		110	70-130			
1,2,3-Trichloropropane	0.0446	0.0050	mg/kg wet	0.05000		89	70-130			
1,2,4-Trichlorobenzene	0.0546	0.0050	mg/kg wet	0.05000		109	70-130			
1,2,4-Trimethylbenzene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
1,2-Dibromo-3-Chloropropane	0.0476	0.0050	mg/kg wet	0.05000		95	70-130			
1,2-Dibromoethane	0.0515	0.0050	mg/kg wet	0.05000		103	70-130			
1,2-Dichlorobenzene	0.0484	0.0050	mg/kg wet	0.05000		97	70-130			
1,2-Dichloroethane	0.0470	0.0050	mg/kg wet	0.05000		94	70-130			
1,2-Dichloropropane	0.0488	0.0050	mg/kg wet	0.05000		98	70-130			
1,3,5-Trimethylbenzene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130			
1,3-Dichlorobenzene	0.0483	0.0050	mg/kg wet	0.05000		97	70-130			
1,3-Dichloropropane	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
1,4-Dichlorobenzene	0.0480	0.0050	mg/kg wet	0.05000		96	70-130			
1,4-Dioxane	1.01	0.100	mg/kg wet	1.000		101	70-130			
2,2-Dichloropropane	0.0506	0.0050	mg/kg wet	0.05000		101	70-130			
2-Butanone	0.241	0.0500	mg/kg wet	0.2500		96	40-160			
2-Chlorotoluene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
2-Hexanone	0.221	0.0500	mg/kg wet	0.2500		88	40-160			
4-Chlorotoluene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
4-Isopropyltoluene	0.0463	0.0050	mg/kg wet	0.05000		93	70-130			
4-Methyl-2-Pentanone	0.210	0.0500	mg/kg wet	0.2500		84	40-160			
Acetone	0.220	0.0500	mg/kg wet	0.2500		88	40-160			
Benzene	0.0482	0.0050	mg/kg wet	0.05000		96	70-130			
Bromobenzene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130			
Bromochloromethane	0.0522	0.0050	mg/kg wet	0.05000		104	70-130			
Bromodichloromethane	0.0502	0.0050	mg/kg wet	0.05000		100	70-130			
Bromoform	0.0538	0.0050	mg/kg wet	0.05000		108	40-160			
Bromomethane	0.0471	0.0100	mg/kg wet	0.05000		94	40-160			
Carbon Disulfide	0.0479	0.0050	mg/kg wet	0.05000		96	70-130			
Carbon Tetrachloride	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
Chlorobenzene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130			
Chloroethane	0.0445	0.0100	mg/kg wet	0.05000		89	40-160			
Chloroform	0.0479	0.0050	mg/kg wet	0.05000		96	70-130			
Chloromethane	0.0400	0.0100	mg/kg wet	0.05000		80	40-160			
cis-1,2-Dichloroethene	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			
cis-1,3-Dichloropropene	0.0529	0.0050	mg/kg wet	0.05000		106	40-160			
Dibromochloromethane	0.0534	0.0050	mg/kg wet	0.05000		107	40-160			
Dibromomethane	0.0492	0.0050	mg/kg wet	0.05000		98	70-130			
Dichlorodifluoromethane	0.0314	0.0100	mg/kg wet	0.05000		63	40-160			
Diethyl Ether	0.0509	0.0050	mg/kg wet	0.05000		102	70-130			
Di-isopropyl ether	0.0522	0.0050	mg/kg wet	0.05000		104	70-130			
Ethyl tertiary-butyl ether	0.0546	0.0050	mg/kg wet	0.05000		109	70-130			
Ethylbenzene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51032 - 5035										
Hexachlorobutadiene	0.0504	0.0050	mg/kg wet	0.05000		101	40-160			
Isopropylbenzene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
Methyl tert-Butyl Ether	0.0531	0.0050	mg/kg wet	0.05000		106	70-130			
Methylene Chloride	0.0477	0.0250	mg/kg wet	0.05000		95	70-130			
Naphthalene	0.0566	0.0050	mg/kg wet	0.05000		113	40-160			
n-Butylbenzene	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
n-Propylbenzene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
sec-Butylbenzene	0.0448	0.0050	mg/kg wet	0.05000		90	70-130			
Styrene	0.0508	0.0050	mg/kg wet	0.05000		102	40-160			
tert-Butylbenzene	0.0482	0.0050	mg/kg wet	0.05000		96	70-130			
Tertiary-amyl methyl ether	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			
Tetrachloroethene	0.0515	0.0050	mg/kg wet	0.05000		103	70-130			
Tetrahydrofuran	0.0424	0.0200	mg/kg wet	0.05000		85	70-130			
Toluene	0.0478	0.0050	mg/kg wet	0.05000		96	70-130			
trans-1,2-Dichloroethene	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			
trans-1,3-Dichloropropene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
Trichloroethene	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
Trichlorofluoromethane	0.0395	0.0050	mg/kg wet	0.05000		79	40-160			
Vinyl Chloride	0.0282	0.0100	mg/kg wet	0.05000		56	70-130			B-
Xylene O	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
Xylene P,M	0.0958	0.0100	mg/kg wet	0.1000		96	70-130			
Surrogate: 1,2-Dichloroethane-d4	*0.0451*		mg/kg wet	*0.05000*		*90*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0497*		mg/kg wet	*0.05000*		*99*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0486*		mg/kg wet	*0.05000*		*97*	*70-130*			
Surrogate: Toluene-d8	*0.0502*		mg/kg wet	*0.05000*		*100*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	0.0531	0.0050	mg/kg wet	0.05000		106	70-130	1	20	
1,1,1-Trichloroethane	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	2	20	
1,1,2,2-Tetrachloroethane	0.0439	0.0050	mg/kg wet	0.05000		88	40-160	2	20	
1,1,2-Trichloroethane	0.0482	0.0050	mg/kg wet	0.05000		96	70-130	2	20	
1,1-Dichloroethane	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	1	20	
1,1-Dichloroethene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	1	20	
1,1-Dichloropropene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130	0.8	20	
1,2,3-Trichlorobenzene	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	0.5	20	
1,2,3-Trichloropropane	0.0456	0.0050	mg/kg wet	0.05000		91	70-130	2	20	
1,2,4-Trichlorobenzene	0.0545	0.0050	mg/kg wet	0.05000		109	70-130	0.1	20	
1,2,4-Trimethylbenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	0.6	20	
1,2-Dibromo-3-Chloropropane	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	3	20	
1,2-Dibromoethane	0.0519	0.0050	mg/kg wet	0.05000		104	70-130	0.7	20	
1,2-Dichlorobenzene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	0.6	20	
1,2-Dichloroethane	0.0476	0.0050	mg/kg wet	0.05000		95	70-130	1	20	
1,2-Dichloropropane	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	1	20	
1,3,5-Trimethylbenzene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130	0.8	20	
1,3-Dichlorobenzene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130	0.7	20	
1,3-Dichloropropane	0.0499	0.0050	mg/kg wet	0.05000		100	70-130	2	20	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51032 - 5035										
1,4-Dichlorobenzene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130	0.2	20	
1,4-Dioxane	1.14	0.100	mg/kg wet	1.000		114	70-130	12	20	
2,2-Dichloropropane	0.0514	0.0050	mg/kg wet	0.05000		103	70-130	2	20	
2-Butanone	0.246	0.0500	mg/kg wet	0.2500		98	40-160	2	20	
2-Chlorotoluene	0.0482	0.0050	mg/kg wet	0.05000		96	70-130	0.3	20	
2-Hexanone	0.227	0.0500	mg/kg wet	0.2500		91	40-160	3	20	
4-Chlorotoluene	0.0480	0.0050	mg/kg wet	0.05000		96	70-130	0.2	20	
4-Isopropyltoluene	0.0466	0.0050	mg/kg wet	0.05000		93	70-130	0.7	20	
4-Methyl-2-Pentanone	0.215	0.0500	mg/kg wet	0.2500		86	40-160	3	20	
Acetone	0.220	0.0500	mg/kg wet	0.2500		88	40-160	0.2	20	
Benzene	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	2	20	
Bromobenzene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130	0.7	20	
Bromochloromethane	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	2	20	
Bromodichloromethane	0.0516	0.0050	mg/kg wet	0.05000		103	70-130	3	20	
Bromoform	0.0547	0.0050	mg/kg wet	0.05000		109	40-160	2	20	
Bromomethane	0.0470	0.0100	mg/kg wet	0.05000		94	40-160	0.2	20	
Carbon Disulfide	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	2	20	
Carbon Tetrachloride	0.0500	0.0050	mg/kg wet	0.05000		100	70-130	2	20	
Chlorobenzene	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	1	20	
Chloroethane	0.0450	0.0100	mg/kg wet	0.05000		90	40-160	1	20	
Chloroform	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	2	20	
Chloromethane	0.0404	0.0100	mg/kg wet	0.05000		81	40-160	0.9	20	
cis-1,2-Dichloroethene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	2	20	
cis-1,3-Dichloropropene	0.0535	0.0050	mg/kg wet	0.05000		107	40-160	1	20	
Dibromochloromethane	0.0542	0.0050	mg/kg wet	0.05000		108	40-160	1	20	
Dibromomethane	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	2	20	
Dichlorodifluoromethane	0.0319	0.0100	mg/kg wet	0.05000		64	40-160	2	20	
Diethyl Ether	0.0519	0.0050	mg/kg wet	0.05000		104	70-130	2	20	
Di-isopropyl ether	0.0529	0.0050	mg/kg wet	0.05000		106	70-130	1	20	
Ethyl tertiary-butyl ether	0.0554	0.0050	mg/kg wet	0.05000		111	70-130	1	20	
Ethylbenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	1	20	
Hexachlorobutadiene	0.0512	0.0050	mg/kg wet	0.05000		102	40-160	1	20	
Isopropylbenzene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130	0.9	20	
Methyl tert-Butyl Ether	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	2	20	
Methylene Chloride	0.0485	0.0250	mg/kg wet	0.05000		97	70-130	2	20	
Naphthalene	0.0578	0.0050	mg/kg wet	0.05000		116	40-160	2	20	
n-Butylbenzene	0.0472	0.0050	mg/kg wet	0.05000		94	70-130	0.2	20	
n-Propylbenzene	0.0478	0.0050	mg/kg wet	0.05000		96	70-130	0.5	20	
sec-Butylbenzene	0.0452	0.0050	mg/kg wet	0.05000		90	70-130	0.9	20	
Styrene	0.0514	0.0050	mg/kg wet	0.05000		103	40-160	1	20	
tert-Butylbenzene	0.0485	0.0050	mg/kg wet	0.05000		97	70-130	0.7	20	
Tertiary-amyl methyl ether	0.0560	0.0050	mg/kg wet	0.05000		112	70-130	2	20	
Tetrachloroethene	0.0511	0.0050	mg/kg wet	0.05000		102	70-130	0.8	20	
Tetrahydrofuran	0.0445	0.0200	mg/kg wet	0.05000		89	70-130	5	20	
Toluene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130	2	20	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51032 - 5035										
trans-1,2-Dichloroethene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130	2	20	
trans-1,3-Dichloropropene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130	1	20	
Trichloroethene	0.0479	0.0050	mg/kg wet	0.05000		96	70-130	3	20	
Trichlorofluoromethane	0.0399	0.0050	mg/kg wet	0.05000		80	40-160	1	20	
Vinyl Chloride	0.0295	0.0100	mg/kg wet	0.05000		59	70-130	4	20	B-
Xylene O	0.0482	0.0050	mg/kg wet	0.05000		96	70-130	1	20	
Xylene P,M	0.0967	0.0100	mg/kg wet	0.1000		97	70-130	1	20	
Surrogate: 1,2-Dichloroethane-d4	*0.0449*		mg/kg wet	*0.05000*		*90*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0495*		mg/kg wet	*0.05000*		*99*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0482*		mg/kg wet	*0.05000*		*96*	*70-130*			
Surrogate: Toluene-d8	*0.0494*		mg/kg wet	*0.05000*		*99*	*70-130*			
Batch DC51123 - 5035										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0500	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0500	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0500	mg/kg wet							
Acetone	ND	0.0500	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51123 - 5035										
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0050	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0250	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0200	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*0.0525*		mg/kg wet	*0.05000*		*105*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0493*		mg/kg wet	*0.05000*		*99*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0493*		mg/kg wet	*0.05000*		*99*	*70-130*			
Surrogate: Toluene-d8	*0.0502*		mg/kg wet	*0.05000*		*100*	*70-130*			
LCS										

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51123 - 5035										
1,1,1,2-Tetrachloroethane	0.0518	0.0050	mg/kg wet	0.05000		104	70-130			
1,1,1-Trichloroethane	0.0513	0.0050	mg/kg wet	0.05000		103	70-130			
1,1,2,2-Tetrachloroethane	0.0439	0.0050	mg/kg wet	0.05000		88	40-160			
1,1,2-Trichloroethane	0.0512	0.0050	mg/kg wet	0.05000		102	70-130			
1,1-Dichloroethane	0.0524	0.0050	mg/kg wet	0.05000		105	70-130			
1,1-Dichloroethene	0.0502	0.0050	mg/kg wet	0.05000		100	70-130			
1,1-Dichloropropene	0.0515	0.0050	mg/kg wet	0.05000		103	70-130			
1,2,3-Trichlorobenzene	0.0515	0.0050	mg/kg wet	0.05000		103	70-130			
1,2,3-Trichloropropane	0.0448	0.0050	mg/kg wet	0.05000		90	70-130			
1,2,4-Trichlorobenzene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130			
1,2,4-Trimethylbenzene	0.0483	0.0050	mg/kg wet	0.05000		97	70-130			
1,2-Dibromo-3-Chloropropane	0.0478	0.0050	mg/kg wet	0.05000		96	70-130			
1,2-Dibromoethane	0.0508	0.0050	mg/kg wet	0.05000		102	70-130			
1,2-Dichlorobenzene	0.0469	0.0050	mg/kg wet	0.05000		94	70-130			
1,2-Dichloroethane	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
1,2-Dichloropropane	0.0530	0.0050	mg/kg wet	0.05000		106	70-130			
1,3,5-Trimethylbenzene	0.0479	0.0050	mg/kg wet	0.05000		96	70-130			
1,3-Dichlorobenzene	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
1,3-Dichloropropane	0.0503	0.0050	mg/kg wet	0.05000		101	70-130			
1,4-Dichlorobenzene	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
1,4-Dioxane	1.06	0.100	mg/kg wet	1.000		106	70-130			
2,2-Dichloropropane	0.0536	0.0050	mg/kg wet	0.05000		107	70-130			
2-Butanone	0.319	0.0500	mg/kg wet	0.2500		128	40-160			
2-Chlorotoluene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
2-Hexanone	0.219	0.0500	mg/kg wet	0.2500		87	40-160			
4-Chlorotoluene	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
4-Isopropyltoluene	0.0449	0.0050	mg/kg wet	0.05000		90	70-130			
4-Methyl-2-Pentanone	0.228	0.0500	mg/kg wet	0.2500		91	40-160			
Acetone	0.213	0.0500	mg/kg wet	0.2500		85	40-160			
Benzene	0.0519	0.0050	mg/kg wet	0.05000		104	70-130			
Bromobenzene	0.0485	0.0050	mg/kg wet	0.05000		97	70-130			
Bromochloromethane	0.0546	0.0050	mg/kg wet	0.05000		109	70-130			
Bromodichloromethane	0.0553	0.0050	mg/kg wet	0.05000		111	70-130			
Bromoform	0.0522	0.0050	mg/kg wet	0.05000		104	40-160			
Bromomethane	0.0513	0.0100	mg/kg wet	0.05000		103	40-160			
Carbon Disulfide	0.0511	0.0050	mg/kg wet	0.05000		102	70-130			
Carbon Tetrachloride	0.0527	0.0050	mg/kg wet	0.05000		105	70-130			
Chlorobenzene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
Chloroethane	0.0493	0.0100	mg/kg wet	0.05000		99	40-160			
Chloroform	0.0519	0.0050	mg/kg wet	0.05000		104	70-130			
Chloromethane	0.0452	0.0100	mg/kg wet	0.05000		90	40-160			
cis-1,2-Dichloroethene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130			
cis-1,3-Dichloropropene	0.0562	0.0050	mg/kg wet	0.05000		112	40-160			
Dibromochloromethane	0.0526	0.0050	mg/kg wet	0.05000		105	40-160			
Dibromomethane	0.0530	0.0050	mg/kg wet	0.05000		106	70-130			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51123 - 5035										
Dichlorodifluoromethane	0.0355	0.0100	mg/kg wet	0.05000		71	40-160			
Diethyl Ether	0.0546	0.0050	mg/kg wet	0.05000		109	70-130			
Di-isopropyl ether	0.0582	0.0050	mg/kg wet	0.05000		116	70-130			
Ethyl tertiary-butyl ether	0.0587	0.0050	mg/kg wet	0.05000		117	70-130			
Ethylbenzene	0.0484	0.0050	mg/kg wet	0.05000		97	70-130			
Hexachlorobutadiene	0.0477	0.0050	mg/kg wet	0.05000		95	40-160			
Isopropylbenzene	0.0478	0.0050	mg/kg wet	0.05000		96	70-130			
Methyl tert-Butyl Ether	0.0562	0.0050	mg/kg wet	0.05000		112	70-130			
Methylene Chloride	0.0512	0.0250	mg/kg wet	0.05000		102	70-130			
Naphthalene	0.0535	0.0050	mg/kg wet	0.05000		107	40-160			
n-Butylbenzene	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
n-Propylbenzene	0.0470	0.0050	mg/kg wet	0.05000		94	70-130			
sec-Butylbenzene	0.0440	0.0050	mg/kg wet	0.05000		88	70-130			
Styrene	0.0498	0.0050	mg/kg wet	0.05000		100	40-160			
tert-Butylbenzene	0.0470	0.0050	mg/kg wet	0.05000		94	70-130			
Tertiary-amyl methyl ether	0.0581	0.0050	mg/kg wet	0.05000		116	70-130			
Tetrachloroethene	0.0452	0.0050	mg/kg wet	0.05000		90	70-130			
Tetrahydrofuran	0.0482	0.0200	mg/kg wet	0.05000		96	70-130			
Toluene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130			
trans-1,2-Dichloroethene	0.0500	0.0050	mg/kg wet	0.05000		100	70-130			
trans-1,3-Dichloropropene	0.0559	0.0050	mg/kg wet	0.05000		112	70-130			
Trichloroethene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130			
Trichlorofluoromethane	0.0426	0.0050	mg/kg wet	0.05000		85	40-160			
Vinyl Chloride	0.0459	0.0100	mg/kg wet	0.05000		92	70-130			
Xylene O	0.0469	0.0050	mg/kg wet	0.05000		94	70-130			
Xylene P,M	0.0943	0.0100	mg/kg wet	0.1000		94	70-130			
Surrogate: 1,2-Dichloroethane-d4	*0.0504*		mg/kg wet	*0.05000*		*101*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0500*		mg/kg wet	*0.05000*		*100*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0516*		mg/kg wet	*0.05000*		*103*	*70-130*			
Surrogate: Toluene-d8	*0.0494*		mg/kg wet	*0.05000*		*99*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	3	20	
1,1,1-Trichloroethane	0.0521	0.0050	mg/kg wet	0.05000		104	70-130	1	20	
1,1,2,2-Tetrachloroethane	0.0444	0.0050	mg/kg wet	0.05000		89	40-160	1	20	
1,1,2-Trichloroethane	0.0515	0.0050	mg/kg wet	0.05000		103	70-130	0.7	20	
1,1-Dichloroethane	0.0530	0.0050	mg/kg wet	0.05000		106	70-130	1	20	
1,1-Dichloroethene	0.0508	0.0050	mg/kg wet	0.05000		102	70-130	1	20	
1,1-Dichloropropene	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	1	20	
1,2,3-Trichlorobenzene	0.0524	0.0050	mg/kg wet	0.05000		105	70-130	2	20	
1,2,3-Trichloropropane	0.0454	0.0050	mg/kg wet	0.05000		91	70-130	1	20	
1,2,4-Trichlorobenzene	0.0515	0.0050	mg/kg wet	0.05000		103	70-130	2	20	
1,2,4-Trimethylbenzene	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	2	20	
1,2-Dibromo-3-Chloropropane	0.0482	0.0050	mg/kg wet	0.05000		96	70-130	0.8	20	
1,2-Dibromoethane	0.0521	0.0050	mg/kg wet	0.05000		104	70-130	3	20	
1,2-Dichlorobenzene	0.0477	0.0050	mg/kg wet	0.05000		95	70-130	2	20	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51123 - 5035										
1,2-Dichloroethane	0.0524	0.0050	mg/kg wet	0.05000		105	70-130	0.1	20	
1,2-Dichloropropane	0.0534	0.0050	mg/kg wet	0.05000		107	70-130	0.6	20	
1,3,5-Trimethylbenzene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	2	20	
1,3-Dichlorobenzene	0.0472	0.0050	mg/kg wet	0.05000		94	70-130	2	20	
1,3-Dichloropropane	0.0519	0.0050	mg/kg wet	0.05000		104	70-130	3	20	
1,4-Dichlorobenzene	0.0471	0.0050	mg/kg wet	0.05000		94	70-130	1	20	
1,4-Dioxane	0.997	0.100	mg/kg wet	1.000		100	70-130	6	20	
2,2-Dichloropropane	0.0542	0.0050	mg/kg wet	0.05000		108	70-130	1	20	
2-Butanone	0.316	0.0500	mg/kg wet	0.2500		127	40-160	0.8	20	
2-Chlorotoluene	0.0485	0.0050	mg/kg wet	0.05000		97	70-130	2	20	
2-Hexanone	0.221	0.0500	mg/kg wet	0.2500		89	40-160	1	20	
4-Chlorotoluene	0.0480	0.0050	mg/kg wet	0.05000		96	70-130	2	20	
4-Isopropyltoluene	0.0461	0.0050	mg/kg wet	0.05000		92	70-130	3	20	
4-Methyl-2-Pentanone	0.228	0.0500	mg/kg wet	0.2500		91	40-160	0.08	20	
Acetone	0.204	0.0500	mg/kg wet	0.2500		82	40-160	4	20	
Benzene	0.0525	0.0050	mg/kg wet	0.05000		105	70-130	1	20	
Bromobenzene	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	2	20	
Bromochloromethane	0.0551	0.0050	mg/kg wet	0.05000		110	70-130	0.9	20	
Bromodichloromethane	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	0.5	20	
Bromoform	0.0533	0.0050	mg/kg wet	0.05000		107	40-160	2	20	
Bromomethane	0.0511	0.0100	mg/kg wet	0.05000		102	40-160	0.4	20	
Carbon Disulfide	0.0519	0.0050	mg/kg wet	0.05000		104	70-130	1	20	
Carbon Tetrachloride	0.0534	0.0050	mg/kg wet	0.05000		107	70-130	1	20	
Chlorobenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	3	20	
Chloroethane	0.0502	0.0100	mg/kg wet	0.05000		100	40-160	2	20	
Chloroform	0.0520	0.0050	mg/kg wet	0.05000		104	70-130	0.2	20	
Chloromethane	0.0450	0.0100	mg/kg wet	0.05000		90	40-160	0.5	20	
cis-1,2-Dichloroethene	0.0536	0.0050	mg/kg wet	0.05000		107	70-130	1	20	
cis-1,3-Dichloropropene	0.0566	0.0050	mg/kg wet	0.05000		113	40-160	0.7	20	
Dibromochloromethane	0.0541	0.0050	mg/kg wet	0.05000		108	40-160	3	20	
Dibromomethane	0.0531	0.0050	mg/kg wet	0.05000		106	70-130	0.2	20	
Dichlorodifluoromethane	0.0354	0.0100	mg/kg wet	0.05000		71	40-160	0.4	20	
Diethyl Ether	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	0.7	20	
Di-isopropyl ether	0.0584	0.0050	mg/kg wet	0.05000		117	70-130	0.4	20	
Ethyl tertiary-butyl ether	0.0594	0.0050	mg/kg wet	0.05000		119	70-130	1	20	
Ethylbenzene	0.0499	0.0050	mg/kg wet	0.05000		100	70-130	3	20	
Hexachlorobutadiene	0.0491	0.0050	mg/kg wet	0.05000		98	40-160	3	20	
Isopropylbenzene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130	3	20	
Methyl tert-Butyl Ether	0.0564	0.0050	mg/kg wet	0.05000		113	70-130	0.3	20	
Methylene Chloride	0.0518	0.0250	mg/kg wet	0.05000		104	70-130	1	20	
Naphthalene	0.0547	0.0050	mg/kg wet	0.05000		109	40-160	2	20	
n-Butylbenzene	0.0474	0.0050	mg/kg wet	0.05000		95	70-130	2	20	
n-Propylbenzene	0.0482	0.0050	mg/kg wet	0.05000		96	70-130	2	20	
sec-Butylbenzene	0.0451	0.0050	mg/kg wet	0.05000		90	70-130	2	20	
Styrene	0.0518	0.0050	mg/kg wet	0.05000		104	40-160	4	20	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51123 - 5035										
tert-Butylbenzene	0.0482	0.0050	mg/kg wet	0.05000		96	70-130	3	20	
Tertiary-amyl methyl ether	0.0589	0.0050	mg/kg wet	0.05000		118	70-130	1	20	
Tetrachloroethene	0.0466	0.0050	mg/kg wet	0.05000		93	70-130	3	20	
Tetrahydrofuran	0.0467	0.0200	mg/kg wet	0.05000		93	70-130	3	20	
Toluene	0.0512	0.0050	mg/kg wet	0.05000		102	70-130	0.9	20	
trans-1,2-Dichloroethene	0.0504	0.0050	mg/kg wet	0.05000		101	70-130	0.9	20	
trans-1,3-Dichloropropene	0.0561	0.0050	mg/kg wet	0.05000		112	70-130	0.4	20	
Trichloroethene	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	2	20	
Trichlorofluoromethane	0.0427	0.0050	mg/kg wet	0.05000		85	40-160	0.3	20	
Vinyl Chloride	0.0456	0.0100	mg/kg wet	0.05000		91	70-130	0.7	20	
Xylene O	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	4	20	
Xylene P,M	0.0971	0.0100	mg/kg wet	0.1000		97	70-130	3	20	
Surrogate: 1,2-Dichloroethane-d4	*0.0492*		mg/kg wet	*0.05000*		*98*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0505*		mg/kg wet	*0.05000*		*101*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0506*		mg/kg wet	*0.05000*		*101*	*70-130*			
Surrogate: Toluene-d8	*0.0497*		mg/kg wet	*0.05000*		*99*	*70-130*			
Semi-Volatile Organic Compounds										
Batch DC50743 - 3546										
Blank										
1,1-Biphenyl	ND	0.025	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.250	mg/kg wet							
1,2-Dichlorobenzene	ND	0.250	mg/kg wet							
1,3-Dichlorobenzene	ND	0.250	mg/kg wet							
1,4-Dichlorobenzene	ND	0.125	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.250	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.125	mg/kg wet							
2,4-Dichlorophenol	ND	0.125	mg/kg wet							
2,4-Dimethylphenol	ND	0.175	mg/kg wet							
2,4-Dinitrophenol	ND	0.500	mg/kg wet							
2,4-Dinitrotoluene	ND	0.125	mg/kg wet							
2,6-Dinitrotoluene	ND	0.250	mg/kg wet							
2-Chloronaphthalene	ND	0.250	mg/kg wet							
2-Chlorophenol	ND	0.125	mg/kg wet							
2-Methylnaphthalene	ND	0.125	mg/kg wet							
2-Methylphenol	ND	0.250	mg/kg wet							
2-Nitrophenol	ND	0.500	mg/kg wet							
3,3´-Dichlorobenzidine	ND	0.250	mg/kg wet							
3+4-Methylphenol	ND	0.250	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.250	mg/kg wet							
4-Chloroaniline	ND	0.250	mg/kg wet							
4-Nitrophenol	ND	1.00	mg/kg wet							
Acenaphthene	ND	0.250	mg/kg wet							
Acenaphthylene	ND	0.250	mg/kg wet							
Acetophenone	ND	0.250	mg/kg wet							

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Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DC50743 - 3546										
Aniline	ND	0.250	mg/kg wet							
Anthracene	ND	0.250	mg/kg wet							
Azobenzene	ND	0.250	mg/kg wet							
Benzo(a)anthracene	ND	0.250	mg/kg wet							
Benzo(a)pyrene	ND	0.250	mg/kg wet							
Benzo(b)fluoranthene	ND	0.250	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.250	mg/kg wet							
Benzo(k)fluoranthene	ND	0.250	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.250	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.125	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.125	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.250	mg/kg wet							
Butylbenzylphthalate	ND	0.250	mg/kg wet							
Chrysene	ND	0.250	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.125	mg/kg wet							
Dibenzofuran	ND	0.250	mg/kg wet							
Diethylphthalate	ND	0.250	mg/kg wet							
Dimethylphthalate	ND	0.250	mg/kg wet							
Di-n-butylphthalate	ND	0.250	mg/kg wet							
Di-n-octylphthalate	ND	0.500	mg/kg wet							
Fluoranthene	ND	0.250	mg/kg wet							
Fluorene	ND	0.250	mg/kg wet							
Hexachlorobenzene	ND	0.125	mg/kg wet							
Hexachlorobutadiene	ND	0.250	mg/kg wet							
Hexachloroethane	ND	0.125	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.250	mg/kg wet							
Isophorone	ND	0.250	mg/kg wet							
Naphthalene	ND	0.250	mg/kg wet							
Nitrobenzene	ND	0.250	mg/kg wet							
N-Nitrosodimethylamine	ND	0.250	mg/kg wet							
Pentachlorophenol	ND	0.500	mg/kg wet							
Phenanthrene	ND	0.250	mg/kg wet							
Phenol	ND	0.250	mg/kg wet							
Pyrene	ND	0.250	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	*2.07*		mg/kg wet	*2.500*		*83*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.11*		mg/kg wet	*3.750*		*83*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*2.97*		mg/kg wet	*3.750*		*79*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*1.91*		mg/kg wet	*2.500*		*76*	*30-130*			
Surrogate: 2-Fluorophenol	*2.99*		mg/kg wet	*3.750*		*80*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.89*		mg/kg wet	*2.500*		*76*	*30-130*			
Surrogate: Phenol-d6	*3.09*		mg/kg wet	*3.750*		*82*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.06*		mg/kg wet	*2.500*		*82*	*30-130*			
LCS										
1,1-Biphenyl	2.18	0.025	mg/kg wet	2.500		87	40-140			
1,2,4-Trichlorobenzene	2.29	0.250	mg/kg wet	2.500		92	40-140			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DC50743 - 3546										
1,2-Dichlorobenzene	2.12	0.250	mg/kg wet	2.500		85	40-140			
1,3-Dichlorobenzene	2.13	0.250	mg/kg wet	2.500		85	40-140			
1,4-Dichlorobenzene	2.23	0.125	mg/kg wet	2.500		89	40-140			
2,4,5-Trichlorophenol	2.36	0.250	mg/kg wet	2.500		94	30-130			
2,4,6-Trichlorophenol	2.24	0.125	mg/kg wet	2.500		90	30-130			
2,4-Dichlorophenol	2.28	0.125	mg/kg wet	2.500		91	30-130			
2,4-Dimethylphenol	2.14	0.175	mg/kg wet	2.500		86	30-130			
2,4-Dinitrophenol	1.88	0.500	mg/kg wet	2.500		75	15-140			
2,4-Dinitrotoluene	2.44	0.125	mg/kg wet	2.500		97	40-140			
2,6-Dinitrotoluene	2.31	0.250	mg/kg wet	2.500		92	40-140			
2-Chloronaphthalene	2.22	0.250	mg/kg wet	2.500		89	40-140			
2-Chlorophenol	2.32	0.125	mg/kg wet	2.500		93	30-130			
2-Methylnaphthalene	2.31	0.125	mg/kg wet	2.500		92	40-140			
2-Methylphenol	2.32	0.250	mg/kg wet	2.500		93	15-140			
2-Nitrophenol	2.24	0.500	mg/kg wet	2.500		90	30-130			
3,3´-Dichlorobenzidine	2.07	0.250	mg/kg wet	2.500		83	40-140			
3+4-Methylphenol	2.29	0.250	mg/kg wet	2.500		92	15-140			
4-Bromophenyl-phenylether	2.06	0.250	mg/kg wet	2.500		82	40-140			
4-Chloroaniline	1.61	0.250	mg/kg wet	2.500		64	15-140			
4-Nitrophenol	1.78	1.00	mg/kg wet	2.500		71	15-140			
Acenaphthene	2.19	0.250	mg/kg wet	2.500		88	40-140			
Acenaphthylene	2.33	0.250	mg/kg wet	2.500		93	40-140			
Acetophenone	2.15	0.250	mg/kg wet	2.500		86	40-140			
Aniline	1.45	0.250	mg/kg wet	2.500		58	40-140			
Anthracene	2.36	0.250	mg/kg wet	2.500		95	40-140			
Azobenzene	2.03	0.250	mg/kg wet	2.500		81	40-140			
Benzo(a)anthracene	2.23	0.250	mg/kg wet	2.500		89	40-140			
Benzo(a)pyrene	2.46	0.250	mg/kg wet	2.500		98	40-140			
Benzo(b)fluoranthene	2.33	0.250	mg/kg wet	2.500		93	40-140			
Benzo(g,h,i)perylene	2.30	0.250	mg/kg wet	2.500		92	40-140			
Benzo(k)fluoranthene	2.41	0.250	mg/kg wet	2.500		97	40-140			
bis(2-Chloroethoxy)methane	2.15	0.250	mg/kg wet	2.500		86	40-140			
bis(2-Chloroethyl)ether	2.06	0.125	mg/kg wet	2.500		82	40-140			
bis(2-chloroisopropyl)Ether	2.19	0.125	mg/kg wet	2.500		88	40-140			
bis(2-Ethylhexyl)phthalate	2.34	0.250	mg/kg wet	2.500		94	40-140			
Butylbenzylphthalate	2.29	0.250	mg/kg wet	2.500		91	40-140			
Chrysene	2.30	0.250	mg/kg wet	2.500		92	40-140			
Dibenzo(a,h)Anthracene	2.41	0.125	mg/kg wet	2.500		96	40-140			
Dibenzofuran	2.33	0.250	mg/kg wet	2.500		93	40-140			
Diethylphthalate	2.34	0.250	mg/kg wet	2.500		94	40-140			
Dimethylphthalate	2.22	0.250	mg/kg wet	2.500		89	15-140			
Di-n-butylphthalate	2.37	0.250	mg/kg wet	2.500		95	40-140			
Di-n-octylphthalate	2.32	0.500	mg/kg wet	2.500		93	40-140			
Fluoranthene	2.54	0.250	mg/kg wet	2.500		102	40-140			
Fluorene	2.43	0.250	mg/kg wet	2.500		97	40-140			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DC50743 - 3546										
Hexachlorobenzene	2.19	0.125	mg/kg wet	2.500		88	40-140			
Hexachlorobutadiene	2.31	0.250	mg/kg wet	2.500		92	40-140			
Hexachloroethane	2.20	0.125	mg/kg wet	2.500		88	40-140			
Indeno(1,2,3-cd)Pyrene	2.32	0.250	mg/kg wet	2.500		93	40-140			
Isophorone	2.22	0.250	mg/kg wet	2.500		89	40-140			
Naphthalene	2.17	0.250	mg/kg wet	2.500		87	40-140			
Nitrobenzene	2.06	0.250	mg/kg wet	2.500		82	40-140			
N-Nitrosodimethylamine	1.80	0.250	mg/kg wet	2.500		72	40-140			
Pentachlorophenol	1.78	0.500	mg/kg wet	2.500		71	15-140			
Phenanthrene	2.30	0.250	mg/kg wet	2.500		92	40-140			
Phenol	2.39	0.250	mg/kg wet	2.500		96	15-140			
Pyrene	2.10	0.250	mg/kg wet	2.500		84	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*2.44*		mg/kg wet	*2.500*		*98*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.49*		mg/kg wet	*3.750*		*93*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.63*		mg/kg wet	*3.750*		*97*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.26*		mg/kg wet	*2.500*		*91*	*30-130*			
Surrogate: 2-Fluorophenol	*3.65*		mg/kg wet	*3.750*		*97*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.16*		mg/kg wet	*2.500*		*86*	*30-130*			
Surrogate: Phenol-d6	*3.73*		mg/kg wet	*3.750*		*99*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.25*		mg/kg wet	*2.500*		*90*	*30-130*			
LCS Dup										
1,1-Biphenyl	2.43	0.025	mg/kg wet	2.500		97	40-140	10	30	
1,2,4-Trichlorobenzene	2.44	0.250	mg/kg wet	2.500		97	40-140	6	30	
1,2-Dichlorobenzene	2.23	0.250	mg/kg wet	2.500		89	40-140	5	30	
1,3-Dichlorobenzene	2.31	0.250	mg/kg wet	2.500		92	40-140	8	30	
1,4-Dichlorobenzene	2.29	0.125	mg/kg wet	2.500		92	40-140	3	30	
2,4,5-Trichlorophenol	2.67	0.250	mg/kg wet	2.500		107	30-130	12	30	
2,4,6-Trichlorophenol	2.51	0.125	mg/kg wet	2.500		100	30-130	11	30	
2,4-Dichlorophenol	2.52	0.125	mg/kg wet	2.500		101	30-130	10	30	
2,4-Dimethylphenol	2.29	0.175	mg/kg wet	2.500		91	30-130	6	30	
2,4-Dinitrophenol	1.93	0.500	mg/kg wet	2.500		77	15-140	3	30	
2,4-Dinitrotoluene	2.65	0.125	mg/kg wet	2.500		106	40-140	9	30	
2,6-Dinitrotoluene	2.54	0.250	mg/kg wet	2.500		101	40-140	10	30	
2-Chloronaphthalene	2.43	0.250	mg/kg wet	2.500		97	40-140	9	30	
2-Chlorophenol	2.41	0.125	mg/kg wet	2.500		96	30-130	4	30	
2-Methylnaphthalene	2.43	0.125	mg/kg wet	2.500		97	40-140	5	30	
2-Methylphenol	2.40	0.250	mg/kg wet	2.500		96	15-140	3	30	
2-Nitrophenol	2.36	0.500	mg/kg wet	2.500		94	30-130	5	30	
3,3´-Dichlorobenzidine	2.18	0.250	mg/kg wet	2.500		87	40-140	5	30	
3+4-Methylphenol	2.34	0.250	mg/kg wet	2.500		94	15-140	2	30	
4-Bromophenyl-phenylether	2.18	0.250	mg/kg wet	2.500		87	40-140	6	30	
4-Chloroaniline	1.78	0.250	mg/kg wet	2.500		71	15-140	10	30	
4-Nitrophenol	1.89	1.00	mg/kg wet	2.500		76	15-140	6	30	
Acenaphthene	2.33	0.250	mg/kg wet	2.500		93	40-140	6	30	
Acenaphthylene	2.58	0.250	mg/kg wet	2.500		103	40-140	10	30	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DC50743 - 3546										
Acetophenone	2.22	0.250	mg/kg wet	2.500		89	40-140	3	30	
Aniline	1.54	0.250	mg/kg wet	2.500		62	40-140	7	30	
Anthracene	2.51	0.250	mg/kg wet	2.500		100	40-140	6	30	
Azobenzene	2.01	0.250	mg/kg wet	2.500		80	40-140	1	30	
Benzo(a)anthracene	2.39	0.250	mg/kg wet	2.500		96	40-140	7	30	
Benzo(a)pyrene	2.61	0.250	mg/kg wet	2.500		104	40-140	6	30	
Benzo(b)fluoranthene	2.48	0.250	mg/kg wet	2.500		99	40-140	6	30	
Benzo(g,h,i)perylene	2.43	0.250	mg/kg wet	2.500		97	40-140	6	30	
Benzo(k)fluoranthene	2.58	0.250	mg/kg wet	2.500		103	40-140	7	30	
bis(2-Chloroethoxy)methane	2.23	0.250	mg/kg wet	2.500		89	40-140	4	30	
bis(2-Chloroethyl)ether	2.11	0.125	mg/kg wet	2.500		84	40-140	2	30	
bis(2-chloroisopropyl)Ether	2.29	0.125	mg/kg wet	2.500		91	40-140	4	30	
bis(2-Ethylhexyl)phthalate	2.53	0.250	mg/kg wet	2.500		101	40-140	8	30	
Butylbenzylphthalate	2.47	0.250	mg/kg wet	2.500		99	40-140	8	30	
Chrysene	2.48	0.250	mg/kg wet	2.500		99	40-140	7	30	
Dibenzo(a,h)Anthracene	2.57	0.125	mg/kg wet	2.500		103	40-140	6	30	
Dibenzofuran	2.56	0.250	mg/kg wet	2.500		103	40-140	10	30	
Diethylphthalate	2.47	0.250	mg/kg wet	2.500		99	40-140	5	30	
Dimethylphthalate	2.45	0.250	mg/kg wet	2.500		98	15-140	10	30	
Di-n-butylphthalate	2.50	0.250	mg/kg wet	2.500		100	40-140	5	30	
Di-n-octylphthalate	2.46	0.500	mg/kg wet	2.500		99	40-140	6	30	
Fluoranthene	2.68	0.250	mg/kg wet	2.500		107	40-140	6	30	
Fluorene	2.69	0.250	mg/kg wet	2.500		108	40-140	10	30	
Hexachlorobenzene	2.34	0.125	mg/kg wet	2.500		94	40-140	7	30	
Hexachlorobutadiene	2.41	0.250	mg/kg wet	2.500		96	40-140	4	30	
Hexachloroethane	2.26	0.125	mg/kg wet	2.500		91	40-140	3	30	
Indeno(1,2,3-cd)Pyrene	2.47	0.250	mg/kg wet	2.500		99	40-140	6	30	
Isophorone	2.32	0.250	mg/kg wet	2.500		93	40-140	5	30	
Naphthalene	2.31	0.250	mg/kg wet	2.500		92	40-140	6	30	
Nitrobenzene	2.16	0.250	mg/kg wet	2.500		87	40-140	5	30	
N-Nitrosodimethylamine	1.73	0.250	mg/kg wet	2.500		69	40-140	4	30	
Pentachlorophenol	1.89	0.500	mg/kg wet	2.500		76	15-140	6	30	
Phenanthrene	2.42	0.250	mg/kg wet	2.500		97	40-140	5	30	
Phenol	2.45	0.250	mg/kg wet	2.500		98	15-140	3	30	
Pyrene	2.36	0.250	mg/kg wet	2.500		94	40-140	12	30	
Surrogate: 1,2-Dichlorobenzene-d4	*2.39*		mg/kg wet	*2.500*		*96*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.53*		mg/kg wet	*3.750*		*94*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.67*		mg/kg wet	*3.750*		*98*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.41*		mg/kg wet	*2.500*		*97*	*30-130*			
Surrogate: 2-Fluorophenol	*3.63*		mg/kg wet	*3.750*		*97*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.16*		mg/kg wet	*2.500*		*86*	*30-130*			
Surrogate: Phenol-d6	*3.67*		mg/kg wet	*3.750*		*98*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.36*		mg/kg wet	*2.500*		*94*	*30-130*			

MADEP-EPH Extractable Petroleum Hydrocarbons

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DC51006 - 3546										
Blank										
C19-C36 Aliphatics1	ND	10.0	mg/kg wet							
C9-C18 Aliphatics1	ND	10.0	mg/kg wet							
Surrogate: 1-Chlorooctadecane	*1.36*		mg/kg wet	*2.000*		*68*	*40-140*			
Blank										
C11-C22 Unadjusted Aromatics1	ND	10.0	mg/kg wet							
Surrogate: 2-Bromonaphthalene	*2.06*		mg/kg wet	*2.000*		*103*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.97*		mg/kg wet	*2.000*		*98*	*40-140*			
Surrogate: O-Terphenyl	*1.63*		mg/kg wet	*2.000*		*81*	*40-140*			
Blank										
2-Methylnaphthalene	ND	0.008	mg/kg wet							
Acenaphthene	ND	0.008	mg/kg wet							
Acenaphthylene	ND	0.008	mg/kg wet							
Anthracene	ND	0.008	mg/kg wet							
Benzo(a)anthracene	ND	0.008	mg/kg wet							
Benzo(a)pyrene	ND	0.008	mg/kg wet							
Benzo(b)fluoranthene	ND	0.008	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.008	mg/kg wet							
Benzo(k)fluoranthene	ND	0.008	mg/kg wet							
Chrysene	ND	0.008	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.008	mg/kg wet							
Fluoranthene	ND	0.008	mg/kg wet							
Fluorene	ND	0.008	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.008	mg/kg wet							
Naphthalene	ND	0.008	mg/kg wet							
Phenanthrene	ND	0.008	mg/kg wet							
Pyrene	ND	0.008	mg/kg wet							
LCS										
C19-C36 Aliphatics1	15.8	10.0	mg/kg wet	16.00		99	40-140			
C9-C18 Aliphatics1	8.9	10.0	mg/kg wet	12.00		74	40-140			
Surrogate: 1-Chlorooctadecane	*1.59*		mg/kg wet	*2.000*		*80*	*40-140*			
LCS										
C11-C22 Unadjusted Aromatics1	26.8	10.0	mg/kg wet	34.00		79	40-140			
Surrogate: 2-Bromonaphthalene	*1.99*		mg/kg wet	*2.000*		*100*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.94*		mg/kg wet	*2.000*		*97*	*40-140*			
Surrogate: O-Terphenyl	*1.64*		mg/kg wet	*2.000*		*82*	*40-140*			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS										
2-Methylnaphthalene	1.42	0.040	mg/kg wet	2.000		71	40-140			
Acenaphthene	1.42	0.040	mg/kg wet	2.000		71	40-140			
Acenaphthylene	1.42	0.040	mg/kg wet	2.000		71	40-140			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DC51006 - 3546										
Anthracene	1.58	0.040	mg/kg wet	2.000		79	40-140			
Benzo(a)anthracene	1.54	0.040	mg/kg wet	2.000		77	40-140			
Benzo(a)pyrene	1.47	0.040	mg/kg wet	2.000		73	40-140			
Benzo(b)fluoranthene	1.46	0.040	mg/kg wet	2.000		73	40-140			
Benzo(g,h,i)perylene	1.59	0.040	mg/kg wet	2.000		80	40-140			
Benzo(k)fluoranthene	1.66	0.040	mg/kg wet	2.000		83	40-140			
Chrysene	1.70	0.040	mg/kg wet	2.000		85	40-140			
Dibenzo(a,h)Anthracene	1.53	0.040	mg/kg wet	2.000		76	40-140			
Fluoranthene	1.74	0.040	mg/kg wet	2.000		87	40-140			
Fluorene	1.53	0.040	mg/kg wet	2.000		76	40-140			
Indeno(1,2,3-cd)Pyrene	1.49	0.040	mg/kg wet	2.000		75	40-140			
Naphthalene	1.21	0.040	mg/kg wet	2.000		61	40-140			
Phenanthrene	1.46	0.040	mg/kg wet	2.000		73	40-140			
Pyrene	1.59	0.040	mg/kg wet	2.000		80	40-140			
LCS Dup										
C19-C36 Aliphatics1	16.9	10.0	mg/kg wet	16.00		105	40-140	6	25	
C9-C18 Aliphatics1	9.5	10.0	mg/kg wet	12.00		79	40-140	7	25	
Surrogate: 1-Chlorooctadecane	*1.69*		mg/kg wet	*2.000*		*85*	*40-140*			
LCS Dup										
C11-C22 Unadjusted Aromatics1	27.7	10.0	mg/kg wet	34.00		82	40-140	3	25	
Surrogate: 2-Bromonaphthalene	*2.00*		mg/kg wet	*2.000*		*100*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.96*		mg/kg wet	*2.000*		*98*	*40-140*			
Surrogate: O-Terphenyl	*1.75*		mg/kg wet	*2.000*		*88*	*40-140*			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	
LCS Dup										
2-Methylnaphthalene	1.52	0.040	mg/kg wet	2.000		76	40-140	7	30	
Acenaphthene	1.51	0.040	mg/kg wet	2.000		76	40-140	7	30	
Acenaphthylene	1.56	0.040	mg/kg wet	2.000		78	40-140	9	30	
Anthracene	1.69	0.040	mg/kg wet	2.000		85	40-140	7	30	
Benzo(a)anthracene	1.67	0.040	mg/kg wet	2.000		84	40-140	8	30	
Benzo(a)pyrene	1.58	0.040	mg/kg wet	2.000		79	40-140	7	30	
Benzo(b)fluoranthene	1.53	0.040	mg/kg wet	2.000		76	40-140	5	30	
Benzo(g,h,i)perylene	1.66	0.040	mg/kg wet	2.000		83	40-140	4	30	
Benzo(k)fluoranthene	1.80	0.040	mg/kg wet	2.000		90	40-140	8	30	
Chrysene	1.76	0.040	mg/kg wet	2.000		88	40-140	3	30	
Dibenzo(a,h)Anthracene	1.61	0.040	mg/kg wet	2.000		81	40-140	5	30	
Fluoranthene	1.84	0.040	mg/kg wet	2.000		92	40-140	6	30	
Fluorene	1.64	0.040	mg/kg wet	2.000		82	40-140	7	30	
Indeno(1,2,3-cd)Pyrene	1.57	0.040	mg/kg wet	2.000		79	40-140	5	30	
Naphthalene	1.27	0.040	mg/kg wet	2.000		63	40-140	5	30	
Phenanthrene	1.57	0.040	mg/kg wet	2.000		78	40-140	7	30	
Pyrene	1.70	0.040	mg/kg wet	2.000		85	40-140	6	30	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8081B Organochlorine Pesticides										
Batch DC51003 - 3546										
Blank										
4,4´-DDD	ND	0.0025	mg/kg wet							
4,4´-DDD [2C]	ND	0.0025	mg/kg wet							
4,4´-DDE	ND	0.0025	mg/kg wet							
4,4´-DDE [2C]	ND	0.0025	mg/kg wet							
4,4´-DDT	ND	0.0025	mg/kg wet							
4,4´-DDT [2C]	ND	0.0025	mg/kg wet							
Aldrin	ND	0.0025	mg/kg wet							
Aldrin [2C]	ND	0.0025	mg/kg wet							
alpha-BHC	ND	0.0025	mg/kg wet							
alpha-BHC [2C]	ND	0.0025	mg/kg wet							
alpha-Chlordane	ND	0.0025	mg/kg wet							
alpha-Chlordane [2C]	ND	0.0025	mg/kg wet							
beta-BHC	ND	0.0025	mg/kg wet							
beta-BHC [2C]	ND	0.0025	mg/kg wet							
Chlordane (Total)	ND	0.0200	mg/kg wet							
Chlordane (Total) [2C]	ND	0.0200	mg/kg wet							
delta-BHC	ND	0.0025	mg/kg wet							
delta-BHC [2C]	ND	0.0025	mg/kg wet							
Dieldrin	ND	0.0025	mg/kg wet							
Dieldrin [2C]	ND	0.0025	mg/kg wet							
Endosulfan I	ND	0.0025	mg/kg wet							
Endosulfan I [2C]	ND	0.0025	mg/kg wet							
Endosulfan II	ND	0.0025	mg/kg wet							
Endosulfan II [2C]	ND	0.0025	mg/kg wet							
Endosulfan Sulfate	ND	0.0025	mg/kg wet							
Endosulfan Sulfate [2C]	ND	0.0025	mg/kg wet							
Endrin	ND	0.0025	mg/kg wet							
Endrin [2C]	ND	0.0025	mg/kg wet							
Endrin Ketone	ND	0.0025	mg/kg wet							
Endrin Ketone [2C]	ND	0.0025	mg/kg wet							
gamma-BHC (Lindane)	ND	0.0015	mg/kg wet							
gamma-BHC (Lindane) [2C]	ND	0.0015	mg/kg wet							
gamma-Chlordane	ND	0.0025	mg/kg wet							
gamma-Chlordane [2C]	ND	0.0025	mg/kg wet							
Heptachlor	ND	0.0025	mg/kg wet							
Heptachlor [2C]	ND	0.0025	mg/kg wet							
Heptachlor Epoxide	ND	0.0025	mg/kg wet							
Heptachlor Epoxide [2C]	ND	0.0025	mg/kg wet							
Hexachlorobenzene	ND	0.0025	mg/kg wet							
Hexachlorobenzene [2C]	ND	0.0025	mg/kg wet							
Methoxychlor	ND	0.0025	mg/kg wet							
Methoxychlor [2C]	ND	0.0025	mg/kg wet							
Surrogate: Decachlorobiphenyl	*0.00921*		mg/kg wet	*0.01250*		*74*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.00967*		mg/kg wet	*0.01250*		*77*	*30-150*			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8081B Organochlorine Pesticides										
Batch DC51003 - 3546										
Surrogate: Tetrachloro-m-xylene	*0.00780*		mg/kg wet	*0.01250*		*62*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.00846*		mg/kg wet	*0.01250*		*68*	*30-150*			
LCS										
4,4´-DDD	0.0136	0.0025	mg/kg wet	0.01250		109	40-140			
4,4´-DDD [2C]	0.0129	0.0025	mg/kg wet	0.01250		103	40-140			
4,4´-DDE	0.0116	0.0025	mg/kg wet	0.01250		93	40-140			
4,4´-DDE [2C]	0.0117	0.0025	mg/kg wet	0.01250		94	40-140			
4,4´-DDT	0.0130	0.0025	mg/kg wet	0.01250		104	40-140			
4,4´-DDT [2C]	0.0132	0.0025	mg/kg wet	0.01250		106	40-140			
Aldrin	0.0098	0.0025	mg/kg wet	0.01250		78	40-140			
Aldrin [2C]	0.0102	0.0025	mg/kg wet	0.01250		81	40-140			
alpha-BHC	0.0095	0.0025	mg/kg wet	0.01250		76	40-140			
alpha-BHC [2C]	0.0101	0.0025	mg/kg wet	0.01250		81	40-140			
alpha-Chlordane	0.0108	0.0025	mg/kg wet	0.01250		86	40-140			
alpha-Chlordane [2C]	0.0114	0.0025	mg/kg wet	0.01250		91	40-140			
beta-BHC	0.0105	0.0025	mg/kg wet	0.01250		84	40-140			
beta-BHC [2C]	0.0109	0.0025	mg/kg wet	0.01250		87	40-140			
delta-BHC	0.0103	0.0025	mg/kg wet	0.01250		82	40-140			
delta-BHC [2C]	0.0103	0.0025	mg/kg wet	0.01250		82	40-140			
Dieldrin	0.0121	0.0025	mg/kg wet	0.01250		97	40-140			
Dieldrin [2C]	0.0123	0.0025	mg/kg wet	0.01250		99	40-140			
Endosulfan I	0.0104	0.0025	mg/kg wet	0.01250		83	40-140			
Endosulfan I [2C]	0.0108	0.0025	mg/kg wet	0.01250		86	40-140			
Endosulfan II	0.0125	0.0025	mg/kg wet	0.01250		100	40-140			
Endosulfan II [2C]	0.0122	0.0025	mg/kg wet	0.01250		98	40-140			
Endosulfan Sulfate	0.0129	0.0025	mg/kg wet	0.01250		103	40-140			
Endosulfan Sulfate [2C]	0.0126	0.0025	mg/kg wet	0.01250		101	40-140			
Endrin	0.0121	0.0025	mg/kg wet	0.01250		97	40-140			
Endrin [2C]	0.0119	0.0025	mg/kg wet	0.01250		95	40-140			
Endrin Ketone	0.0132	0.0025	mg/kg wet	0.01250		105	40-140			
Endrin Ketone [2C]	0.0131	0.0025	mg/kg wet	0.01250		105	40-140			
gamma-BHC (Lindane)	0.0098	0.0015	mg/kg wet	0.01250		78	40-140			
gamma-BHC (Lindane) [2C]	0.0100	0.0015	mg/kg wet	0.01250		80	40-140			
gamma-Chlordane	0.0126	0.0025	mg/kg wet	0.01250		101	40-140			
gamma-Chlordane [2C]	0.0131	0.0025	mg/kg wet	0.01250		105	40-140			
Heptachlor	0.0099	0.0025	mg/kg wet	0.01250		79	40-140			
Heptachlor [2C]	0.0110	0.0025	mg/kg wet	0.01250		88	40-140			
Heptachlor Epoxide	0.0106	0.0025	mg/kg wet	0.01250		85	40-140			
Heptachlor Epoxide [2C]	0.0112	0.0025	mg/kg wet	0.01250		90	40-140			
Hexachlorobenzene	0.0079	0.0025	mg/kg wet	0.01250		63	40-140			
Hexachlorobenzene [2C]	0.0087	0.0025	mg/kg wet	0.01250		70	40-140			
Methoxychlor	0.0135	0.0025	mg/kg wet	0.01250		108	40-140			
Methoxychlor [2C]	0.0143	0.0025	mg/kg wet	0.01250		114	40-140			
Surrogate: Decachlorobiphenyl	*0.0106*		mg/kg wet	*0.01250*		*85*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0114*		mg/kg wet	*0.01250*		*92*	*30-150*			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8081B Organochlorine Pesticides										
Batch DC51003 - 3546										
Surrogate: Tetrachloro-m-xylene	*0.00779*		mg/kg wet	*0.01250*		*62*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.00845*		mg/kg wet	*0.01250*		*68*	*30-150*			
LCS Dup										
4,4´-DDD	0.0110	0.0025	mg/kg wet	0.01250		88	40-140	21	30	
4,4´-DDD [2C]	0.0107	0.0025	mg/kg wet	0.01250		86	40-140	19	30	
4,4´-DDE	0.0097	0.0025	mg/kg wet	0.01250		78	40-140	18	30	
4,4´-DDE [2C]	0.0097	0.0025	mg/kg wet	0.01250		78	40-140	19	30	
4,4´-DDT	0.0104	0.0025	mg/kg wet	0.01250		83	40-140	22	30	
4,4´-DDT [2C]	0.0106	0.0025	mg/kg wet	0.01250		85	40-140	22	30	
Aldrin	0.0091	0.0025	mg/kg wet	0.01250		73	40-140	8	30	
Aldrin [2C]	0.0092	0.0025	mg/kg wet	0.01250		74	40-140	10	30	
alpha-BHC	0.0088	0.0025	mg/kg wet	0.01250		70	40-140	7	30	
alpha-BHC [2C]	0.0093	0.0025	mg/kg wet	0.01250		74	40-140	8	30	
alpha-Chlordane	0.0091	0.0025	mg/kg wet	0.01250		73	40-140	16	30	
alpha-Chlordane [2C]	0.0096	0.0025	mg/kg wet	0.01250		77	40-140	17	30	
beta-BHC	0.0091	0.0025	mg/kg wet	0.01250		73	40-140	14	30	
beta-BHC [2C]	0.0093	0.0025	mg/kg wet	0.01250		74	40-140	16	30	
delta-BHC	0.0083	0.0025	mg/kg wet	0.01250		66	40-140	21	30	
delta-BHC [2C]	0.0083	0.0025	mg/kg wet	0.01250		66	40-140	21	30	
Dieldrin	0.0102	0.0025	mg/kg wet	0.01250		82	40-140	17	30	
Dieldrin [2C]	0.0103	0.0025	mg/kg wet	0.01250		82	40-140	18	30	
Endosulfan I	0.0091	0.0025	mg/kg wet	0.01250		73	40-140	13	30	
Endosulfan I [2C]	0.0093	0.0025	mg/kg wet	0.01250		75	40-140	14	30	
Endosulfan II	0.0101	0.0025	mg/kg wet	0.01250		81	40-140	21	30	
Endosulfan II [2C]	0.0099	0.0025	mg/kg wet	0.01250		79	40-140	22	30	
Endosulfan Sulfate	0.0104	0.0025	mg/kg wet	0.01250		83	40-140	21	30	
Endosulfan Sulfate [2C]	0.0100	0.0025	mg/kg wet	0.01250		80	40-140	23	30	
Endrin	0.0103	0.0025	mg/kg wet	0.01250		82	40-140	17	30	
Endrin [2C]	0.0098	0.0025	mg/kg wet	0.01250		78	40-140	20	30	
Endrin Ketone	0.0104	0.0025	mg/kg wet	0.01250		83	40-140	23	30	
Endrin Ketone [2C]	0.0104	0.0025	mg/kg wet	0.01250		83	40-140	23	30	
gamma-BHC (Lindane)	0.0090	0.0015	mg/kg wet	0.01250		72	40-140	8	30	
gamma-BHC (Lindane) [2C]	0.0091	0.0015	mg/kg wet	0.01250		73	40-140	10	30	
gamma-Chlordane	0.0106	0.0025	mg/kg wet	0.01250		85	40-140	17	30	
gamma-Chlordane [2C]	0.0109	0.0025	mg/kg wet	0.01250		87	40-140	18	30	
Heptachlor	0.0092	0.0025	mg/kg wet	0.01250		74	40-140	7	30	
Heptachlor [2C]	0.0100	0.0025	mg/kg wet	0.01250		80	40-140	9	30	
Heptachlor Epoxide	0.0094	0.0025	mg/kg wet	0.01250		75	40-140	13	30	
Heptachlor Epoxide [2C]	0.0098	0.0025	mg/kg wet	0.01250		78	40-140	14	30	
Hexachlorobenzene	0.0075	0.0025	mg/kg wet	0.01250		60	40-140	6	30	
Hexachlorobenzene [2C]	0.0081	0.0025	mg/kg wet	0.01250		65	40-140	7	30	
Methoxychlor	0.0108	0.0025	mg/kg wet	0.01250		86	40-140	22	30	
Methoxychlor [2C]	0.0112	0.0025	mg/kg wet	0.01250		90	40-140	24	30	
Surrogate: Decachlorobiphenyl	*0.00818*		mg/kg wet	*0.01250*		*65*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.00881*		mg/kg wet	*0.01250*		*70*	*30-150*			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8081B Organochlorine Pesticides										
Batch DC51003 - 3546										
Surrogate: Tetrachloro-m-xylene	*0.00706*		mg/kg wet	*0.01250*		*56*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.00758*		mg/kg wet	*0.01250*		*61*	*30-150*			
8151A Chlorinated Herbicides										
Batch DC51147 - 3546										
Blank										
2,4,5-T	ND	0.010	mg/kg wet							
2,4,5-T [2C]	ND	0.010	mg/kg wet							
2,4,5-TP (Silvex)	ND	0.010	mg/kg wet							
2,4,5-TP (Silvex) [2C]	ND	0.010	mg/kg wet							
2,4-D	ND	0.047	mg/kg wet							
2,4-D [2C]	ND	0.047	mg/kg wet							
2,4-DB	ND	0.048	mg/kg wet							
2,4-DB [2C]	ND	0.048	mg/kg wet							
Dalapon	ND	0.046	mg/kg wet							
Dalapon [2C]	ND	0.046	mg/kg wet							
Dicamba	ND	0.009	mg/kg wet							
Dicamba [2C]	ND	0.009	mg/kg wet							
Dichlorprop	ND	0.047	mg/kg wet							
Dichlorprop [2C]	ND	0.047	mg/kg wet							
MCPA	ND	2.32	mg/kg wet							
MCPA [2C]	ND	2.32	mg/kg wet							
MCPP	ND	2.35	mg/kg wet							
MCPP [2C]	ND	2.35	mg/kg wet							
Surrogate: DCAA	*0.155*		mg/kg wet	*0.2000*		*78*	*30-150*			
Surrogate: DCAA [2C]	*0.149*		mg/kg wet	*0.2000*		*75*	*30-150*			
LCS										
2,4,5-T	0.015	0.010	mg/kg wet	0.01900		78	40-140			
2,4,5-T [2C]	0.014	0.010	mg/kg wet	0.01900		76	40-140			
2,4,5-TP (Silvex)	0.014	0.010	mg/kg wet	0.01900		76	40-140			
2,4,5-TP (Silvex) [2C]	0.015	0.010	mg/kg wet	0.01900		78	40-140			
2,4-D	0.104	0.047	mg/kg wet	0.1880		55	40-140			
2,4-D [2C]	0.130	0.047	mg/kg wet	0.1880		69	40-140			
2,4-DB	0.154	0.048	mg/kg wet	0.1900		81	40-140			
2,4-DB [2C]	0.150	0.048	mg/kg wet	0.1900		79	40-140			
Dalapon	0.321	0.046	mg/kg wet	0.4550		70	40-140			
Dalapon [2C]	0.375	0.046	mg/kg wet	0.4550		82	40-140			
Dicamba	0.013	0.009	mg/kg wet	0.01880		68	40-140			
Dicamba [2C]	0.017	0.009	mg/kg wet	0.01880		88	40-140			
Dichlorprop	0.159	0.047	mg/kg wet	0.1880		85	40-140			
Dichlorprop [2C]	0.158	0.047	mg/kg wet	0.1880		84	40-140			
MCPA	17.1	2.32	mg/kg wet	18.60		92	40-140			
MCPA [2C]	16.7	2.32	mg/kg wet	18.60		90	40-140			
MCPP	16.4	2.35	mg/kg wet	18.80		87	40-140			
MCPP [2C]	18.9	2.35	mg/kg wet	18.80		101	40-140			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
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ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8151A Chlorinated Herbicides										
Batch DC51147 - 3546										
Surrogate: DCAA	*0.179*		mg/kg wet	*0.2000*		*90*	*30-150*			
Surrogate: DCAA [2C]	*0.168*		mg/kg wet	*0.2000*		*84*	*30-150*			
LCS Dup										
2,4,5-T	0.015	0.010	mg/kg wet	0.01900		78	40-140	0	30	
2,4,5-T [2C]	0.015	0.010	mg/kg wet	0.01900		78	40-140	3	30	
2,4,5-TP (Silvex)	0.015	0.010	mg/kg wet	0.01900		78	40-140	3	30	
2,4,5-TP (Silvex) [2C]	0.016	0.010	mg/kg wet	0.01900		82	40-140	5	30	
2,4-D	0.105	0.047	mg/kg wet	0.1880		56	40-140	1	30	
2,4-D [2C]	0.130	0.047	mg/kg wet	0.1880		69	40-140	0.6	30	
2,4-DB	0.158	0.048	mg/kg wet	0.1900		83	40-140	2	30	
2,4-DB [2C]	0.151	0.048	mg/kg wet	0.1900		80	40-140	1	30	
Dalapon	0.314	0.046	mg/kg wet	0.4550		69	40-140	2	30	
Dalapon [2C]	0.345	0.046	mg/kg wet	0.4550		76	40-140	8	30	
Dicamba	0.014	0.009	mg/kg wet	0.01880		72	40-140	6	30	
Dicamba [2C]	0.017	0.009	mg/kg wet	0.01880		88	40-140	0	30	
Dichlorprop	0.165	0.047	mg/kg wet	0.1880		88	40-140	3	30	
Dichlorprop [2C]	0.162	0.047	mg/kg wet	0.1880		86	40-140	3	30	
MCPA	17.1	2.32	mg/kg wet	18.60		92	40-140	0.3	30	
MCPA [2C]	17.3	2.32	mg/kg wet	18.60		93	40-140	3	30	
MCPP	16.4	2.35	mg/kg wet	18.80		87	40-140	0.4	30	
MCPP [2C]	19.5	2.35	mg/kg wet	18.80		104	40-140	3	30	
Surrogate: DCAA	*0.179*		mg/kg wet	*0.2000*		*89*	*30-150*			
Surrogate: DCAA [2C]	*0.172*		mg/kg wet	*0.2000*		*86*	*30-150*			
8100M Total Petroleum Hydrocarbons										
Batch DC50744 - 3546										
Blank										
Decane (C10)	ND	0.2	mg/kg wet							
Docosane (C22)	ND	0.2	mg/kg wet							
Dodecane (C12)	ND	0.2	mg/kg wet							
Eicosane (C20)	ND	0.2	mg/kg wet							
Hexacosane (C26)	ND	0.2	mg/kg wet							
Hexadecane (C16)	ND	0.2	mg/kg wet							
Hexatriacontane (C36)	ND	0.2	mg/kg wet							
Nonadecane (C19)	ND	0.2	mg/kg wet							
Nonane (C9)	ND	0.2	mg/kg wet							
Octacosane (C28)	ND	0.2	mg/kg wet							
Octadecane (C18)	ND	0.2	mg/kg wet							
Tetracosane (C24)	ND	0.2	mg/kg wet							
Tetradecane (C14)	ND	0.2	mg/kg wet							
Total Petroleum Hydrocarbons (C9-C36)	ND	10.0	mg/kg wet							
Triacontane (C30)	ND	0.2	mg/kg wet							
Surrogate: O-Terphenyl	*3.95*		mg/kg wet	*5.000*		*79*	*40-140*			
LCS										

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8100M Total Petroleum Hydrocarbons										
Batch DC50744 - 3546										
Decane (C10)	1.7	0.2	mg/kg wet	2.500		66	40-140			
Docosane (C22)	1.9	0.2	mg/kg wet	2.500		75	40-140			
Dodecane (C12)	1.8	0.2	mg/kg wet	2.500		72	40-140			
Eicosane (C20)	1.9	0.2	mg/kg wet	2.500		74	40-140			
Hexacosane (C26)	1.9	0.2	mg/kg wet	2.500		76	40-140			
Hexadecane (C16)	1.8	0.2	mg/kg wet	2.500		72	40-140			
Hexatriacontane (C36)	1.7	0.2	mg/kg wet	2.500		66	40-140			
Nonadecane (C19)	1.8	0.2	mg/kg wet	2.500		74	40-140			
Nonane (C9)	1.6	0.2	mg/kg wet	2.500		63	30-140			
Octacosane (C28)	1.9	0.2	mg/kg wet	2.500		76	40-140			
Octadecane (C18)	1.8	0.2	mg/kg wet	2.500		73	40-140			
Tetracosane (C24)	1.9	0.2	mg/kg wet	2.500		76	40-140			
Tetradecane (C14)	1.8	0.2	mg/kg wet	2.500		72	40-140			
Total Petroleum Hydrocarbons (C9-C36)	25.6	10.0	mg/kg wet	35.00		73	40-140			
Triacontane (C30)	1.8	0.2	mg/kg wet	2.500		74	40-140			
Surrogate: O-Terphenyl	*3.61*		mg/kg wet	*5.000*		*72*	*40-140*			
LCS Dup										
Decane (C10)	1.8	0.2	mg/kg wet	2.500		73	40-140	10	25	
Docosane (C22)	2.1	0.2	mg/kg wet	2.500		83	40-140	10	25	
Dodecane (C12)	1.9	0.2	mg/kg wet	2.500		77	40-140	8	25	
Eicosane (C20)	2.1	0.2	mg/kg wet	2.500		82	40-140	10	25	
Hexacosane (C26)	2.1	0.2	mg/kg wet	2.500		84	40-140	10	25	
Hexadecane (C16)	2.0	0.2	mg/kg wet	2.500		80	40-140	10	25	
Hexatriacontane (C36)	1.8	0.2	mg/kg wet	2.500		72	40-140	8	25	
Nonadecane (C19)	2.0	0.2	mg/kg wet	2.500		82	40-140	10	25	
Nonane (C9)	1.6	0.2	mg/kg wet	2.500		65	30-140	2	25	
Octacosane (C28)	2.1	0.2	mg/kg wet	2.500		84	40-140	10	25	
Octadecane (C18)	2.0	0.2	mg/kg wet	2.500		81	40-140	10	25	
Tetracosane (C24)	2.1	0.2	mg/kg wet	2.500		83	40-140	10	25	
Tetradecane (C14)	2.0	0.2	mg/kg wet	2.500		79	40-140	9	25	
Total Petroleum Hydrocarbons (C9-C36)	27.9	10.0	mg/kg wet	35.00		80	40-140	9	25	
Triacontane (C30)	2.0	0.2	mg/kg wet	2.500		81	40-140	10	25	
Surrogate: O-Terphenyl	*4.13*		mg/kg wet	*5.000*		*83*	*40-140*			
Classical Chemistry										
Batch DC50736 - General Preparation										
Blank										
Conductivity	ND	5	umhos/cm							
LCS										
Conductivity	1410		umhos/cm	1410		100	90-110			
Batch DC51035 - General Preparation										
Blank										
Reactive Cyanide	ND	2.0	mg/kg							
Reactive Sulfide	ND	2.0	mg/kg							

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch DC51035 - General Preparation										
LCS										
Reactive Cyanide	4.1	2.0	mg/kg	100.3		4	0.68-5.41			
Reactive Sulfide	2.2	2.0	mg/kg	10.00		22	0-44			
Batch DC51036 - General Preparation										
Reference										
Flashpoint	80		°F	81.00		99	97.9-102.1			
Batch DC51156 - General Preparation										
Blank										
Total Organic Carbon (1)	ND	500	mg/kg							
Total Organic Carbon (2)	ND	500	mg/kg							
LCS										
Total Organic Carbon (1)	9240	500	mg/kg	10010		92	80-120			
Total Organic Carbon (2)	9680	500	mg/kg	10010		97	80-120			
LCS Dup										
Total Organic Carbon (1)	9600	500	mg/kg	10010		96	80-120	4	25	
Total Organic Carbon (2)	9110	500	mg/kg	10010		91	80-120	6	25	
8082 Polychlorinated Biphenyls (PCB) / Congeners										
Batch DC51104 - 3540C										
Blank										
BZ#101	ND	0.00027	mg/kg wet							
BZ#101 [2C]	ND	0.00027	mg/kg wet							
BZ#105	ND	0.00027	mg/kg wet							
BZ#105 [2C]	ND	0.00027	mg/kg wet							
BZ#118	ND	0.00027	mg/kg wet							
BZ#118 [2C]	ND	0.00027	mg/kg wet							
BZ#128	ND	0.00027	mg/kg wet							
BZ#128 [2C]	ND	0.00027	mg/kg wet							
BZ#138	ND	0.00027	mg/kg wet							
BZ#138 [2C]	ND	0.00027	mg/kg wet							
BZ#153	ND	0.00027	mg/kg wet							
BZ#153 [2C]	ND	0.00027	mg/kg wet							
BZ#170	ND	0.00027	mg/kg wet							
BZ#170 [2C]	ND	0.00027	mg/kg wet							
BZ#18	ND	0.00027	mg/kg wet							
BZ#18 [2C]	ND	0.00027	mg/kg wet							
BZ#180	ND	0.00027	mg/kg wet							
BZ#180 [2C]	ND	0.00027	mg/kg wet							
BZ#187	ND	0.00027	mg/kg wet							
BZ#187 [2C]	ND	0.00027	mg/kg wet							
BZ#195	ND	0.00027	mg/kg wet							
BZ#195 [2C]	ND	0.00027	mg/kg wet							
BZ#206	ND	0.00027	mg/kg wet							

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082 Polychlorinated Biphenyls (PCB) / Congeners										
Batch DC51104 - 3540C										
BZ#206 [2C]	ND	0.00027	mg/kg wet							
BZ#209	ND	0.00027	mg/kg wet							
BZ#209 [2C]	ND	0.00027	mg/kg wet							
BZ#28	ND	0.00027	mg/kg wet							
BZ#28 [2C]	ND	0.00027	mg/kg wet							
BZ#44	ND	0.00027	mg/kg wet							
BZ#44 [2C]	ND	0.00027	mg/kg wet							
BZ#52	ND	0.00027	mg/kg wet							
BZ#52 [2C]	ND	0.00027	mg/kg wet							
BZ#66	ND	0.00027	mg/kg wet							
BZ#66 [2C]	ND	0.00027	mg/kg wet							
BZ#8	ND	0.00027	mg/kg wet							
BZ#8 [2C]	ND	0.00027	mg/kg wet							
Surrogate: Tetrachloro-m-xylene	*0.00259*		mg/kg wet	*0.003333*		*78*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.00245*		mg/kg wet	*0.003333*		*74*	*30-150*			
LCS										
BZ#101	0.00255	0.00027	mg/kg wet	0.003333		77	40-140			
BZ#101 [2C]	0.00246	0.00027	mg/kg wet	0.003333		74	40-140			
BZ#105	0.00269	0.00027	mg/kg wet	0.003333		81	40-140			
BZ#105 [2C]	0.00255	0.00027	mg/kg wet	0.003333		76	40-140			
BZ#118	0.00248	0.00027	mg/kg wet	0.003333		74	40-140			
BZ#118 [2C]	0.00242	0.00027	mg/kg wet	0.003333		73	40-140			
BZ#128	0.00225	0.00027	mg/kg wet	0.003333		68	40-140			
BZ#128 [2C]	0.00238	0.00027	mg/kg wet	0.003333		72	40-140			
BZ#138	0.00254	0.00027	mg/kg wet	0.003333		76	40-140			
BZ#138 [2C]	0.00250	0.00027	mg/kg wet	0.003333		75	40-140			
BZ#153	0.00246	0.00027	mg/kg wet	0.003333		74	40-140			
BZ#153 [2C]	0.00233	0.00027	mg/kg wet	0.003333		70	40-140			
BZ#170	0.00247	0.00027	mg/kg wet	0.003333		74	40-140			
BZ#170 [2C]	0.00245	0.00027	mg/kg wet	0.003333		74	40-140			
BZ#18	0.00247	0.00027	mg/kg wet	0.003333		74	40-140			
BZ#18 [2C]	0.00227	0.00027	mg/kg wet	0.003333		68	40-140			
BZ#180	0.00258	0.00027	mg/kg wet	0.003333		77	40-140			
BZ#180 [2C]	0.00241	0.00027	mg/kg wet	0.003333		72	40-140			
BZ#187	0.00246	0.00027	mg/kg wet	0.003333		74	40-140			
BZ#187 [2C]	0.00243	0.00027	mg/kg wet	0.003333		73	40-140			
BZ#195	0.00252	0.00027	mg/kg wet	0.003333		76	40-140			
BZ#195 [2C]	0.00241	0.00027	mg/kg wet	0.003333		72	40-140			
BZ#206	0.00244	0.00027	mg/kg wet	0.003333		73	40-140			
BZ#206 [2C]	0.00241	0.00027	mg/kg wet	0.003333		72	40-140			
BZ#209	0.00242	0.00027	mg/kg wet	0.003333		73	40-140			
BZ#209 [2C]	0.00239	0.00027	mg/kg wet	0.003333		72	40-140			
BZ#28	0.00281	0.00027	mg/kg wet	0.003333		84	40-140			
BZ#28 [2C]	0.00223	0.00027	mg/kg wet	0.003333		67	40-140			
BZ#44	0.00267	0.00027	mg/kg wet	0.003333		80	40-140			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082 Polychlorinated Biphenyls (PCB) / Congeners										
Batch DC51104 - 3540C										
BZ#44 [2C]	0.00242	0.00027	mg/kg wet	0.003333		73	40-140			
BZ#52	0.00259	0.00027	mg/kg wet	0.003333		78	40-140			
BZ#52 [2C]	0.00229	0.00027	mg/kg wet	0.003333		69	40-140			
BZ#66	0.00258	0.00027	mg/kg wet	0.003333		78	40-140			
BZ#66 [2C]	0.00233	0.00027	mg/kg wet	0.003333		70	40-140			
BZ#8	0.00262	0.00027	mg/kg wet	0.003333		79	40-140			
BZ#8 [2C]	0.00230	0.00027	mg/kg wet	0.003333		69	40-140			
Surrogate: Tetrachloro-m-xylene	*0.00228*		mg/kg wet	*0.003333*		*68*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.00217*		mg/kg wet	*0.003333*		*65*	*30-150*			
LCS Dup										
BZ#101	0.00296	0.00027	mg/kg wet	0.003333		89	40-140	15	30	
BZ#101 [2C]	0.00283	0.00027	mg/kg wet	0.003333		85	40-140	14	30	
BZ#105	0.00303	0.00027	mg/kg wet	0.003333		91	40-140	12	30	
BZ#105 [2C]	0.00287	0.00027	mg/kg wet	0.003333		86	40-140	12	30	
BZ#118	0.00278	0.00027	mg/kg wet	0.003333		84	40-140	12	30	
BZ#118 [2C]	0.00275	0.00027	mg/kg wet	0.003333		83	40-140	13	30	
BZ#128	0.00251	0.00027	mg/kg wet	0.003333		75	40-140	11	30	
BZ#128 [2C]	0.00271	0.00027	mg/kg wet	0.003333		81	40-140	13	30	
BZ#138	0.00292	0.00027	mg/kg wet	0.003333		88	40-140	14	30	
BZ#138 [2C]	0.00287	0.00027	mg/kg wet	0.003333		86	40-140	14	30	
BZ#153	0.00284	0.00027	mg/kg wet	0.003333		85	40-140	14	30	
BZ#153 [2C]	0.00264	0.00027	mg/kg wet	0.003333		79	40-140	13	30	
BZ#170	0.00281	0.00027	mg/kg wet	0.003333		84	40-140	13	30	
BZ#170 [2C]	0.00273	0.00027	mg/kg wet	0.003333		82	40-140	10	30	
BZ#18	0.00275	0.00027	mg/kg wet	0.003333		82	40-140	10	30	
BZ#18 [2C]	0.00267	0.00027	mg/kg wet	0.003333		80	40-140	16	30	
BZ#180	0.00294	0.00027	mg/kg wet	0.003333		88	40-140	13	30	
BZ#180 [2C]	0.00276	0.00027	mg/kg wet	0.003333		83	40-140	14	30	
BZ#187	0.00286	0.00027	mg/kg wet	0.003333		86	40-140	15	30	
BZ#187 [2C]	0.00281	0.00027	mg/kg wet	0.003333		84	40-140	15	30	
BZ#195	0.00285	0.00027	mg/kg wet	0.003333		85	40-140	12	30	
BZ#195 [2C]	0.00272	0.00027	mg/kg wet	0.003333		82	40-140	12	30	
BZ#206	0.00276	0.00027	mg/kg wet	0.003333		83	40-140	12	30	
BZ#206 [2C]	0.00269	0.00027	mg/kg wet	0.003333		81	40-140	11	30	
BZ#209	0.00277	0.00027	mg/kg wet	0.003333		83	40-140	13	30	
BZ#209 [2C]	0.00268	0.00027	mg/kg wet	0.003333		80	40-140	12	30	
BZ#28	0.00333	0.00027	mg/kg wet	0.003333		100	40-140	17	30	
BZ#28 [2C]	0.00264	0.00027	mg/kg wet	0.003333		79	40-140	17	30	
BZ#44	0.00313	0.00027	mg/kg wet	0.003333		94	40-140	16	30	
BZ#44 [2C]	0.00279	0.00027	mg/kg wet	0.003333		84	40-140	14	30	
BZ#52	0.00282	0.00027	mg/kg wet	0.003333		85	40-140	9	30	
BZ#52 [2C]	0.00263	0.00027	mg/kg wet	0.003333		79	40-140	14	30	
BZ#66	0.00299	0.00027	mg/kg wet	0.003333		90	40-140	14	30	
BZ#66 [2C]	0.00268	0.00027	mg/kg wet	0.003333		80	40-140	14	30	
BZ#8	0.00309	0.00027	mg/kg wet	0.003333		93	40-140	16	30	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082 Polychlorinated Biphenyls (PCB) / Congeners										
Batch DC51104 - 3540C										
BZ#8 [2C]	0.00268	0.00027	mg/kg wet	0.003333		80	40-140	15	30	
Surrogate: Tetrachloro-m-xylene	*0.00263*		mg/kg wet	*0.003333*		*79*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.00252*		mg/kg wet	*0.003333*		*75*	*30-150*			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ ESS Laboratory Work Order: 25C0241

Notes and Definitions

Z18	Temperature is not within 23 +/-2 ºC.
Z-08	See Attached
WL	Results obtained from a deionized water leach of the sample.
U	Analyte included in the analysis, but not detected
R-	Standard Reference Material is biased low (R-).
Q	Calibration required quadratic regression (Q).
P	Percent difference between primary and confirmation results exceeds 40% (P).
LC	Lower value is used due to matrix interferences (LC).
IC	Internal Standard(s) outside of criteria. Sample was reanalyzed to confirm (IC).
EL	Elevated Method Reporting Limits due to sample matrix (EL).
DDT	DDT breakdown > 20%
D	Diluted.
CD-	Continuing Calibration %Diff/Drift is below control limit (CD-).
B-	Blank Spike recovery is below lower control limit (B-).
>	Greater than.
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0241

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

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4/22/2025

Accreditation# 98218

ESS Laboratory

MicroVision Labs Coal Ash Report, Job # 17264
ESS Laboratory Project#: 25C0241

Scope of Work:

This report covers the methods and findings of the Coal/Coal Ash analysis that MicroVision Laboratories, Inc. conducted on four soil samples submitted for testing. The purpose of this analysis was to detect and document any coal, coal ash, wood ash or asphalt that may be present in the submitted soil samples by use of a combination of microscopy techniques including SEM/EDS, PLM, and macroscopic inspection. The results presented in this report relate only to the samples examined and as received.

Methods:

MicroVision Labs is accredited to the ISO/IEC 17025:2017 standard. This analysis follows our in house SOP #MVL05 (Microscopic Analysis for Coal, Coal Ash and Wood Ash). This method is listed on our certificate of accreditation and has been validated.

Findings:

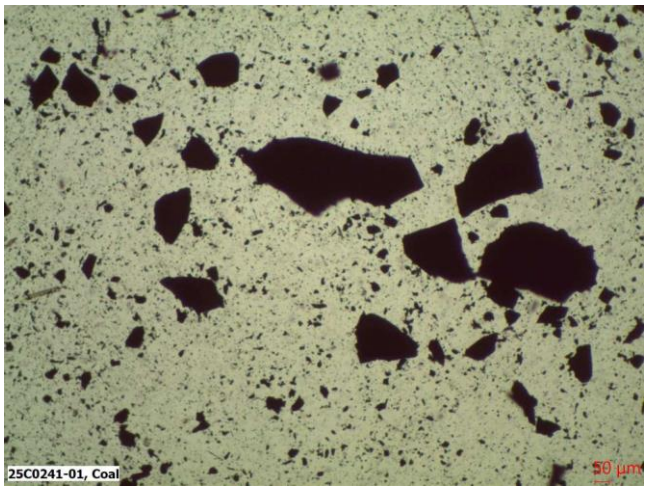
The following pages display the data for each particle type detected in the samples for this project. Each page contains a PLM image, SEM image, and EDS spectrum for the particle types detected for these samples as well as particle type descriptions and observations.

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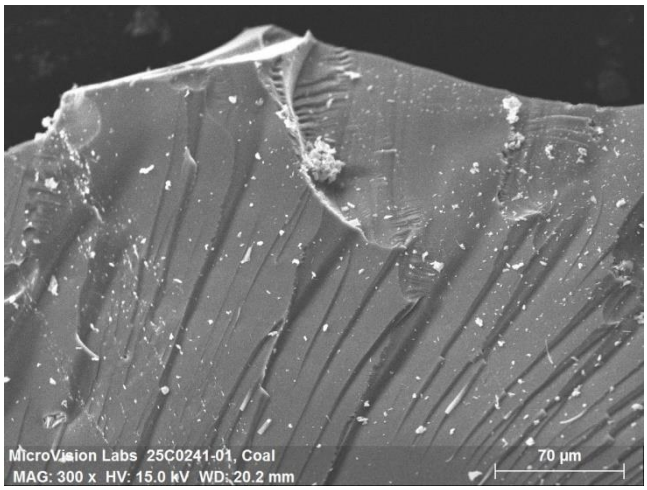
Sample: 25C0241-01

Number of Suspect Particle Types: Two

Coal: This particle type consisted of twenty-six shiny, black grains approximately 1-20mm in diameter. The PLM examination indicated this particle type to be consistent with coal. The PLM and SEM images of this particle type show the angular edges and typical conchoidal fractures found in coal.

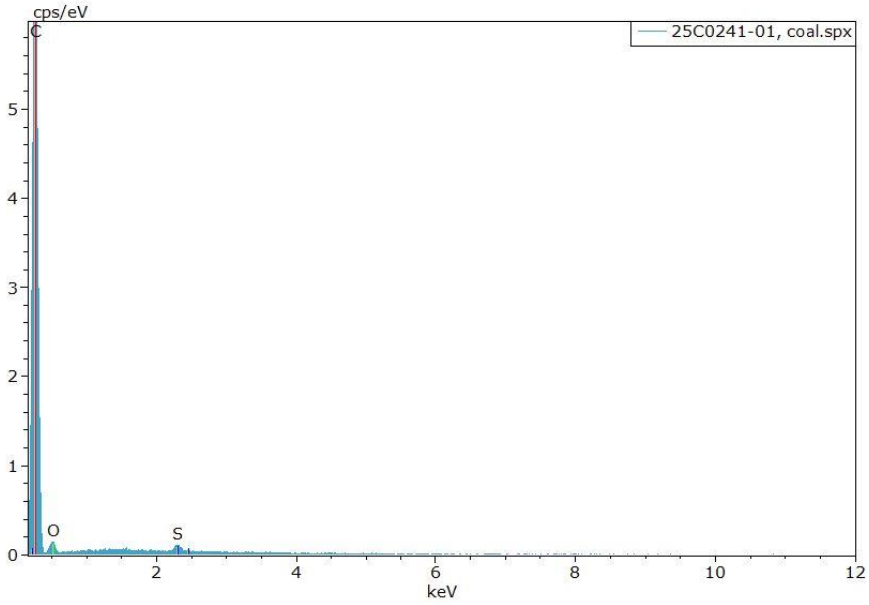


PLM Image



SEM Image

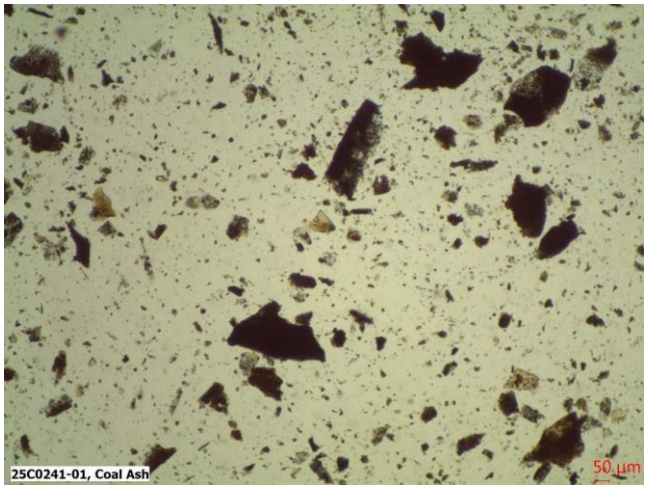
The EDS spectrum, shown below, confirms that this particle type is coal. The analysis for this particle shows concentrations of carbon, oxygen, and sulfur.

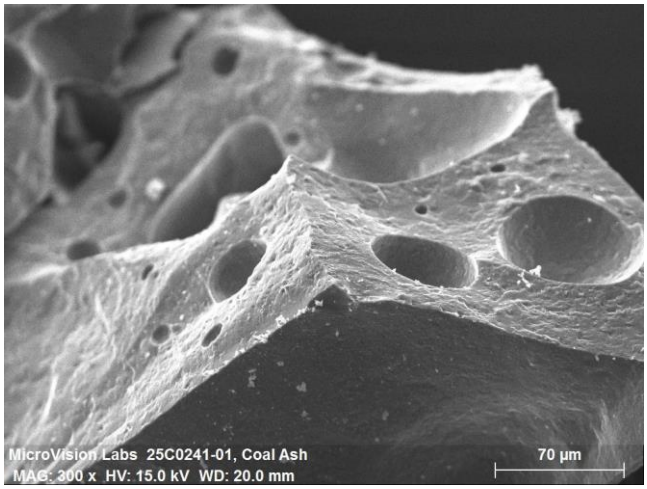


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Last Modified: 06/24/2026 at 9:48AM EDT

Coal Ash: This particle type consisted of one dark, porous grain approximately 2mm in diameter. The PLM examination indicated this particle type to be consistent with coal ash. The PLM and SEM images show the spherical gas voids that formed during combustion.

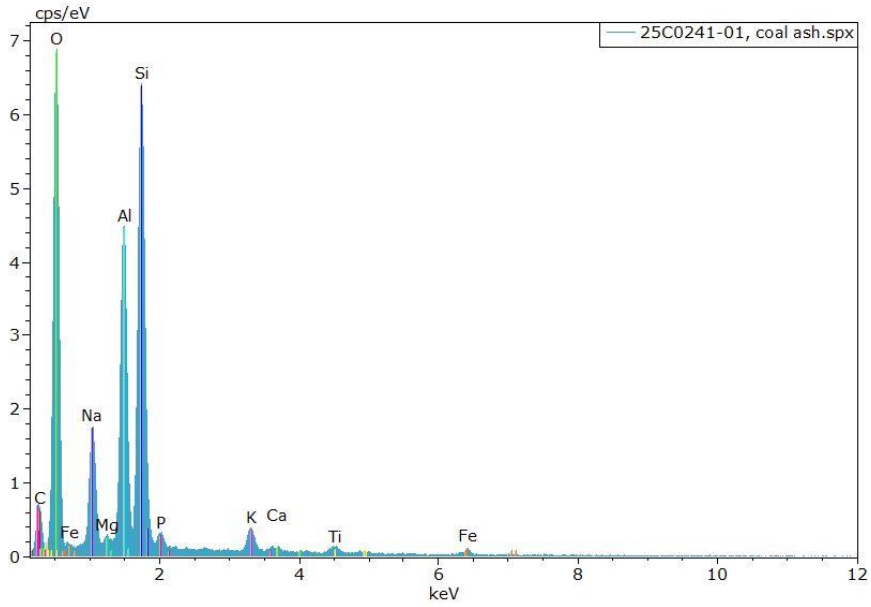




PLM Image **SEM Image**

Last Modified: 06/24/2026 at 9:48AM EDT

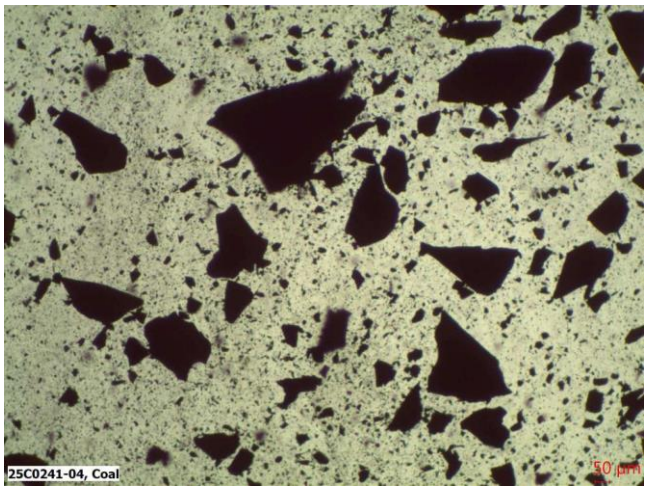
The EDS spectrum, shown below, indicates this particle type is coal ash. The analysis for this particle shows concentrations of carbon, oxygen, sodium, magnesium, aluminum, silicon, phosphorus, potassium, calcium, titanium and iron.



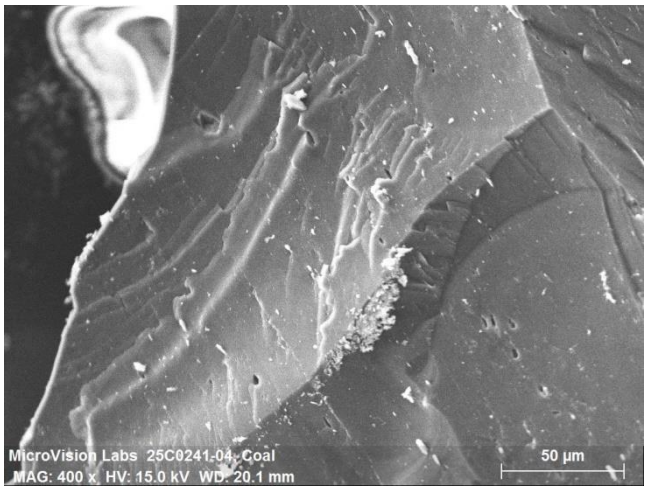
Sample: 25C0241-04

Number of Suspect Particle Types: One

Coal: This particle type consisted of four shiny, black grains approximately 3-26mm in diameter. The PLM examination indicated this particle type to be consistent with coal. The PLM and SEM images of this particle type show the angular edges and typical conchoidal fractures found in coal.

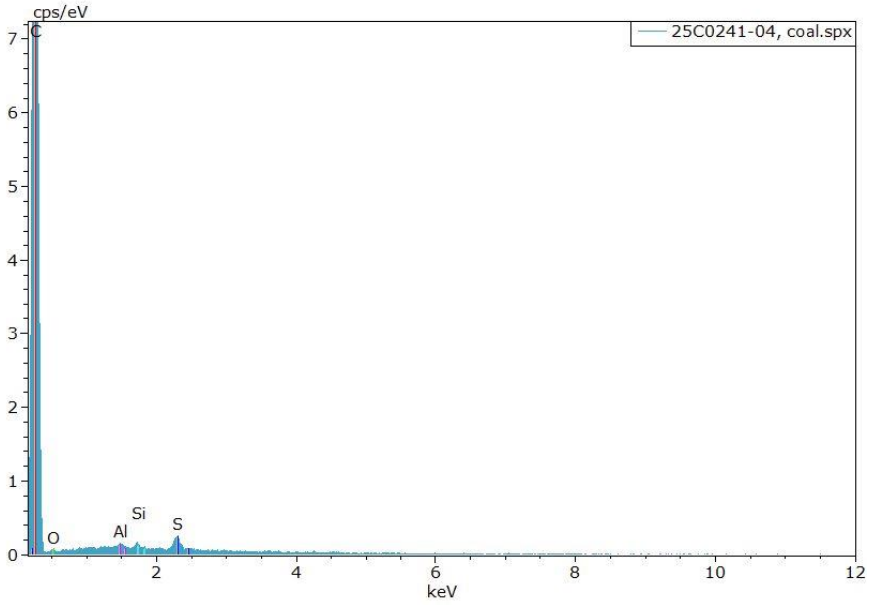


PLM Image



SEM Image

The EDS spectrum, shown below, confirms that this particle type is coal. The analysis for this particle shows concentrations of carbon, oxygen, aluminum, silicon, and sulfur.



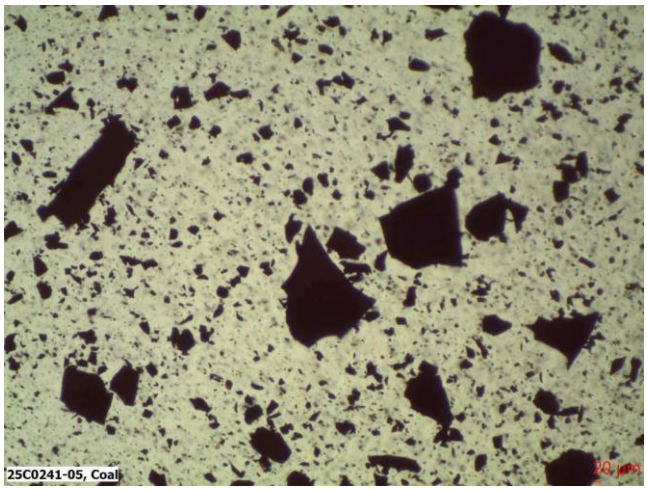
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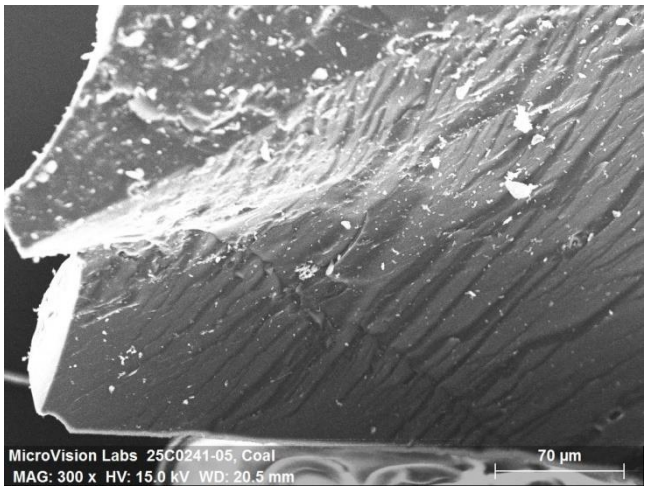
Sample: 25C0241-05

Number of Suspect Particle Types: One

Coal: This particle type consisted of thirteen shiny, black grains approximately 1-12mm in diameter. The PLM examination indicated this particle type to be consistent with coal. The PLM and SEM images of this particle type show the angular edges and typical conchoidal fractures found in coal.

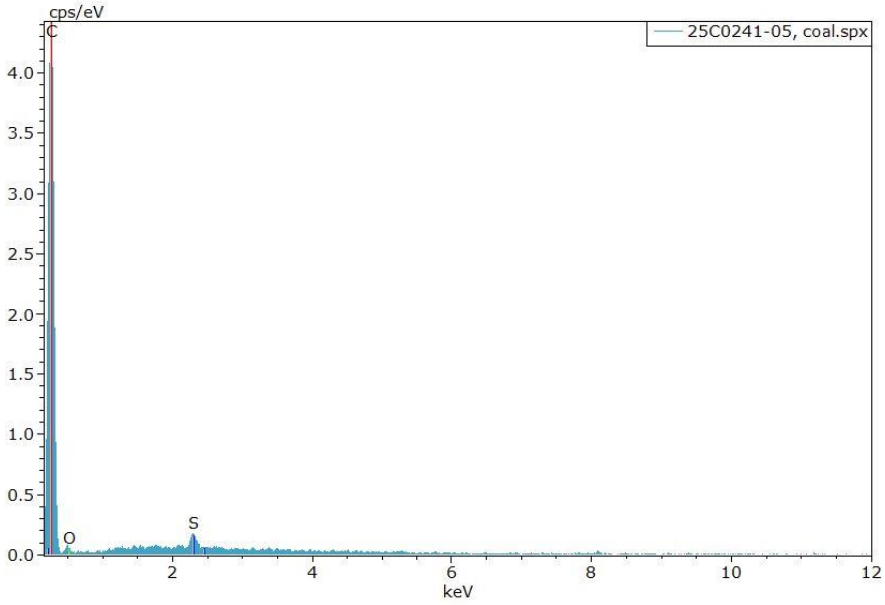


PLM Image



SEM Image

The EDS spectrum, shown below, confirms that this particle type is coal. The analysis for this particle shows concentrations of carbon, oxygen, and sulfur.

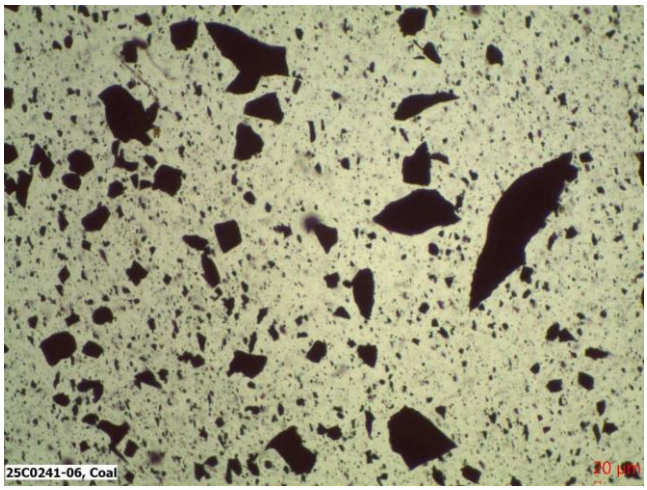


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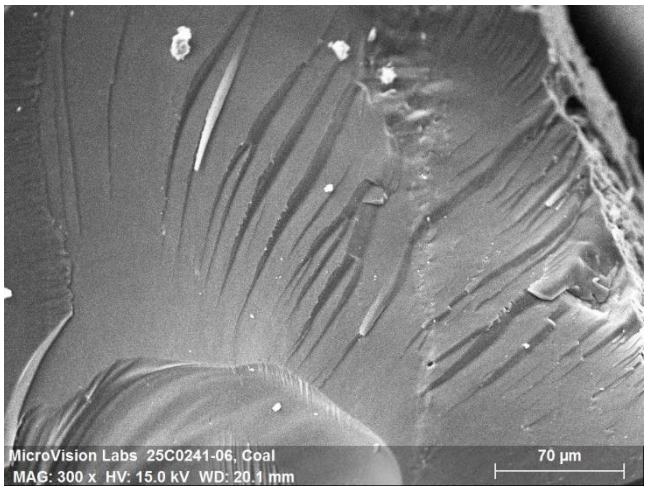
Sample: 25C0241-06

Number of Suspect Particle Types: One

Coal: This particle type consisted of four shiny, black grains approximately 2-5mm in diameter. The PLM examination indicated this particle type to be consistent with coal. The PLM and SEM images of this particle type show the angular edges and typical conchoidal fractures found in coal.

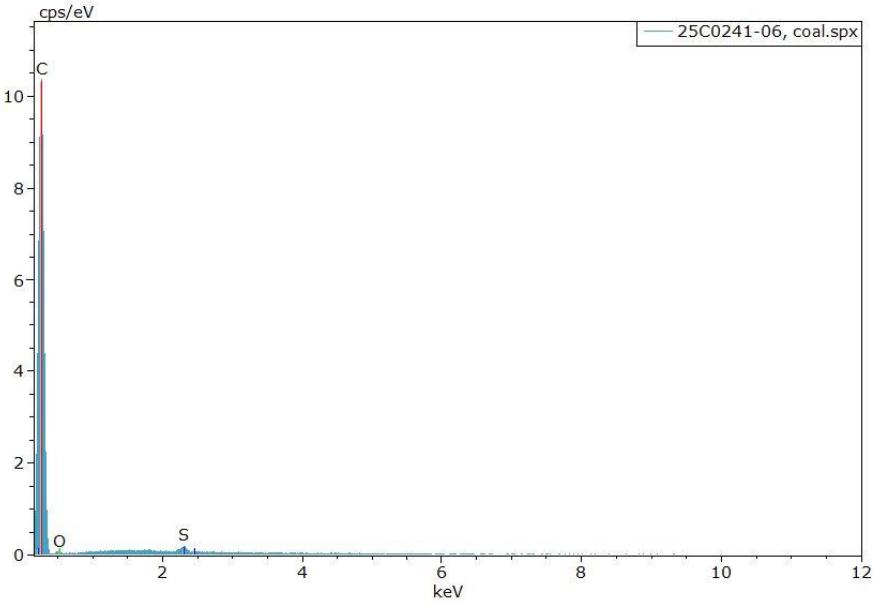


PLM Image



SEM Image

The EDS spectrum, shown below, confirms that this particle type is coal. The analysis for this particle shows concentrations of carbon, oxygen, and sulfur.



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Results Summary Table:

Sample Name	Material Detected
25C0241-01	Coal (moderate), Coal Ash (trace)
25C0241-04	Coal (trace)
25C0241-05	Coal (light)
25C0241-06	Coal (trace)

The concentrations of the particle types detected in these samples are listed in parenthesis in the table above and are based on the number of particles found and the relative difficulty in finding them. The concentration information is listed for informational purposes only and has no bearing on exemption status.

Please let us know if you have any questions about this analysis or if there is anything else we can do for you.

Sincerely,

Denise Weidler
Analytical Microscopist

Reviewed by: jas

Last Modified: 06/24/2026 at 9:48AM EDT

ESS Laboratory

DIVISION OF THE RISE GROUP

SUBCONTRACT ORDER 17264

25C0241

SENDING LABORATORY
ESS Laboratory
185 Frances Avenue
Cranston, RI 02910
Phone: (401) 461-7181

RECEIVING LABORATORY
Microvision Laboratories, Inc.
187 Billerica Road
Chelmsford, MA 01824
Phone: (978) 250-9909

PROJECT NOTES

Project Name: 25C0241
Project Location: MA
Project PO Number: 20008C
Due Date Standard
Send Report To: smorrell@thielsch.com; MDean@thielsch.com; ESSProjectManagement@thielsch.com

Sample ID: 25C0241-01
Sample Matrix: Sediment
Sampled: 03/05/25 13:20
Sample Type: Composite
Sampled By: Client
Container - Preservation: x 8 oz. Jar - Unpres
Hold Time Expires 3/19/2025
Analysis Coal/Wood Ash Determination
Analysis Comments: N/A

Sample ID: 25C0241-04
Sample Matrix: Sediment
Sampled: 03/05/25 12:00
Sample Type: Composite
Sampled By: Client
Container - Preservation: x 8 oz. Jar - Unpres
Hold Time Expires 3/19/2025
Analysis Coal/Wood Ash Determination
Analysis Comments: N/A

Sample ID: 25C0241-05
Sample Matrix: Sediment
Sampled: 03/05/25 13:15
Sample Type: Composite
Sampled By: Client
Container - Preservation: x 8 oz. Jar - Unpres
Hold Time Expires 3/19/2025
Analysis Coal/Wood Ash Determination
Analysis Comments: N/A

Released By	Date	Received By	Date
	4/15/25 0805	AO	4/15/25 805A
AO	4/15/25 959A		4/15/25 10AM
Released By	Date	Received By	Date

Page 1 of 2

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ESS Laboratory
DIVISION OF THE RISE GROUP

SUBCONTRACT ORDER 17264

25C0241

Sample ID: 25C0241-06
Sample Matrix: Sediment

Container - Preservation: x 8 oz. Jar - Unpres
Analysis Coal/Wood Ash Determination
Analysis Comments: N/A

Sampled: 03/05/25 12:30
Sample Type: Composite
Sampled By: Client
Hold Time Expires 3/19/2025

Released By	Date	Received By	Date
	4/15/25		4/15/25
4/15/25 959		4/15/25 10AM	
Released By	Date	Received By	Date

Page 2 of 2

Last Modified: 06/24/2026 at 9:48AM EDT

Thielsch DIVISION OF THE RISE GROUP	195 Frances Avenue Cranston RI, 02910 Phone: (401)-467-6454 Fax: (401)-467-2398 cts.thielsch.com *Let's Build a Solid Foundation*	Client Information: **ESS Laboratory** **Cranston, RI** **(401) 461-7181** Project Contact: Shawn Morrell Collected By: Client	Project Information: **Lily Pond** **Nantucket, MA** Project Number: 25C0241 Summary Page: 1 of 1 Report Date: 03.17.25

LABORATORY TESTING DATA SHEET, Report No.: 7425-C-143

Material Source	Sample ID	Depth (ft)	Laboratory No.	Identification Tests									Proctor / CBR / Permeability Tests								Laboratory Log and Soil Description
				As Rcvd Moisture Content %	LL %	PL %	OD LL	Gravel %	Sand %	Fines %	Org. %	pH	g_d MAX (pcf) W_{opt} (%)	g_d MAX (pcf) W_{opt} (%) (Corr.)	Dry unit wt. (pcf)	Test Moisture Content %	Target Test Setup as % of Proctor	CBR @ 0.1"	CBR @ 0.2"	Permeability cm/sec	
				D2216	D4318			D6913			D2974	D4792	D1557								
Sediment	2025-SS-1		25C0241-01	42.8				10.7	57.6	31.7											Dark Brown Organic silty sand
Sediment	2025-SS-2		25C0241-02	210				41.8	48.3	9.9											Brown Organic poorly graded sand with silt and gravel
Sediment	2025-SS-3		25C0241-03	83.3				0.0	86.0	14.0											Dark Brown Organic silty sand
Sediment	2025-SS-4		25C0241-04	150				15.2	54.6	30.2											Dark Brown Organic silty sand with gravel
Sediment	2025-SS-5		25C0241-05	78.7				0.0	72.6	27.4											Dark Brown Organic silty sand
Sediment	2025-SS-6		25C0241-06	76.6				6.4	78.0	15.6											Dark Brown Organic silty sand
Sediment	2025-SS-7		25C0241-07	55.2				0.0	58.5	41.5											Dark Brown Organic silty sand
Sediment	2025-SS-8		25C0241-08	84.0				0.0	86.4	13.6											Dark Brown Organic silty sand
Sediment	2025-SS-9		25C0241-09	37.9				2.9	85.3	11.8											Dark Brown Organic well-graded sand with silt
Sediment	2025-SS-10		25C0241-10	26.7				3.1	63.6	33.3											Dark Brown Organic silty sand

Date Received: **03.11.25** Reviewed By: Date Reviewed: **03.17.25**

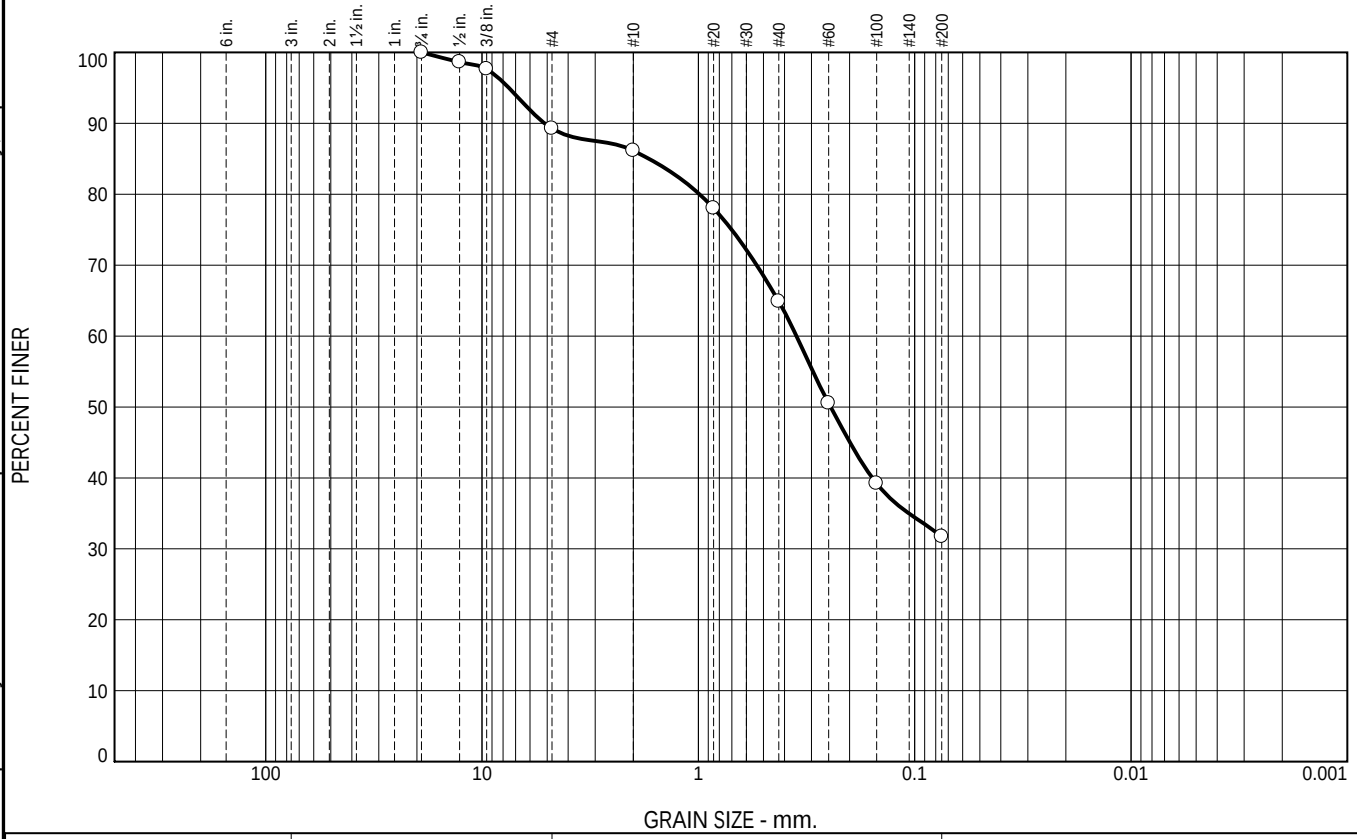
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Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	10.7	3.2	21.2	33.2	31.7	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	98.6		
3/8"	97.6		
#4	89.3		
#10	86.1		
#20	78.0		
#40	64.9		
#60	50.5		
#100	39.2		
#200	31.7		

* (no specification provided)

Soil Description

Dark Brown Organic silty sand

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 5.1430 D_{85}= 1.6926 D_{60}= 0.3520
D_{50}= 0.2446 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Sample description is for informational purposes, and is meant to indicate particle size not inclusion of mineral material.

Source of Sample: Sediment
Sample Number: 2025-SS-1

Date: 03.14.25

Thielsch Engineering Inc.

Cranston, RI

Client: ESS Laboratory
Project: Lily Pond
Nantucket, MA
Project No: 25C0241

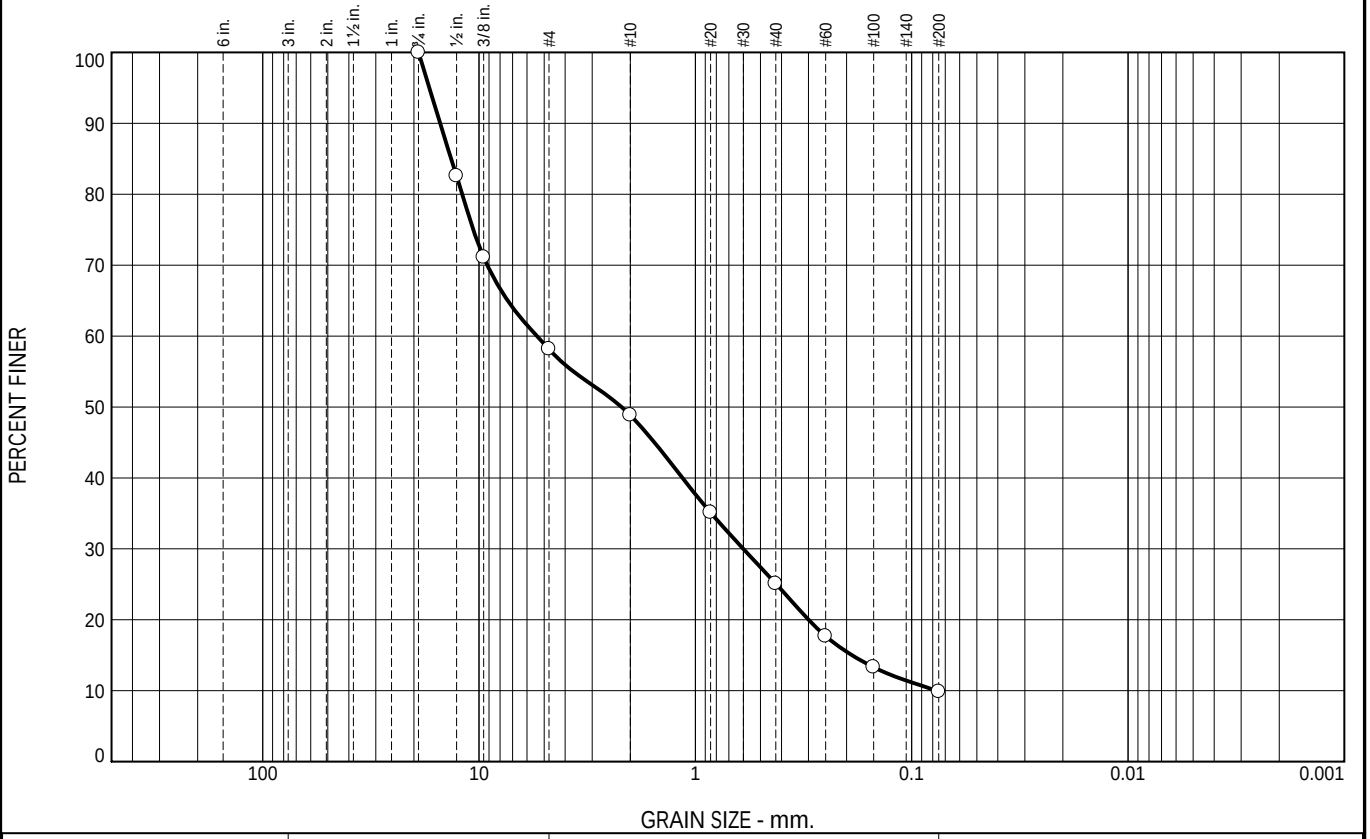
Fig. 25C0241-01

Tested By: RKO/AB Checked By: Kris Roland

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Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	41.8	9.4	23.7	15.2	9.9	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	82.6		
3/8"	71.1		
#4	58.2		
#10	48.8		
#20	35.1		
#40	25.1		
#60	17.7		
#100	13.3		
#200	9.9		

* (no specification provided)

Source of Sample: Sediment
Sample Number: 2025-SS-2

Soil Description

Dark Brown Organic poorly graded sand with silt and gravel

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 15.1252 D_{85}= 13.4570 D_{60}= 5.3987
D_{50}= 2.1946 D_{30}= 0.6007 D_{15}= 0.1888
D_{10}= 0.0771 C_u= 70.00 C_c= 0.87

Classification

USCS= SP-SM AASHTO= A-1-a

Remarks

Sample description is for informational purposes, and is meant to indicate particle size not inclusion of mineral material.

Date: 03.14.25

Thielsch Engineering Inc.

Cranston, RI

Client: ESS Laboratory
Project: Lily Pond
Nantucket, MA
Project No: 25C0241

Fig. 25C0241-02

Tested By: RKO/AB Checked By: Kris Roland

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Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	6.0	38.9	41.1	14.0	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	94.0		
#20	80.1		
#40	55.1		
#60	35.0		
#100	21.6		
#200	14.0		

* (no specification provided)

Soil Description

Dark Brown Organic silty sand

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 1.4389 D_{85}= 1.0555 D_{60}= 0.4828
D_{50}= 0.3720 D_{30}= 0.2126 D_{15}= 0.0828
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Sample description is for informational purposes, and is meant to indicate particle size not inclusion of mineral material.

Source of Sample: Sediment
Sample Number: 2025-SS-3

Date: 03.14.25

Thielsch Engineering Inc.

Cranston, RI

Client: ESS Laboratory
Project: Lily Pond
Nantucket, MA
Project No: 25C0241

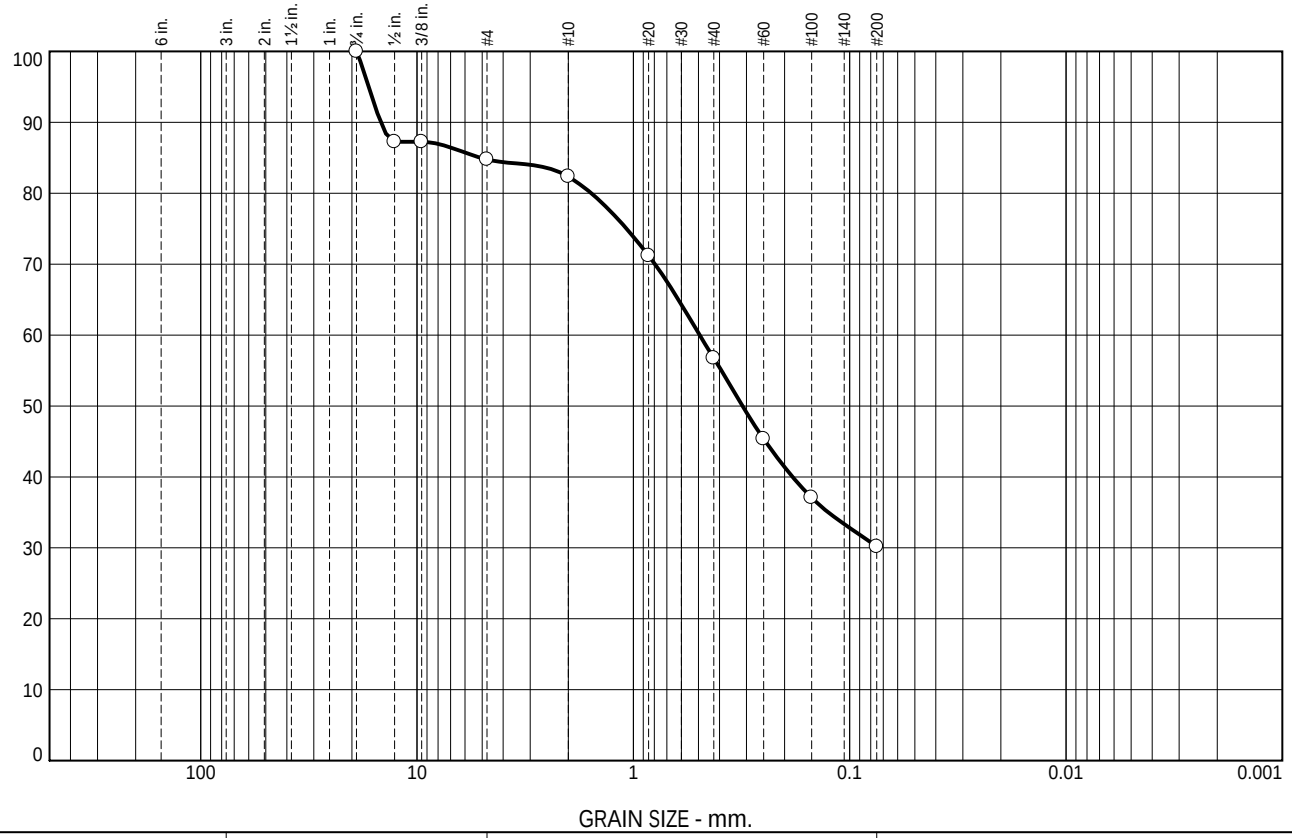
Fig. 25C0241-03

Tested By: RKO/AB Checked By: Kris Roland

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Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	15.2	2.5	25.6	26.5	30.2	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/4"	100.0		
1/2"	87.3		
3/8"	87.3		
#4	84.8		
#10	82.3		
#20	71.2		
#40	56.7		
#60	45.4		
#100	37.1		
#200	30.2		

* (no specification provided)

Source of Sample: Sediment
Sample Number: 2025-SS-4

Soil Description

Dark Brown Organic silty sand with gravel

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 14.7129 D_{85}= 5.0775 D_{60}= 0.4937
D_{50}= 0.3130 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Sample description is for informational purposes, and is meant to indicate particle size not inclusion of mineral material.

Date: 03.14.25

Thielsch Engineering Inc.

Cranston, RI

Client: ESS Laboratory
Project: Lily Pond
Nantucket, MA
Project No: 25C0241

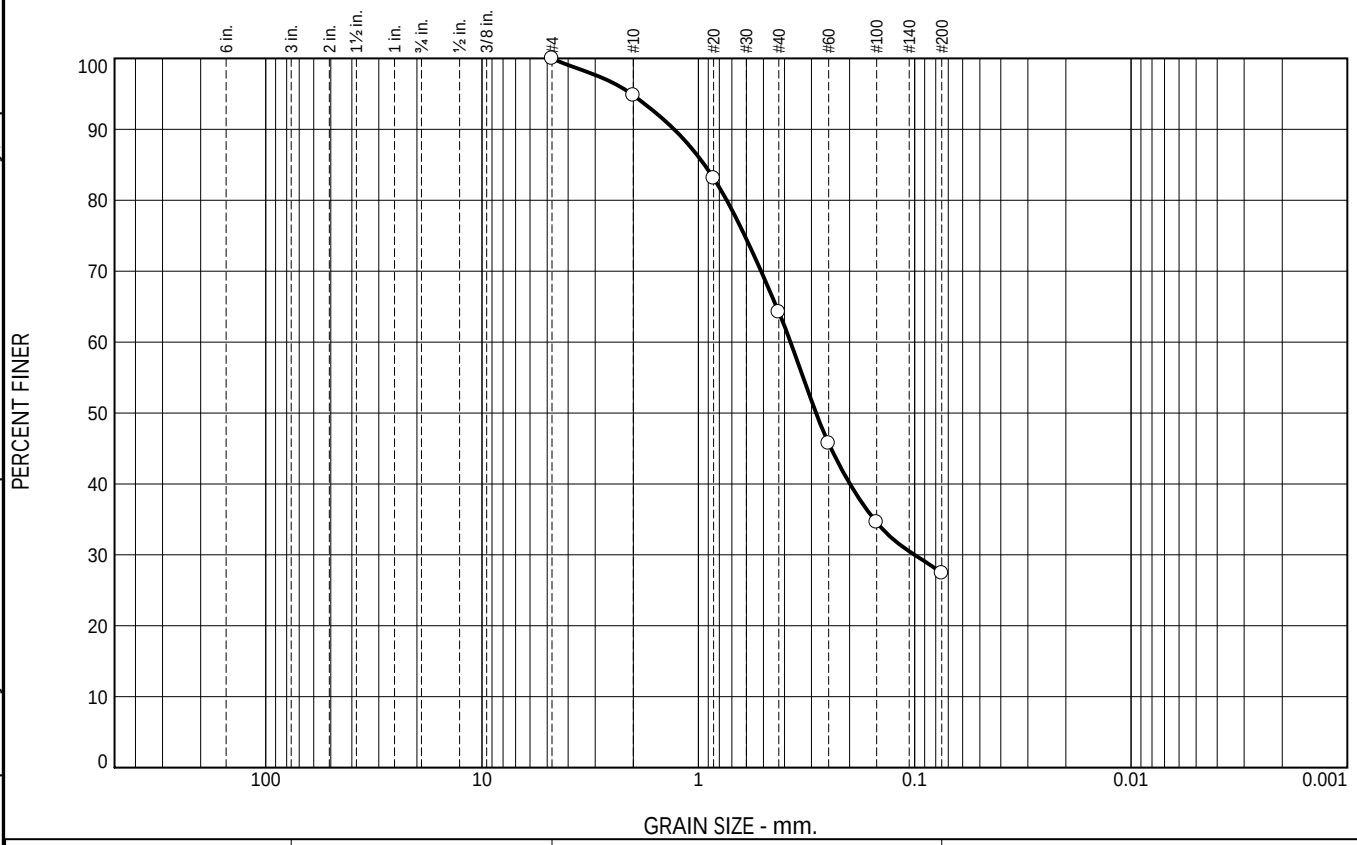
Fig. 25C0241-04

Tested By: RKO/AB Checked By: Kris Roland

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Last Modified: 06/24/2026 at 9:48AM EDT

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	5.2	30.6	36.8	27.4	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	94.8		
#20	83.1		
#40	64.2		
#60	45.7		
#100	34.6		
#200	27.4		

* (no specification provided)

Soil Description

Dark Brown Organic silty sand

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 1.2941 D_{85}= 0.9368 D_{60}= 0.3750
D_{50}= 0.2859 D_{30}= 0.1002 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Sample description is for informational purposes, and is meant to indicate particle size not inclusion of mineral material.

Source of Sample: Sediment
Sample Number: 2025-SS-5

Date: 03.14.25

Thielsch Engineering Inc.

Cranston, RI

Client: ESS Laboratory
Project: Lily Pond
Nantucket, MA
Project No: 25C0241

Fig. 25C0241-05

Tested By: RKO/AB Checked By: Kris Roland

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Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	6.4	2.7	37.4	37.9	15.6	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2"	100.0		
3/8"	94.5		
#4	93.6		
#10	90.9		
#20	75.1		
#40	53.5		
#60	35.6		
#100	23.8		
#200	15.6		

* (no specification provided)

Soil Description

Dark Brown Organic silty sand

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 1.8329 D_{85}= 1.3278 D_{60}= 0.5174
D_{50}= 0.3830 D_{30}= 0.2019 D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Sample description is for informational purposes, and is meant to indicate particle size not inclusion of mineral material.

Source of Sample: Sediment
Sample Number: 2025-SS-6

Date: 03.13.25

Thielsch Engineering Inc.

Cranston, RI

Client: ESS Laboratory
Project: Lily Pond
Nantucket, MA
Project No: 25C0241

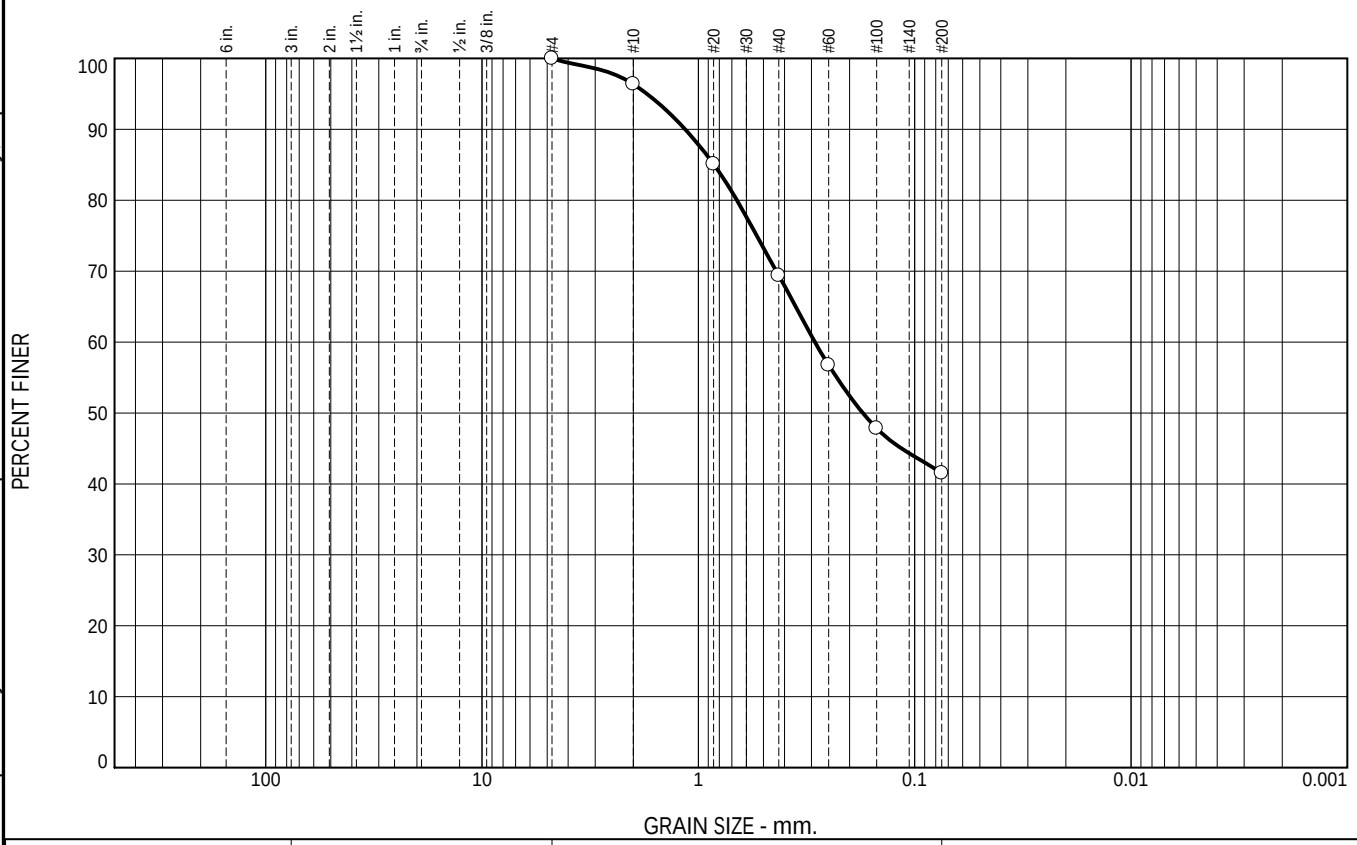
Fig. 25C0241-06

Tested By: RKO/AB Checked By: Kris Roland

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Last Modified: 06/24/2026 at 9:48AM EDT

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	3.6	27.0	27.9	41.5	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	96.4		
#20	85.1		
#40	69.4		
#60	56.7		
#100	47.8		
#200	41.5		

* (no specification provided)

Soil Description

Dark Brown Organic silty sand

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 1.1508 D_{85}= 0.8456 D_{60}= 0.2893
D_{50}= 0.1737 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-4(0)

Remarks

Sample description is for informational purposes, and is meant to indicate particle size not inclusion of mineral material.

Source of Sample: Sediment
Sample Number: 2025-SS-7

Date: 03.14.25

Thielsch Engineering Inc.

Cranston, RI

Client: ESS Laboratory
Project: Lily Pond
Nantucket, MA
Project No: 25C0241

Fig. 25C0241-07

Tested By: RKO/AB Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Last Modified: 06/24/2026 at 9:48AM EDT

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	4.8	36.4	45.2	13.6	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
#4	100.0		
#10	95.2		
#20	84.4		
#40	58.8		
#60	37.4		
#100	22.6		
#200	13.6		

* (no specification provided)

Soil Description

Dark Brown Organic silty sand

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 1.1546 D_{85}= 0.8730 D_{60}= 0.4383
D_{50}= 0.3430 D_{30}= 0.1993 D_{15}= 0.0843
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Sample description is for informational purposes, and is meant to indicate particle size not inclusion of mineral material.

Source of Sample: Sediment
Sample Number: 2025-SS-8

Date: 03.14.25

Thielsch Engineering Inc.

Cranston, RI

Client: ESS Laboratory
Project: Lily Pond
Nantucket, MA
Project No: 25C0241

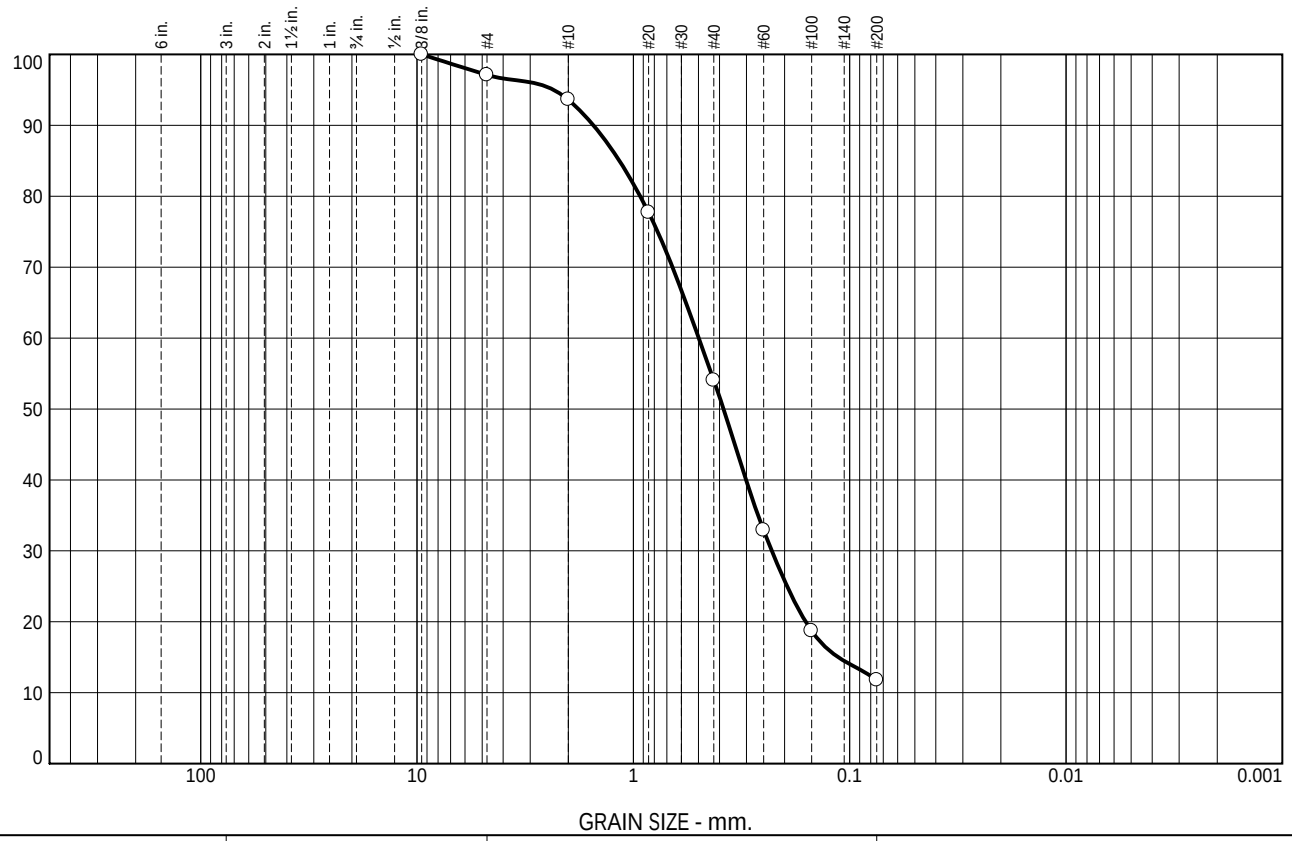
Fig. 25C0241-08

Tested By: RKO/AB Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Last Modified: 06/24/2026 at 9:48AM EDT

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.9	3.5	39.6	42.2	11.8	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	97.1		
#10	93.6		
#20	77.7		
#40	54.0		
#60	32.9		
#100	18.7		
#200	11.8		

* (no specification provided)

Source of Sample: Sediment
Sample Number: 2025-SS-9

Soil Description

Dark Brown Organic well-graded sand with silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 1.5290 D_{85}= 1.1603 D_{60}= 0.4988
D_{50}= 0.3831 D_{30}= 0.2292 D_{15}= 0.1130
D_{10}= C_u= C_c=

Classification

USCS= SW-SM AASHTO= A-2-4(0)

Remarks

Sample description is for informational purposes, and is meant to indicate particle size not inclusion of mineral material.

Date: 03.14.25

Thielsch Engineering Inc.

Cranston, RI

Client: ESS Laboratory
Project: Lily Pond
Nantucket, MA
Project No: 25C0241

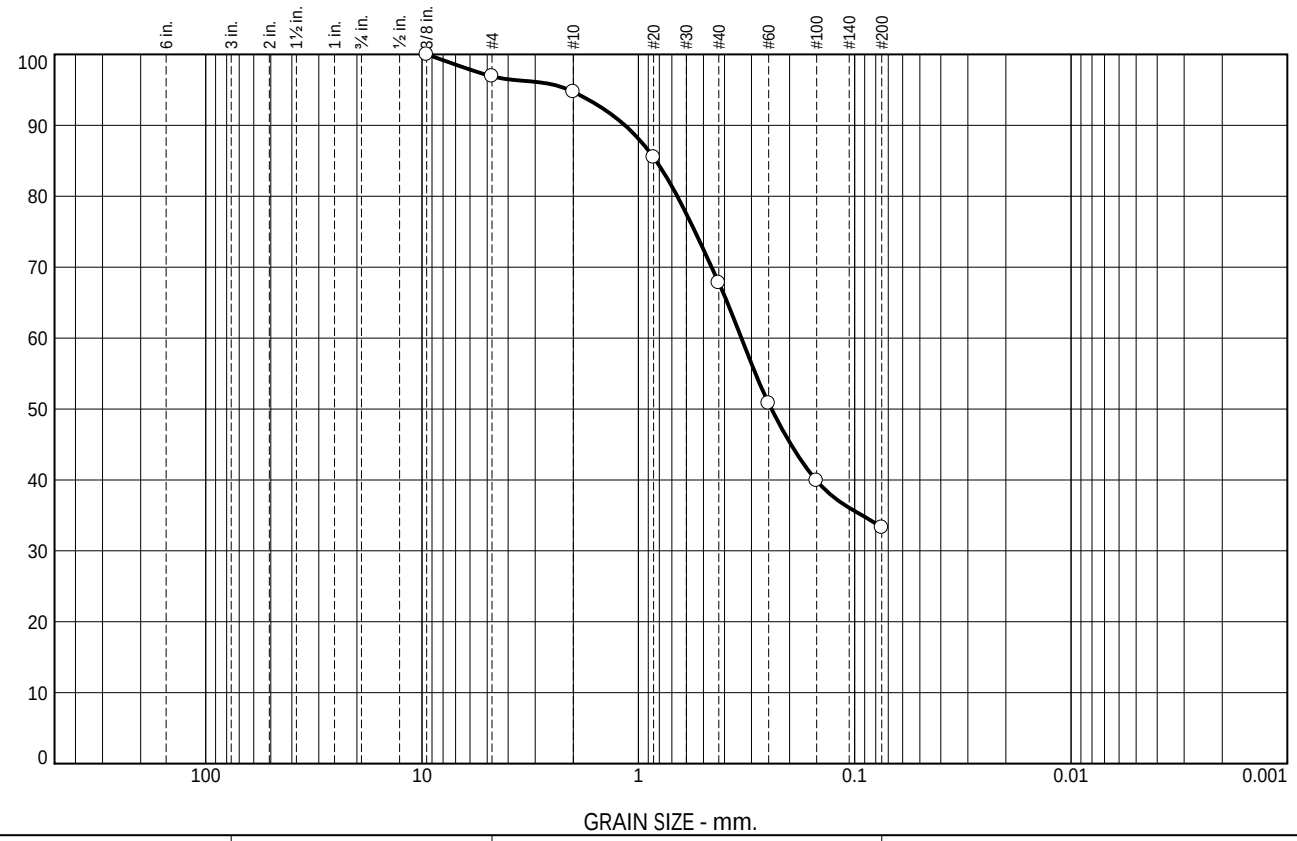
Fig. 25C0241-09

Tested By: RKO/AB Checked By: Kris Roland

These results are for the exclusive use of the client for whom they were obtained. This report only relates to items inspect and/or tested. No warranty, expressed or implied, is made.

Last Modified: 06/24/2026 at 9:48AM EDT

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	3.1	2.2	26.9	34.5	33.3	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
3/8"	100.0		
#4	96.9		
#10	94.7		
#20	85.5		
#40	67.8		
#60	50.8		
#100	39.9		
#200	33.3		

* (no specification provided)

Soil Description

Dark Brown Organic silty sand

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 1.1526 D_{85}= 0.8277 D_{60}= 0.3340
D_{50}= 0.2425 D_{30}= D_{15}=
D_{10}= C_u= C_c=

Classification

USCS= SM AASHTO= A-2-4(0)

Remarks

Sample description is for informational purposes, and is meant to indicate particle size not inclusion of mineral material.

Source of Sample: Sediment
Sample Number: 2025-SS-10

Date: 03.14.25

Thielsch Engineering Inc.

Cranston, RI

Client: ESS Laboratory
Project: Lily Pond
Nantucket, MA
Project No: 25C0241

Fig. 25C0241-10

Tested By: RKO/AB Checked By: Kris Roland

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Horsley Witten Group - TJM

Shipped/Delivered Via: ESS Courier

ESS Project ID: 25C0241
Date Received: 3/7/2025
Project Due Date: 3/14/2025
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 4.4 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** Yes / No / NA
10. Were any analyses received outside of hold time? Yes / No

11. Any Subcontracting needed? Yes / No
    ESS Sample IDs: **1--10**
    Analysis: **Particle size**
    TAT: **5 day**
12. Were VOAs received? Yes / No
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? Yes / No / NA
13. Are the samples properly preserved? Yes / No
    a. If metals preserved upon receipt: Date: _____ Time: _____ By/Acid Lot#: _____
    b. If dissolved metals are requested, are they: Yes / No Field Filtered Yes / No To Be Lab Filtered
    c. Low Level VOA vials frozen: Date: 3/7/25 Time: _____ By: Client
    w/ice within 48 hours

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / No
    a. Was there a need to contact the client? Yes / No
    Who was contacted? _____ Date: _____ Time: _____ By: _____

Resolution:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	645520	Yes	N/A	Yes	8 oz jar	NP	
1	645521	Yes	N/A	Yes	8 oz jar	NP	
1	645651	Yes	N/A	Yes	8 oz jar	NP	
1	645652	Yes	N/A	Yes	8 oz jar	NP	
2	645522	Yes	N/A	Yes	8 oz jar	NP	
2	645523	Yes	N/A	Yes	8 oz jar	NP	
2	645653	Yes	N/A	Yes	8 oz jar	NP	
2	645654	Yes	N/A	Yes	8 oz jar	NP	
3	645524	Yes	N/A	Yes	8 oz jar	NP	
3	645525	Yes	N/A	Yes	8 oz jar	NP	
3	645655	Yes	N/A	Yes	8 oz jar	NP	
3	645656	Yes	N/A	Yes	8 oz jar	NP	
4	645526	Yes	N/A	Yes	8 oz jar	NP	
4	645527	Yes	N/A	Yes	8 oz jar	NP	
4	645657	Yes	N/A	Yes	8 oz jar	NP	
4	645658	Yes	N/A	Yes	8 oz jar	NP	
5	645528	Yes	N/A	Yes	8 oz jar	NP	
5	645529	Yes	N/A	Yes	8 oz jar	NP	
5	645659	Yes	N/A	Yes	8 oz jar	NP	
5	645660	Yes	N/A	Yes	8 oz jar	NP	

Last Modified: 06/24/2026 at 9:48AM EDT

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Horsley Witten Group - TJM

ESS Project ID: 25C0241

Date Received: 3/7/2025

6	645530	Yes	N/A	Yes	8 oz jar	NP
6	645531	Yes	N/A	Yes	8 oz jar	NP
6	645661	Yes	N/A	Yes	8 oz jar	NP
6	645662	Yes	N/A	Yes	8 oz jar	NP
7	645532	Yes	N/A	Yes	8 oz jar	NP
7	645533	Yes	N/A	Yes	8 oz jar	NP
7	645663	Yes	N/A	Yes	8 oz jar	NP
7	645664	Yes	N/A	Yes	8 oz jar	NP
8	645534	Yes	N/A	Yes	8 oz jar	NP
8	645535	Yes	N/A	Yes	8 oz jar	NP
8	645665	Yes	N/A	Yes	8 oz jar	NP
8	645666	Yes	N/A	Yes	8 oz jar	NP
9	645536	Yes	N/A	Yes	8 oz jar	NP
9	645537	Yes	N/A	Yes	8 oz jar	NP
9	645667	Yes	N/A	Yes	8 oz jar	NP
9	645668	Yes	N/A	Yes	8 oz jar	NP
10	645538	Yes	N/A	Yes	8 oz jar	NP
10	645539	Yes	N/A	Yes	8 oz jar	NP
10	645669	Yes	N/A	Yes	8 oz jar	NP
10	645670	Yes	N/A	Yes	8 oz jar	NP
11	645480	Yes	N/A	Yes	VOA Vial	DI Water
11	645481	Yes	N/A	Yes	VOA Vial	DI Water
11	645500	Yes	N/A	Yes	VOA Vial	MeOH
11	645510	Yes	N/A	Yes	4 oz. Jar	NP
12	645482	Yes	N/A	Yes	VOA Vial	DI Water
12	645483	Yes	N/A	Yes	VOA Vial	DI Water
12	645501	Yes	N/A	Yes	VOA Vial	MeOH
12	645511	Yes	N/A	Yes	4 oz. Jar	NP
13	645484	Yes	N/A	Yes	VOA Vial	DI Water
13	645485	Yes	N/A	Yes	VOA Vial	DI Water
13	645502	Yes	N/A	Yes	VOA Vial	MeOH
13	645512	Yes	N/A	Yes	4 oz. Jar	NP
14	645486	Yes	N/A	Yes	VOA Vial	DI Water
14	645487	Yes	N/A	Yes	VOA Vial	DI Water
14	645503	Yes	N/A	Yes	VOA Vial	MeOH
14	645513	Yes	N/A	Yes	4 oz. Jar	NP
15	645488	Yes	N/A	Yes	VOA Vial	DI Water
15	645489	Yes	N/A	Yes	VOA Vial	DI Water
15	645504	Yes	N/A	Yes	VOA Vial	MeOH
15	645514	Yes	N/A	Yes	4 oz. Jar	NP
16	645490	Yes	N/A	Yes	VOA Vial	DI Water
16	645491	Yes	N/A	Yes	VOA Vial	DI Water
16	645505	Yes	N/A	Yes	VOA Vial	MeOH
16	645515	Yes	N/A	Yes	4 oz. Jar	NP
17	645492	Yes	N/A	Yes	VOA Vial	DI Water
17	645493	Yes	N/A	Yes	VOA Vial	DI Water
17	645506	Yes	N/A	Yes	VOA Vial	MeOH
17	645516	Yes	N/A	Yes	4 oz. Jar	NP
18	645494	Yes	N/A	Yes	VOA Vial	DI Water
18	645495	Yes	N/A	Yes	VOA Vial	DI Water
18	645507	Yes	N/A	Yes	VOA Vial	MeOH
18	645517	Yes	N/A	Yes	4 oz. Jar	NP
19	645496	Yes	N/A	Yes	VOA Vial	DI Water
19	645497	Yes	N/A	Yes	VOA Vial	DI Water
19	645508	Yes	N/A	Yes	VOA Vial	MeOH
19	645518	Yes	N/A	Yes	4 oz. Jar	NP

Last Modified: 06/24/2026 at 9:48AM EDT

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Horsley Witten Group - TJM

ESS Project ID: 25C0241
Date Received: 3/7/2025

20	645498	Yes	N/A	Yes	VOA Vial	DI Water
20	645499	Yes	N/A	Yes	VOA Vial	DI Water
20	645509	Yes	N/A	Yes	VOA Vial	MeOH
20	645519	Yes	N/A	Yes	4 oz. Jar	NP

2nd Review

Were all containers scanned into storage/lab? Initials TC

Are barcode labels on correct containers? Yes / No

Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA

Are all Hex Chrome stickers attached? Yes / No / NA

Are all QC stickers attached? Yes / No / NA

Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: [signature] Date & Time: 3/7/25 1811

Reviewed By: [signature] Date & Time: 3/7/25 1830

Last Modified: 06/24/2026 at 9:48AM EDT

CHAIN OF CUSTODY

ESS Lab # 25C0241 | Page 1 of 3

ESS LABORATORY
185 Frances Avenue
Cranston, RI 02921
Phone: 401-461-7181
www.esslaboratory.com

Turn Time: ☐ >5 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ Same Day
Regulatory State: MA Criteria: GW-1/S-1/401WQC
Is this project for any of the following?: ☐ CT RCP ☒ MA MCP ☐ RGP ☐ Permit ☒ 401 WQ

ELECTRONIC DELIVERABLES (Final Reports are PDF)
☒ Limit Checker ☐ State Forms ☐ EQuIS
☒ Excel ☐ Hard Copy ☐ Enviro Data
☐ CLP-Like Package ☐ Other (Specify) →

CLIENT INFORMATION

Client: Horsley Witten Group
Address: 90 Route 6A
Sandwich
Phone: 508-833-6600
Email Distribution List: ghedman@horsleywitten.com
cgran@horsleywitten.com

PROJECT INFORMATION

Project Name: Lily Pond
Project Location: Nantucket, MA
Project Number: 20008C
Project Manager: Gary Hedman
Bill to:
PO#:
Quote#:

Client acknowledges that sampling is compliant with all EPA / State regulatory programs

REQUESTED ANALYSES

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	RCRA 8	PCBs	SVOCs full	TPH	EPH	Pest / Herb	pH, cond.	Flash point	Reactivity	Grain size	TOC	1L WATER	tCLP Lead	Coal Ash			ML - 4/11/25	Total Number of Bottles
1	3/5/25	1320	comp	sed	2025-SS-1	X	X	X	X	X	X	X	X	X	X	X	X		X				
2		1115			2025-SS-2														X				
3		1100			2025-SS-3													X	X				
4		1200			2025-SS-4														X				
5		1315			2025-SS-5													X	X				
6		1230			2025-SS-6													X	X				
7		1030			2025-SS-7																		
8		9:15			2025-SS-8																		
9		9:50			2025-SS-9																		
10		900			2025-SS-10																		

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer J-Jar O-Other P-Poly S-Sterile V-Vial
Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*

Sampled by: Caroline Gran

Chain needs to be filled out neatly and completely for on time delivery.

Laboratory Use Only
Cooler Temperature (°C): 4.4 / 1C

Comments: * Please specify "Other" preservative and containers types in this space
meet 401 WQC reporting limits

All samples submitted are subject to ESS Laboratory's payment terms and conditions.

Dissolved Filtration
☐ Lab Filter

Relinquished by (Signature)	Date	Time	Received by (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)
Caroline Gran	3/7/25	14:30	3/7/25		3/7/25	17:23	
Relinquished by (Signature)	Date	Time	Received by (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)

Last Modified: 06/24/2026 at 9:48AM EDT

ESS LABORATORY

185 Frances Avenue
Cranston, RI 02921
Phone: 401-461-7181
[redacted]
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 75C0241 | Page 2 of 3

Turn Time: ☐ >5 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ Same Day

Regulatory State: MA Criteria: GW-1/S-1/401

Is this project for any of the following?:
☐ CT RCP ☒ MA MCP ☐ RGP ☐ Permit ☒ 401 WQ

ELECTRONIC DELIVERABLES (Final Reports are PDF)
☒ Limit Checker ☐ State Forms ☐ EQuIS
☒ Excel ☐ Hard Copy ☐ Enviro Data
☐ CLP-Like Package ☐ Other (Specify) →

CLIENT INFORMATION

Client: Horsley Witten Group
Address: 90 Route 6A
Sandwich, MA
Phone: 508-833-6600
Email Distribution List: ghedman@horsleywitten.com
cgran@horsleywitten.com

PROJECT INFORMATION

Project Name: Lily Pond
Project Location: Nantucket, MA
Project Number: 20008C
Project Manager: Gary Hedman
Bill to:
PO#:
Quote#:

Client acknowledges that sampling is compliant with all EPA / State regulatory programs

REQUESTED ANALYSES

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	VOCs	Solids %	Total Number of Bottles
11	3/6/25	1320	~~Grab~~ G	~~Soil~~ Sed.	2025-SS-1A	X	X	
12		1115			2025-SS-2C	X	X	
13		1045			2025-SS-3A	X	X	
14		1200			2025-SS-4B	X	X	
15		1315			2025-SS-5C	X	X	
16		1230			2025-SS-6A	X	X	
17		1030			2025-SS-7B	X	X	
18		9:15			2025-SS-8C	X	X	
19		9:50			2025-SS-9A	X	X	
20		9:00			2025-SS-10C	X	X	
Container Type:	AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer J-Jar O-Other P-Poly S-Sterile V-Vial					V	J	
Container Volume:	1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*					7	8	
Preservation Code:	1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*					2/6	1	

Sampled by: Caroline Gran

Chain needs to be filled out neatly and completely for on time delivery.

Laboratory Use Only
Cooler Temperature (°C): 9.4 / 1.7

Comments: * Please specify "Other" preservative and containers types in this space
Grab samples, frozen w/in 48 hours of collection with D.I.

All samples submitted are subject to ESS Laboratory's payment terms and conditions.

Dissolved Filtration
☐ Lab Filter

Relinquished by (Signature)	Date	Time	Received by (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)
Caroline Gran	3/6/25	1430	[signature] 3/7/25 14:30	[signature]	3/7/25	17:38	[signature]
Relinquished by (Signature)	Date	Time	Received by (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)

Last Modified: 06/24/2026 at 9:43AM EDT

CERTIFICATE OF ANALYSIS

Caroline Gran
Horsley & Witten
90 Route 6A
Sandwich, MA 02563

RE: Lily Pond - 401WQ (20008C)
ESS Laboratory Work Order Number: 25C0242

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Last Modified: 06/24/2026 at 9:48AM EDT

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 2:04 pm, Mar 21, 2025

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

Subcontracted Analyses

CTS - Cranston, RI	Grain Size Analysis, Water Content

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

SAMPLE RECEIPT

The following samples were received on March 07, 2025 for the analyses specified on the enclosed Chain of Custody Record.

To achieve CAM compliance for MCP data, ESS Laboratory has reviewed all QA/QC Requirements and Performance Standards listed in each method. Holding times and preservation have also been reviewed. All CAM requirements have been performed and achieved unless noted in the project narrative.

Each method has been set-up in the laboratory to reach required MCP standards. The methods for aqueous VOA and Soil Methanol VOA have known limitations for certain analytes. The regulatory standards may not be achieved due to these limitations. In addition, for all methods, matrix interferences, dilutions, and %Solids may elevate method reporting limits above regulatory standards. ESS Laboratory can provide, upon request, a Limit Checker (regulatory standard comparison spreadsheet) electronic deliverable which will highlight these exceedances.

Last Modified: 06/24/2026 at 9:48AM EDT

Sample 25C0242-01 for 401 WQ Metals were oven dried at 60 degrees Celsius prior to digestion and relogged in as sample 25C0242-03. This was done to increase the dry weight of the sample digested which decreases variability of results and lowers the detection limits for samples with high water content.

Low Level VOA vials were frozen by the client within 48 hrs.
Tetrahydrofuran is reported above the MA CAM reporting limit of 0.010 mg/kg.

Question I: All samples for EPH and Metals were analyzed for a subset of the required MCP list per the client's request.

Lab Number	Sample Name	Matrix	Analysis
25C0242-01	2025-SS-11	Sediment	1010A, 2540G, 2550B, 6010D, 7.3.3.2, 7.3.4.1, 7010, 7471B, 8081B, 8082A Cong, 8100M, 8151A, 8270E, 9045, 9050A, EPH8270, EPH8270SIM, LK, MADEP-EPH, SUB
25C0242-02	2025-SS-11B	Sediment	8260D Low
25C0242-03	2025-SS-11 - Oven Dried	Sediment	6010D, 7471B

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ ESS Laboratory Work Order: 25C0242

PROJECT NARRATIVE

MADEP-EPH Extractable Petroleum Hydrocarbons

D5C0300-CCV1 **Calibration required quadratic regression (Q).**
Benzo(a)pyrene (110% @ 80-120%), Benzo(b)fluoranthene (114% @ 80-120%), Dibenzo(a,h)Anthracene (104% @ 80-120%), Indeno(1,2,3-cd)Pyrene (102% @ 80-120%)

Semi-Volatile Organic Compounds

D5C0182-CCV1 **Calibration required quadratic regression (Q).**
2,4-Dinitrophenol (75% @ 40-160%)

D5C0182-CCV1 **Continuing Calibration %Diff/Drift is below control limit (CD-).**
N-Nitrosodimethylamine (24% @ 20%)

D5C0182-TUN1 **DDT breakdown > 20%**

Total Metals

DC51107-SRM1 **Standard Reference Material is biased low (R-).**
Lead (77% @ 81-120%)

Volatile Organics Low Level

D5C0185-CCV1 **Calibration required quadratic regression (Q).**
Bromoform (106% @ 40-160%)

D5C0185-CCV1 **Continuing Calibration %Diff/Drift is below control limit (CD-).**
Vinyl Chloride (32% @ 20%)

DC51032-BS1 **Blank Spike recovery is below lower control limit (B-).**
Vinyl Chloride (56% @ 70-130%)

DC51032-BSD1 **Blank Spike recovery is below lower control limit (B-).**
Vinyl Chloride (59% @ 70-130%)

No other observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

Semivolatile Organics Internal Standard Information

Semivolatile Organics Surrogate Information

Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010D - ICP
6020B - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260D - VOA
8270E - SVOA
8270E SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 19-2.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

Last Modified: 06/24/2026 at 9:48AM EDT

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

MassDEP Analytical Protocol Certification Form

MADEP RTN: _____

This form provides certification for the following data set: **25C0242-01 through 25C0242-03**

Matrices: ( ) Ground Water/Surface Water (x) Soil/Sediment ( ) Drinking Water ( ) Air ( ) Other:_____

CAM Protocol (check all that apply below):

( ) 8260 VOC CAM II A	(x) 7470/7471 Hg CAM III B	( ) MassDEP VPH (GC/PID/FID) CAM IV A	(x) 8082 PCB CAM V A	( ) 9014 Total Cyanide/PAC CAM VI A	( ) 6860 Perchlorate CAM VIII B
(x) 8270 SVOC CAM II B	( ) 7010 Metals CAM III C	( ) MassDEP VPH (GC/MS) CAM IV C	(x) 8081 Pesticides CAM V B	( ) 7196 Hex Cr CAM VI B	( ) MassDEP APH CAM IX A
(x) 6010 Metals CAM III A	( ) 6020 Metals CAM III D	(x) MassDEP EPH CAM IV B	(x) 8151 Herbicides CAM V C	( ) Explosives CAM VIII A	( ) TO-15 VOC CAM IX B

Affirmative responses to questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	Yes (x) No ( )
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	Yes (x) No ( )
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	Yes (x) No ( )
D	Does the laboratory report comply with all the reporting requirements specified in the CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	Yes (x) No ( )
E	VPH, EPH, APH and TO-15 only: a. Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	Yes (x) No ( )
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	Yes ( ) No ( )
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	Yes (x) No ( )

Responses to Questions G, H and I below are required for '"Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocols(s)?	Yes ( ) No (x)*
	***Data User Note:** Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.*	
H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	Yes ( ) No (x)*
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	Yes ( ) No (x)*

All negative responses must be addressed in an attached laboratory narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: _____ Date: March 21, 2025

Printed Name: Laurel Stoddard Position: Laboratory Director

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11
Date Sampled: 03/05/25 12:30
Percent Solids: 75

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-01
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**1.81** (1.32)	---	6010D	---	1	CEV	03/10/25 19:13	5.04 100	DC51007
Barium	**74.3** (0.53)	---	6010D	---	1	CEV	03/10/25 19:13	5.04 100	DC51007
Cadmium	ND (0.26)	---	6010D	---	1	CEV	03/10/25 19:13	5.04 100	DC51007
Chromium	**3.40** (0.53)	---	6010D	---	1	CEV	03/10/25 19:13	5.04 100	DC51007
Lead	**126** (2.64)	---	6010D	---	1	CEV	03/10/25 19:13	5.04 100	DC51007
Mercury	**0.497** (0.063)	---	7471B	---	5	BJV	03/11/25 14:13	2.09 40	DC51008
Selenium	ND (2.64)	---	7010	---	10	CEV	03/11/25 20:05	5.04 100	DC51007
Silver	**1.76** (0.26)	---	6010D	---	1	CEV	03/10/25 19:13	5.04 100	DC51007

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11
Date Sampled: 03/05/25 12:30
Percent Solids: 75
Initial Volume: 19.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1-Biphenyl	ND (0.034)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
1,2,4-Trichlorobenzene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
1,2-Dichlorobenzene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
1,3-Dichlorobenzene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
1,4-Dichlorobenzene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
2,4,5-Trichlorophenol	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
2,4,6-Trichlorophenol	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
2,4-Dichlorophenol	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
2,4-Dimethylphenol	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
2,4-Dinitrophenol	ND (1.37)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
2,4-Dinitrotoluene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
2,6-Dinitrotoluene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
2-Chloronaphthalene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
2-Chlorophenol	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
2-Methylnaphthalene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
2-Methylphenol	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
2-Nitrophenol	ND (0.685)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
3,3´-Dichlorobenzidine	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
3+4-Methylphenol	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
4-Bromophenyl-phenylether	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
4-Chloroaniline	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
4-Nitrophenol	ND (1.37)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Acenaphthene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Acenaphthylene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Acetophenone	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Aniline	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Anthracene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11
Date Sampled: 03/05/25 12:30
Percent Solids: 75
Initial Volume: 19.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Azobenzene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Benzo(a)anthracene	**0.465** (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Benzo(a)pyrene	**0.481** (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Benzo(b)fluoranthene	**0.506** (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Benzo(g,h,i)perylene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Benzo(k)fluoranthene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
bis(2-Chloroethoxy)methane	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
bis(2-Chloroethyl)ether	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
bis(2-chloroisopropyl)Ether	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
bis(2-Ethylhexyl)phthalate	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Butylbenzylphthalate	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Chrysene	**0.537** (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Dibenzo(a,h)Anthracene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Dibenzofuran	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Diethylphthalate	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Dimethylphthalate	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Di-n-butylphthalate	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Di-n-octylphthalate	ND (0.685)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Fluoranthene	**0.984** (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Fluorene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Hexachlorobenzene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Hexachlorobutadiene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Hexachloroethane	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Indeno(1,2,3-cd)Pyrene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Isophorone	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Naphthalene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Nitrobenzene	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11
Date Sampled: 03/05/25 12:30
Percent Solids: 75
Initial Volume: 19.4g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: TJ
Prepared: 3/7/25 20:35

Semi-Volatile Organic Compounds

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
N-Nitrosodimethylamine	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Pentachlorophenol	ND (1.37)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Phenanthrene	**0.383** (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Phenol	ND (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743
Pyrene	**0.824** (0.343)	---	8270E	---	1	TJ	03/11/25 1:29	D5C0182	DC50743

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	*88 %*		*30-130*
Surrogate: 2,4,6-Tribromophenol	*88 %*		*30-130*
Surrogate: 2-Chlorophenol-d4	*81 %*		*30-130*
Surrogate: 2-Fluorobiphenyl	*82 %*		*30-130*
Surrogate: 2-Fluorophenol	*78 %*		*30-130*
Surrogate: Nitrobenzene-d5	*76 %*		*30-130*
Surrogate: Phenol-d6	*81 %*		*30-130*
Surrogate: p-Terphenyl-d14	*90 %*		*30-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11
Date Sampled: 03/05/25 12:30
Percent Solids: 75
Initial Volume: 25.3g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-01
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 3/12/25 15:52

MADEP-EPH Extractable Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
C9-C18 Aliphatics1	ND (13.1)	---	MADEP-EPH	---	1	JDN	03/13/25 16:00	D5C0216	DC51203
C19-C36 Aliphatics1	ND (13.1)	---	MADEP-EPH	---	1	JDN	03/13/25 16:00	D5C0216	DC51203
C11-C22 Unadjusted Aromatics1	ND (13.1)	---	EPH8270	---	1	DMC	03/13/25 17:57	D5C0258	DC51203
C11-C22 Aromatics1,2	ND (13.3)	---	EPH8270	---		TJ	03/14/25 19:11	---	[CALC]
2-Methylnaphthalene	ND (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Acenaphthene	ND (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Naphthalene	**0.012** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Phenanthrene	**0.303** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Acenaphthylene	**0.019** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Anthracene	**0.055** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Benzo(a)anthracene	**0.297** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Benzo(a)pyrene	**0.266** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Benzo(b)fluoranthene	**0.220** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Benzo(g,h,i)perylene	**0.159** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Benzo(k)fluoranthene	**0.225** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Chrysene	**0.294** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Dibenzo(a,h)Anthracene	**0.077** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Fluoranthene	**0.620** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Fluorene	**0.015** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Indeno(1,2,3-cd)Pyrene	**0.141** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203
Pyrene	**0.544** (0.011)	---	EPH8270SIM	---	1	TJ	03/14/25 19:11	D5C0300	DC51203

	%Recovery	Qualifier	Limits
Surrogate: 1-Chlorooctadecane	*64 %*		*40-140*
Surrogate: 2-Bromonaphthalene	*101 %*		*40-140*
Surrogate: 2-Fluorobiphenyl	*95 %*		*40-140*
Surrogate: O-Terphenyl	*70 %*		*40-140*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11
Date Sampled: 03/05/25 12:30
Percent Solids: 75
Initial Volume: 20.2g
Final Volume: 5ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/10/25 10:18

8081B Organochlorine Pesticides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
4,4´-DDD [2C]	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
4,4´-DDE [2C]	**0.0063** (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
4,4´-DDT [2C]	**0.0037** (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
Aldrin	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
alpha-BHC	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
alpha-Chlordane	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
beta-BHC	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
Chlordane (Total)	ND (0.0263)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
delta-BHC	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
Dieldrin	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
Endosulfan I	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
Endosulfan II	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
Endosulfan Sulfate	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
Endrin	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
Endrin Ketone	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
gamma-BHC (Lindane)	ND (0.0020)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
gamma-Chlordane	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
Heptachlor	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
Heptachlor Epoxide	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
Hexachlorobenzene	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003
Methoxychlor	ND (0.0033)	---	8081B	---	1	03/11/25 22:16	D5C0200	DC51003

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*70 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*75 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*62 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*59 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11
Date Sampled: 03/05/25 12:30
Percent Solids: 75
Initial Volume: 10g
Final Volume: 4ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 3/11/25 18:00

8151A Chlorinated Herbicides

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
2,4,5-T	ND (0.013)	---	8151A	---	1	03/14/25 2:55	D5C0281	DC51147
2,4,5-TP (Silvex)	ND (0.013)	---	8151A	---	1	03/14/25 2:55	D5C0281	DC51147
2,4-D	ND (0.062)	---	8151A	---	1	03/14/25 2:55	D5C0281	DC51147
2,4-DB	ND (0.063)	---	8151A	---	1	03/14/25 2:55	D5C0281	DC51147
Dalapon	ND (0.060)	---	8151A	---	1	03/14/25 2:55	D5C0281	DC51147
Dicamba	ND (0.012)	---	8151A	---	1	03/14/25 2:55	D5C0281	DC51147
Dichlorprop	ND (0.062)	---	8151A	---	1	03/14/25 2:55	D5C0281	DC51147
MCPA	ND (3.09)	---	8151A	---	1	03/14/25 2:55	D5C0281	DC51147
MCPP	ND (3.12)	---	8151A	---	1	03/14/25 2:55	D5C0281	DC51147

	%Recovery	Qualifier	Limits
Surrogate: DCAA	*83 %*		*30-150*
Surrogate: DCAA [2C]	*77 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11
Date Sampled: 03/05/25 12:30
Percent Solids: 75
Initial Volume: 19.7g
Final Volume: 1ml
Extraction Method: 3546

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JDN
Prepared: 3/7/25 22:15

8100M Total Petroleum Hydrocarbons

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
Total Petroleum Hydrocarbons (C9-C36)	**33.9** (13.5)	---	8100M	---	1	03/10/25 22:38	---	DC50744

	%Recovery	Qualifier	Limits
Surrogate: O-Terphenyl	*77 %*		*40-140*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11
Date Sampled: 03/05/25 12:30
Percent Solids: 75

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-01
Sample Matrix: Sediment

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Conductivity	**WL 63** (5)	---	9050A	---	1	JLK	03/07/25 21:26	umhos/cm	DC50736
Corrosivity (pH)	**5.94** (N/A)	---	9045	---	1	CCP	03/07/25 20:17	S.U.	DC50725
Corrosivity (pH) Sample Temp	**19.5**	---	2550B	---	1	CCP	03/07/25 20:17	°C	DC50725
Flashpoint	**> 200** (N/A)	---	1010A	---	1	CCP	03/10/25 15:30	°F	DC51036
Percent Moisture	**25** (1)	---	2540G	---	1	EAG	03/11/25 14:00	%	DC51111
Reactive Cyanide	ND (2.0)	---	7.3.3.2	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Reactive Sulfide	ND (2.0)	---	7.3.4.1	---	1	EAM	03/10/25 16:29	mg/kg	DC51035
Total Organic Carbon (Average)	**24600** (500)	---	LK	---	1	CCP	03/20/25 16:45	mg/kg	[CALC]

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11
Date Sampled: 03/05/25 12:30

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-01
Sample Matrix: Sediment

Subcontracted Analysis

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Units	Batch
Grain Size	**See Attached** (N/A)	---		---				%	
Water Content	**See Attached** (N/A)	---		---				%	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11
Date Sampled: 03/05/25 12:30
Percent Solids: 75
Initial Volume: 29.7g
Final Volume: 2ml
Extraction Method: 3540C

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: JLG
Prepared: 3/11/25 10:28

8082 Polychlorinated Biphenyls (PCB) / Congeners

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyzed	Sequence	Batch
BZ#8	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#18	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#28	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#44	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#52	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#66	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#101	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#105 [2C]	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#118	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#128	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#138	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#153 [2C]	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#170	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#180	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#187	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#195	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#206	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104
BZ#209	ND (0.00036)	---	8082A Cong	---	1	03/13/25 17:06	D5C0271	DC51104

	%Recovery	Qualifier	Limits
Surrogate: Tetrachloro-m-xylene	*74 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*69 %*		*30-150*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11B
Date Sampled: 03/05/25 12:30
Percent Solids: 81
Initial Volume: 4.8g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-02
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
1,1,1,2-Tetrachloroethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,1,1-Trichloroethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,1,2,2-Tetrachloroethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,1,2-Trichloroethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,1-Dichloroethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,1-Dichloroethene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,1-Dichloropropene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,2,3-Trichlorobenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,2,3-Trichloropropane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,2,4-Trichlorobenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,2,4-Trimethylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,2-Dibromo-3-Chloropropane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,2-Dibromoethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,2-Dichlorobenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,2-Dichloroethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,2-Dichloropropane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,3,5-Trimethylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,3-Dichlorobenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,3-Dichloropropane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,4-Dichlorobenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
1,4-Dioxane	ND (0.128)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
2,2-Dichloropropane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
2-Butanone	ND (0.0641)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
2-Chlorotoluene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
2-Hexanone	ND (0.0641)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
4-Chlorotoluene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
4-Isopropyltoluene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11B
Date Sampled: 03/05/25 12:30
Percent Solids: 81
Initial Volume: 4.8g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-02
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
4-Methyl-2-Pentanone	ND (0.0641)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Acetone	ND (0.0641)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Benzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Bromobenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Bromochloromethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Bromodichloromethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Bromoform	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Bromomethane	ND (0.0128)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Carbon Disulfide	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Carbon Tetrachloride	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Chlorobenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Chloroethane	ND (0.0128)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Chloroform	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Chloromethane	ND (0.0128)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
cis-1,2-Dichloroethene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
cis-1,3-Dichloropropene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Dibromochloromethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Dibromomethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Dichlorodifluoromethane	ND (0.0128)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Diethyl Ether	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Di-isopropyl ether	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Ethyl tertiary-butyl ether	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Ethylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Hexachlorobutadiene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Isopropylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Methyl tert-Butyl Ether	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Methylene Chloride	ND (0.0321)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11B
Date Sampled: 03/05/25 12:30
Percent Solids: 81
Initial Volume: 4.8g
Final Volume: 10ml
Extraction Method: 5035

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-02
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK
Prepared: 3/10/25 8:00

Volatile Organics Low Level

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	Sequence	Batch
Naphthalene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
n-Butylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
n-Propylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
sec-Butylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Styrene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
tert-Butylbenzene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Tertiary-amyl methyl ether	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Tetrachloroethene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Tetrahydrofuran	ND (0.0256)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Toluene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
trans-1,2-Dichloroethene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
trans-1,3-Dichloropropene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Trichloroethene	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Trichlorofluoromethane	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Vinyl Chloride	ND (0.0128)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Xylene O	ND (0.0064)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Xylene P,M	ND (0.0128)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032
Xylenes (Total)	ND (0.0128)	---	8260D Low	---	1	MEK	03/10/25 12:06	D5C0185	DC51032

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	*101 %*		*70-130*
Surrogate: 4-Bromofluorobenzene	*88 %*		*70-130*
Surrogate: Dibromofluoromethane	*97 %*		*70-130*
Surrogate: Toluene-d8	*106 %*		*70-130*

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ
Client Sample ID: 2025-SS-11 - Oven Dried
Date Sampled: 03/05/25 12:30
Percent Solids: 100

ESS Laboratory Work Order: 25C0242
ESS Laboratory Sample ID: 25C0242-03
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analyst	Analyzed	IV / FV	Batch
Arsenic	**1.61** (0.36)	---	6010D	---	1	CEV	03/12/25 14:05	5.59 100	DC51107
Cadmium	ND (0.09)	---	6010D	---	1	CEV	03/12/25 14:05	5.59 100	DC51107
Chromium	**4.36** (0.36)	---	6010D	---	1	CEV	03/12/25 14:05	5.59 100	DC51107
Copper	**8.27** (0.89)	---	6010D	---	1	CEV	03/12/25 14:05	5.59 100	DC51107
Lead	**78.4** (1.79)	---	6010D	---	1	CEV	03/12/25 14:05	5.59 100	DC51107
Mercury	**1.91** (0.476)	---	7471B	---	50	BJV	03/11/25 16:43	2.08 40	DC51121
Nickel	**2.52** (0.89)	---	6010D	---	1	CEV	03/12/25 14:05	5.59 100	DC51107
Zinc	**30.8** (0.89)	---	6010D	---	1	CEV	03/12/25 14:05	5.59 100	DC51107

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DC51007 - 3050B										
Blank										
Arsenic	ND	2.34	mg/kg wet							
Barium	ND	0.93	mg/kg wet							
Cadmium	ND	0.47	mg/kg wet							
Chromium	ND	0.93	mg/kg wet							
Lead	ND	4.67	mg/kg wet							
Silver	ND	0.47	mg/kg wet							
Blank										
Selenium	ND	5.00	mg/kg wet							
LCS										
Arsenic	132	7.81	mg/kg wet	280.0		47	32-110			
Barium	333	3.12	mg/kg wet	688.0		48	33-110			
Cadmium	93.2	1.56	mg/kg wet	210.0		44	33-110			
Chromium	157	3.12	mg/kg wet	225.0		70	50-110			
Lead	166	15.6	mg/kg wet	350.0		47	31-110			
Silver	43.8	1.56	mg/kg wet	95.00		46	30-111			
LCS										
Selenium	189	78.1	mg/kg wet	320.0		59	29-110			
LCS Dup										
Arsenic	123	8.20	mg/kg wet	280.0		44	32-110	7	30	
Barium	298	3.28	mg/kg wet	688.0		43	33-110	11	30	
Cadmium	87.3	1.64	mg/kg wet	210.0		42	33-110	7	30	
Chromium	147	3.28	mg/kg wet	225.0		65	50-110	7	30	
Lead	155	16.4	mg/kg wet	350.0		44	31-110	7	30	
Silver	40.1	1.64	mg/kg wet	95.00		42	30-111	9	30	
LCS Dup										
Selenium	167	82.0	mg/kg wet	320.0		52	29-110	12	30	
Batch DC51008 - 7471B										
Blank										
Mercury	ND	0.029	mg/kg wet							
LCS										
Mercury	18.5	3.09	mg/kg wet	24.00		77	56-110			
LCS Dup										
Mercury	18.4	2.91	mg/kg wet	24.00		77	56-110	0.2	30	
Batch DC51107 - 3050B										
Blank										
Arsenic	ND	0.87	mg/kg wet							
Cadmium	ND	0.22	mg/kg wet							
Chromium	ND	0.87	mg/kg wet							
Copper	ND	2.18	mg/kg wet							
Lead	ND	4.37	mg/kg wet							
Nickel	ND	2.18	mg/kg wet							

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Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Total Metals										
Batch DC51107 - 3050B										
Zinc	ND	2.18	mg/kg wet							
LCS										
Arsenic	124	3.03	mg/kg wet	280.0		44	32-110			
Cadmium	85.2	0.76	mg/kg wet	210.0		41	33-110			
Chromium	145	3.03	mg/kg wet	225.0		64	50-110			
Copper	127	7.58	mg/kg wet	290.0		44	33-110			
Lead	153	15.2	mg/kg wet	350.0		44	31-110			
Nickel	60.4	7.58	mg/kg wet	95.00		64	48-111			
Zinc	210	7.58	mg/kg wet	500.0		42	30-110			
LCS Dup										
Arsenic	127	2.99	mg/kg wet	280.0		45	32-110	2	30	
Cadmium	90.8	0.75	mg/kg wet	210.0		43	33-110	6	30	
Chromium	152	2.99	mg/kg wet	225.0		68	50-110	5	30	
Copper	135	7.46	mg/kg wet	290.0		47	33-110	6	30	
Lead	159	14.9	mg/kg wet	350.0		45	31-110	4	30	
Nickel	63.4	7.46	mg/kg wet	95.00		67	48-111	5	30	
Zinc	221	7.46	mg/kg wet	500.0		44	30-110	5	30	
Reference										
Lead	3470	169	mg/kg wet	4490		77	81-120			R-
Batch DC51121 - 7471A										
Blank										
Mercury	ND	0.030	mg/kg wet							
LCS										
Mercury	19.5	3.09	mg/kg wet	24.00		81	56-110			
LCS Dup										
Mercury	17.8	2.83	mg/kg wet	24.00		74	56-110	9	30	
Volatile Organics Low Level										
Batch DC51032 - 5035										
Blank										
1,1,1,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,1-Trichloroethane	ND	0.0050	mg/kg wet							
1,1,2,2-Tetrachloroethane	ND	0.0050	mg/kg wet							
1,1,2-Trichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethane	ND	0.0050	mg/kg wet							
1,1-Dichloroethene	ND	0.0050	mg/kg wet							
1,1-Dichloropropene	ND	0.0050	mg/kg wet							
1,2,3-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,3-Trichloropropane	ND	0.0050	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.0050	mg/kg wet							
1,2,4-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,2-Dibromo-3-Chloropropane	ND	0.0050	mg/kg wet							
1,2-Dibromoethane	ND	0.0050	mg/kg wet							

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Client Name: Horsley & Witten
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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51032 - 5035										
1,2-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,2-Dichloroethane	ND	0.0050	mg/kg wet							
1,2-Dichloropropane	ND	0.0050	mg/kg wet							
1,3,5-Trimethylbenzene	ND	0.0050	mg/kg wet							
1,3-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,3-Dichloropropane	ND	0.0050	mg/kg wet							
1,4-Dichlorobenzene	ND	0.0050	mg/kg wet							
1,4-Dioxane	ND	0.100	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0500	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0500	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0500	mg/kg wet							
Acetone	ND	0.0500	mg/kg wet							
Benzene	ND	0.0050	mg/kg wet							
Bromobenzene	ND	0.0050	mg/kg wet							
Bromochloromethane	ND	0.0050	mg/kg wet							
Bromodichloromethane	ND	0.0050	mg/kg wet							
Bromoform	ND	0.0050	mg/kg wet							
Bromomethane	ND	0.0100	mg/kg wet							
Carbon Disulfide	ND	0.0050	mg/kg wet							
Carbon Tetrachloride	ND	0.0050	mg/kg wet							
Chlorobenzene	ND	0.0050	mg/kg wet							
Chloroethane	ND	0.0100	mg/kg wet							
Chloroform	ND	0.0050	mg/kg wet							
Chloromethane	ND	0.0100	mg/kg wet							
cis-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
cis-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Dibromochloromethane	ND	0.0050	mg/kg wet							
Dibromomethane	ND	0.0050	mg/kg wet							
Dichlorodifluoromethane	ND	0.0100	mg/kg wet							
Diethyl Ether	ND	0.0050	mg/kg wet							
Di-isopropyl ether	ND	0.0050	mg/kg wet							
Ethyl tertiary-butyl ether	ND	0.0050	mg/kg wet							
Ethylbenzene	ND	0.0050	mg/kg wet							
Hexachlorobutadiene	ND	0.0050	mg/kg wet							
Isopropylbenzene	ND	0.0050	mg/kg wet							
Methyl tert-Butyl Ether	ND	0.0050	mg/kg wet							
Methylene Chloride	ND	0.0250	mg/kg wet							
Naphthalene	ND	0.0050	mg/kg wet							
n-Butylbenzene	ND	0.0050	mg/kg wet							
n-Propylbenzene	ND	0.0050	mg/kg wet							
sec-Butylbenzene	ND	0.0050	mg/kg wet							

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Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51032 - 5035										
Styrene	ND	0.0050	mg/kg wet							
tert-Butylbenzene	ND	0.0050	mg/kg wet							
Tertiary-amyl methyl ether	ND	0.0050	mg/kg wet							
Tetrachloroethene	ND	0.0050	mg/kg wet							
Tetrahydrofuran	ND	0.0200	mg/kg wet							
Toluene	ND	0.0050	mg/kg wet							
trans-1,2-Dichloroethene	ND	0.0050	mg/kg wet							
trans-1,3-Dichloropropene	ND	0.0050	mg/kg wet							
Trichloroethene	ND	0.0050	mg/kg wet							
Trichlorofluoromethane	ND	0.0050	mg/kg wet							
Vinyl Chloride	ND	0.0100	mg/kg wet							
Xylene O	ND	0.0050	mg/kg wet							
Xylene P,M	ND	0.0100	mg/kg wet							
Surrogate: 1,2-Dichloroethane-d4	*0.0470*		mg/kg wet	*0.05000*		*94*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0492*		mg/kg wet	*0.05000*		*98*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0472*		mg/kg wet	*0.05000*		*94*	*70-130*			
Surrogate: Toluene-d8	*0.0497*		mg/kg wet	*0.05000*		*99*	*70-130*			
LCS										
1,1,1,2-Tetrachloroethane	0.0524	0.0050	mg/kg wet	0.05000		105	70-130			
1,1,1-Trichloroethane	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
1,1,2,2-Tetrachloroethane	0.0430	0.0050	mg/kg wet	0.05000		86	40-160			
1,1,2-Trichloroethane	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
1,1-Dichloroethane	0.0482	0.0050	mg/kg wet	0.05000		96	70-130			
1,1-Dichloroethene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
1,1-Dichloropropene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130			
1,2,3-Trichlorobenzene	0.0548	0.0050	mg/kg wet	0.05000		110	70-130			
1,2,3-Trichloropropane	0.0446	0.0050	mg/kg wet	0.05000		89	70-130			
1,2,4-Trichlorobenzene	0.0546	0.0050	mg/kg wet	0.05000		109	70-130			
1,2,4-Trimethylbenzene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
1,2-Dibromo-3-Chloropropane	0.0476	0.0050	mg/kg wet	0.05000		95	70-130			
1,2-Dibromoethane	0.0515	0.0050	mg/kg wet	0.05000		103	70-130			
1,2-Dichlorobenzene	0.0484	0.0050	mg/kg wet	0.05000		97	70-130			
1,2-Dichloroethane	0.0470	0.0050	mg/kg wet	0.05000		94	70-130			
1,2-Dichloropropane	0.0488	0.0050	mg/kg wet	0.05000		98	70-130			
1,3,5-Trimethylbenzene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130			
1,3-Dichlorobenzene	0.0483	0.0050	mg/kg wet	0.05000		97	70-130			
1,3-Dichloropropane	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
1,4-Dichlorobenzene	0.0480	0.0050	mg/kg wet	0.05000		96	70-130			
1,4-Dioxane	1.01	0.100	mg/kg wet	1.000		101	70-130			
2,2-Dichloropropane	0.0506	0.0050	mg/kg wet	0.05000		101	70-130			
2-Butanone	0.241	0.0500	mg/kg wet	0.2500		96	40-160			
2-Chlorotoluene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
2-Hexanone	0.221	0.0500	mg/kg wet	0.2500		88	40-160			
4-Chlorotoluene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130			
4-Isopropyltoluene	0.0463	0.0050	mg/kg wet	0.05000		93	70-130			

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Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51032 - 5035										
4-Methyl-2-Pentanone	0.210	0.0500	mg/kg wet	0.2500		84	40-160			
Acetone	0.220	0.0500	mg/kg wet	0.2500		88	40-160			
Benzene	0.0482	0.0050	mg/kg wet	0.05000		96	70-130			
Bromobenzene	0.0506	0.0050	mg/kg wet	0.05000		101	70-130			
Bromochloromethane	0.0522	0.0050	mg/kg wet	0.05000		104	70-130			
Bromodichloromethane	0.0502	0.0050	mg/kg wet	0.05000		100	70-130			
Bromoform	0.0538	0.0050	mg/kg wet	0.05000		108	40-160			
Bromomethane	0.0471	0.0100	mg/kg wet	0.05000		94	40-160			
Carbon Disulfide	0.0479	0.0050	mg/kg wet	0.05000		96	70-130			
Carbon Tetrachloride	0.0490	0.0050	mg/kg wet	0.05000		98	70-130			
Chlorobenzene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130			
Chloroethane	0.0445	0.0100	mg/kg wet	0.05000		89	40-160			
Chloroform	0.0479	0.0050	mg/kg wet	0.05000		96	70-130			
Chloromethane	0.0400	0.0100	mg/kg wet	0.05000		80	40-160			
cis-1,2-Dichloroethene	0.0499	0.0050	mg/kg wet	0.05000		100	70-130			
cis-1,3-Dichloropropene	0.0529	0.0050	mg/kg wet	0.05000		106	40-160			
Dibromochloromethane	0.0534	0.0050	mg/kg wet	0.05000		107	40-160			
Dibromomethane	0.0492	0.0050	mg/kg wet	0.05000		98	70-130			
Dichlorodifluoromethane	0.0314	0.0100	mg/kg wet	0.05000		63	40-160			
Diethyl Ether	0.0509	0.0050	mg/kg wet	0.05000		102	70-130			
Di-isopropyl ether	0.0522	0.0050	mg/kg wet	0.05000		104	70-130			
Ethyl tertiary-butyl ether	0.0546	0.0050	mg/kg wet	0.05000		109	70-130			
Ethylbenzene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130			
Hexachlorobutadiene	0.0504	0.0050	mg/kg wet	0.05000		101	40-160			
Isopropylbenzene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130			
Methyl tert-Butyl Ether	0.0531	0.0050	mg/kg wet	0.05000		106	70-130			
Methylene Chloride	0.0477	0.0250	mg/kg wet	0.05000		95	70-130			
Naphthalene	0.0566	0.0050	mg/kg wet	0.05000		113	40-160			
n-Butylbenzene	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
n-Propylbenzene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
sec-Butylbenzene	0.0448	0.0050	mg/kg wet	0.05000		90	70-130			
Styrene	0.0508	0.0050	mg/kg wet	0.05000		102	40-160			
tert-Butylbenzene	0.0482	0.0050	mg/kg wet	0.05000		96	70-130			
Tertiary-amyl methyl ether	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			
Tetrachloroethene	0.0515	0.0050	mg/kg wet	0.05000		103	70-130			
Tetrahydrofuran	0.0424	0.0200	mg/kg wet	0.05000		85	70-130			
Toluene	0.0478	0.0050	mg/kg wet	0.05000		96	70-130			
trans-1,2-Dichloroethene	0.0474	0.0050	mg/kg wet	0.05000		95	70-130			
trans-1,3-Dichloropropene	0.0523	0.0050	mg/kg wet	0.05000		105	70-130			
Trichloroethene	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
Trichlorofluoromethane	0.0395	0.0050	mg/kg wet	0.05000		79	40-160			
Vinyl Chloride	0.0282	0.0100	mg/kg wet	0.05000		56	70-130			B-
Xylene O	0.0475	0.0050	mg/kg wet	0.05000		95	70-130			
Xylene P,M	0.0958	0.0100	mg/kg wet	0.1000		96	70-130			
Surrogate: 1,2-Dichloroethane-d4	*0.0451*		mg/kg wet	*0.05000*		*90*	*70-130*			

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Client Name: Horsley & Witten
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ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51032 - 5035										
Surrogate: 4-Bromofluorobenzene	*0.0497*		mg/kg wet	*0.05000*		*99*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0486*		mg/kg wet	*0.05000*		*97*	*70-130*			
Surrogate: Toluene-d8	*0.0502*		mg/kg wet	*0.05000*		*100*	*70-130*			
LCS Dup										
1,1,1,2-Tetrachloroethane	0.0531	0.0050	mg/kg wet	0.05000		106	70-130	1	20	
1,1,1-Trichloroethane	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	2	20	
1,1,2,2-Tetrachloroethane	0.0439	0.0050	mg/kg wet	0.05000		88	40-160	2	20	
1,1,2-Trichloroethane	0.0482	0.0050	mg/kg wet	0.05000		96	70-130	2	20	
1,1-Dichloroethane	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	1	20	
1,1-Dichloroethene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	1	20	
1,1-Dichloropropene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130	0.8	20	
1,2,3-Trichlorobenzene	0.0550	0.0050	mg/kg wet	0.05000		110	70-130	0.5	20	
1,2,3-Trichloropropane	0.0456	0.0050	mg/kg wet	0.05000		91	70-130	2	20	
1,2,4-Trichlorobenzene	0.0545	0.0050	mg/kg wet	0.05000		109	70-130	0.1	20	
1,2,4-Trimethylbenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	0.6	20	
1,2-Dibromo-3-Chloropropane	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	3	20	
1,2-Dibromoethane	0.0519	0.0050	mg/kg wet	0.05000		104	70-130	0.7	20	
1,2-Dichlorobenzene	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	0.6	20	
1,2-Dichloroethane	0.0476	0.0050	mg/kg wet	0.05000		95	70-130	1	20	
1,2-Dichloropropane	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	1	20	
1,3,5-Trimethylbenzene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130	0.8	20	
1,3-Dichlorobenzene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130	0.7	20	
1,3-Dichloropropane	0.0499	0.0050	mg/kg wet	0.05000		100	70-130	2	20	
1,4-Dichlorobenzene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130	0.2	20	
1,4-Dioxane	1.14	0.100	mg/kg wet	1.000		114	70-130	12	20	
2,2-Dichloropropane	0.0514	0.0050	mg/kg wet	0.05000		103	70-130	2	20	
2-Butanone	0.246	0.0500	mg/kg wet	0.2500		98	40-160	2	20	
2-Chlorotoluene	0.0482	0.0050	mg/kg wet	0.05000		96	70-130	0.3	20	
2-Hexanone	0.227	0.0500	mg/kg wet	0.2500		91	40-160	3	20	
4-Chlorotoluene	0.0480	0.0050	mg/kg wet	0.05000		96	70-130	0.2	20	
4-Isopropyltoluene	0.0466	0.0050	mg/kg wet	0.05000		93	70-130	0.7	20	
4-Methyl-2-Pentanone	0.215	0.0500	mg/kg wet	0.2500		86	40-160	3	20	
Acetone	0.220	0.0500	mg/kg wet	0.2500		88	40-160	0.2	20	
Benzene	0.0490	0.0050	mg/kg wet	0.05000		98	70-130	2	20	
Bromobenzene	0.0509	0.0050	mg/kg wet	0.05000		102	70-130	0.7	20	
Bromochloromethane	0.0532	0.0050	mg/kg wet	0.05000		106	70-130	2	20	
Bromodichloromethane	0.0516	0.0050	mg/kg wet	0.05000		103	70-130	3	20	
Bromoform	0.0547	0.0050	mg/kg wet	0.05000		109	40-160	2	20	
Bromomethane	0.0470	0.0100	mg/kg wet	0.05000		94	40-160	0.2	20	
Carbon Disulfide	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	2	20	
Carbon Tetrachloride	0.0500	0.0050	mg/kg wet	0.05000		100	70-130	2	20	
Chlorobenzene	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	1	20	
Chloroethane	0.0450	0.0100	mg/kg wet	0.05000		90	40-160	1	20	
Chloroform	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	2	20	
Chloromethane	0.0404	0.0100	mg/kg wet	0.05000		81	40-160	0.9	20	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Volatile Organics Low Level										
Batch DC51032 - 5035										
cis-1,2-Dichloroethene	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	2	20	
cis-1,3-Dichloropropene	0.0535	0.0050	mg/kg wet	0.05000		107	40-160	1	20	
Dibromochloromethane	0.0542	0.0050	mg/kg wet	0.05000		108	40-160	1	20	
Dibromomethane	0.0503	0.0050	mg/kg wet	0.05000		101	70-130	2	20	
Dichlorodifluoromethane	0.0319	0.0100	mg/kg wet	0.05000		64	40-160	2	20	
Diethyl Ether	0.0519	0.0050	mg/kg wet	0.05000		104	70-130	2	20	
Di-isopropyl ether	0.0529	0.0050	mg/kg wet	0.05000		106	70-130	1	20	
Ethyl tertiary-butyl ether	0.0554	0.0050	mg/kg wet	0.05000		111	70-130	1	20	
Ethylbenzene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	1	20	
Hexachlorobutadiene	0.0512	0.0050	mg/kg wet	0.05000		102	40-160	1	20	
Isopropylbenzene	0.0495	0.0050	mg/kg wet	0.05000		99	70-130	0.9	20	
Methyl tert-Butyl Ether	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	2	20	
Methylene Chloride	0.0485	0.0250	mg/kg wet	0.05000		97	70-130	2	20	
Naphthalene	0.0578	0.0050	mg/kg wet	0.05000		116	40-160	2	20	
n-Butylbenzene	0.0472	0.0050	mg/kg wet	0.05000		94	70-130	0.2	20	
n-Propylbenzene	0.0478	0.0050	mg/kg wet	0.05000		96	70-130	0.5	20	
sec-Butylbenzene	0.0452	0.0050	mg/kg wet	0.05000		90	70-130	0.9	20	
Styrene	0.0514	0.0050	mg/kg wet	0.05000		103	40-160	1	20	
tert-Butylbenzene	0.0485	0.0050	mg/kg wet	0.05000		97	70-130	0.7	20	
Tertiary-amyl methyl ether	0.0560	0.0050	mg/kg wet	0.05000		112	70-130	2	20	
Tetrachloroethene	0.0511	0.0050	mg/kg wet	0.05000		102	70-130	0.8	20	
Tetrahydrofuran	0.0445	0.0200	mg/kg wet	0.05000		89	70-130	5	20	
Toluene	0.0486	0.0050	mg/kg wet	0.05000		97	70-130	2	20	
trans-1,2-Dichloroethene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130	2	20	
trans-1,3-Dichloropropene	0.0530	0.0050	mg/kg wet	0.05000		106	70-130	1	20	
Trichloroethene	0.0479	0.0050	mg/kg wet	0.05000		96	70-130	3	20	
Trichlorofluoromethane	0.0399	0.0050	mg/kg wet	0.05000		80	40-160	1	20	
Vinyl Chloride	0.0295	0.0100	mg/kg wet	0.05000		59	70-130	4	20	B-
Xylene O	0.0482	0.0050	mg/kg wet	0.05000		96	70-130	1	20	
Xylene P,M	0.0967	0.0100	mg/kg wet	0.1000		97	70-130	1	20	
Surrogate: 1,2-Dichloroethane-d4	*0.0449*		mg/kg wet	*0.05000*		*90*	*70-130*			
Surrogate: 4-Bromofluorobenzene	*0.0495*		mg/kg wet	*0.05000*		*99*	*70-130*			
Surrogate: Dibromofluoromethane	*0.0482*		mg/kg wet	*0.05000*		*96*	*70-130*			
Surrogate: Toluene-d8	*0.0494*		mg/kg wet	*0.05000*		*99*	*70-130*			
Semi-Volatile Organic Compounds										
Batch DC50743 - 3546										
Blank										
1,1-Biphenyl	ND	0.025	mg/kg wet							
1,2,4-Trichlorobenzene	ND	0.250	mg/kg wet							
1,2-Dichlorobenzene	ND	0.250	mg/kg wet							
1,3-Dichlorobenzene	ND	0.250	mg/kg wet							
1,4-Dichlorobenzene	ND	0.125	mg/kg wet							
2,4,5-Trichlorophenol	ND	0.250	mg/kg wet							
2,4,6-Trichlorophenol	ND	0.125	mg/kg wet							

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DC50743 - 3546										
2,4-Dichlorophenol	ND	0.125	mg/kg wet							
2,4-Dimethylphenol	ND	0.175	mg/kg wet							
2,4-Dinitrophenol	ND	0.500	mg/kg wet							
2,4-Dinitrotoluene	ND	0.125	mg/kg wet							
2,6-Dinitrotoluene	ND	0.250	mg/kg wet							
2-Chloronaphthalene	ND	0.250	mg/kg wet							
2-Chlorophenol	ND	0.125	mg/kg wet							
2-Methylnaphthalene	ND	0.125	mg/kg wet							
2-Methylphenol	ND	0.250	mg/kg wet							
2-Nitrophenol	ND	0.500	mg/kg wet							
3,3´-Dichlorobenzidine	ND	0.250	mg/kg wet							
3+4-Methylphenol	ND	0.250	mg/kg wet							
4-Bromophenyl-phenylether	ND	0.250	mg/kg wet							
4-Chloroaniline	ND	0.250	mg/kg wet							
4-Nitrophenol	ND	1.00	mg/kg wet							
Acenaphthene	ND	0.250	mg/kg wet							
Acenaphthylene	ND	0.250	mg/kg wet							
Acetophenone	ND	0.250	mg/kg wet							
Aniline	ND	0.250	mg/kg wet							
Anthracene	ND	0.250	mg/kg wet							
Azobenzene	ND	0.250	mg/kg wet							
Benzo(a)anthracene	ND	0.250	mg/kg wet							
Benzo(a)pyrene	ND	0.250	mg/kg wet							
Benzo(b)fluoranthene	ND	0.250	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.250	mg/kg wet							
Benzo(k)fluoranthene	ND	0.250	mg/kg wet							
bis(2-Chloroethoxy)methane	ND	0.250	mg/kg wet							
bis(2-Chloroethyl)ether	ND	0.125	mg/kg wet							
bis(2-chloroisopropyl)Ether	ND	0.125	mg/kg wet							
bis(2-Ethylhexyl)phthalate	ND	0.250	mg/kg wet							
Butylbenzylphthalate	ND	0.250	mg/kg wet							
Chrysene	ND	0.250	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.125	mg/kg wet							
Dibenzofuran	ND	0.250	mg/kg wet							
Diethylphthalate	ND	0.250	mg/kg wet							
Dimethylphthalate	ND	0.250	mg/kg wet							
Di-n-butylphthalate	ND	0.250	mg/kg wet							
Di-n-octylphthalate	ND	0.500	mg/kg wet							
Fluoranthene	ND	0.250	mg/kg wet							
Fluorene	ND	0.250	mg/kg wet							
Hexachlorobenzene	ND	0.125	mg/kg wet							
Hexachlorobutadiene	ND	0.250	mg/kg wet							
Hexachloroethane	ND	0.125	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.250	mg/kg wet							
Isophorone	ND	0.250	mg/kg wet							

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DC50743 - 3546										
Naphthalene	ND	0.250	mg/kg wet							
Nitrobenzene	ND	0.250	mg/kg wet							
N-Nitrosodimethylamine	ND	0.250	mg/kg wet							
Pentachlorophenol	ND	0.500	mg/kg wet							
Phenanthrene	ND	0.250	mg/kg wet							
Phenol	ND	0.250	mg/kg wet							
Pyrene	ND	0.250	mg/kg wet							
Surrogate: 1,2-Dichlorobenzene-d4	*2.07*		mg/kg wet	*2.500*		*83*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.11*		mg/kg wet	*3.750*		*83*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*2.97*		mg/kg wet	*3.750*		*79*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*1.91*		mg/kg wet	*2.500*		*76*	*30-130*			
Surrogate: 2-Fluorophenol	*2.99*		mg/kg wet	*3.750*		*80*	*30-130*			
Surrogate: Nitrobenzene-d5	*1.89*		mg/kg wet	*2.500*		*76*	*30-130*			
Surrogate: Phenol-d6	*3.09*		mg/kg wet	*3.750*		*82*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.06*		mg/kg wet	*2.500*		*82*	*30-130*			
LCS										
1,1-Biphenyl	2.18	0.025	mg/kg wet	2.500		87	40-140			
1,2,4-Trichlorobenzene	2.29	0.250	mg/kg wet	2.500		92	40-140			
1,2-Dichlorobenzene	2.12	0.250	mg/kg wet	2.500		85	40-140			
1,3-Dichlorobenzene	2.13	0.250	mg/kg wet	2.500		85	40-140			
1,4-Dichlorobenzene	2.23	0.125	mg/kg wet	2.500		89	40-140			
2,4,5-Trichlorophenol	2.36	0.250	mg/kg wet	2.500		94	30-130			
2,4,6-Trichlorophenol	2.24	0.125	mg/kg wet	2.500		90	30-130			
2,4-Dichlorophenol	2.28	0.125	mg/kg wet	2.500		91	30-130			
2,4-Dimethylphenol	2.14	0.175	mg/kg wet	2.500		86	30-130			
2,4-Dinitrophenol	1.88	0.500	mg/kg wet	2.500		75	15-140			
2,4-Dinitrotoluene	2.44	0.125	mg/kg wet	2.500		97	40-140			
2,6-Dinitrotoluene	2.31	0.250	mg/kg wet	2.500		92	40-140			
2-Chloronaphthalene	2.22	0.250	mg/kg wet	2.500		89	40-140			
2-Chlorophenol	2.32	0.125	mg/kg wet	2.500		93	30-130			
2-Methylnaphthalene	2.31	0.125	mg/kg wet	2.500		92	40-140			
2-Methylphenol	2.32	0.250	mg/kg wet	2.500		93	15-140			
2-Nitrophenol	2.24	0.500	mg/kg wet	2.500		90	30-130			
3,3´-Dichlorobenzidine	2.07	0.250	mg/kg wet	2.500		83	40-140			
3+4-Methylphenol	2.29	0.250	mg/kg wet	2.500		92	15-140			
4-Bromophenyl-phenylether	2.06	0.250	mg/kg wet	2.500		82	40-140			
4-Chloroaniline	1.61	0.250	mg/kg wet	2.500		64	15-140			
4-Nitrophenol	1.78	1.00	mg/kg wet	2.500		71	15-140			
Acenaphthene	2.19	0.250	mg/kg wet	2.500		88	40-140			
Acenaphthylene	2.33	0.250	mg/kg wet	2.500		93	40-140			
Acetophenone	2.15	0.250	mg/kg wet	2.500		86	40-140			
Aniline	1.45	0.250	mg/kg wet	2.500		58	40-140			
Anthracene	2.36	0.250	mg/kg wet	2.500		95	40-140			
Azobenzene	2.03	0.250	mg/kg wet	2.500		81	40-140			
Benzo(a)anthracene	2.23	0.250	mg/kg wet	2.500		89	40-140			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DC50743 - 3546										
Benzo(a)pyrene	2.46	0.250	mg/kg wet	2.500		98	40-140			
Benzo(b)fluoranthene	2.33	0.250	mg/kg wet	2.500		93	40-140			
Benzo(g,h,i)perylene	2.30	0.250	mg/kg wet	2.500		92	40-140			
Benzo(k)fluoranthene	2.41	0.250	mg/kg wet	2.500		97	40-140			
bis(2-Chloroethoxy)methane	2.15	0.250	mg/kg wet	2.500		86	40-140			
bis(2-Chloroethyl)ether	2.06	0.125	mg/kg wet	2.500		82	40-140			
bis(2-chloroisopropyl)Ether	2.19	0.125	mg/kg wet	2.500		88	40-140			
bis(2-Ethylhexyl)phthalate	2.34	0.250	mg/kg wet	2.500		94	40-140			
Butylbenzylphthalate	2.29	0.250	mg/kg wet	2.500		91	40-140			
Chrysene	2.30	0.250	mg/kg wet	2.500		92	40-140			
Dibenzo(a,h)Anthracene	2.41	0.125	mg/kg wet	2.500		96	40-140			
Dibenzofuran	2.33	0.250	mg/kg wet	2.500		93	40-140			
Diethylphthalate	2.34	0.250	mg/kg wet	2.500		94	40-140			
Dimethylphthalate	2.22	0.250	mg/kg wet	2.500		89	15-140			
Di-n-butylphthalate	2.37	0.250	mg/kg wet	2.500		95	40-140			
Di-n-octylphthalate	2.32	0.500	mg/kg wet	2.500		93	40-140			
Fluoranthene	2.54	0.250	mg/kg wet	2.500		102	40-140			
Fluorene	2.43	0.250	mg/kg wet	2.500		97	40-140			
Hexachlorobenzene	2.19	0.125	mg/kg wet	2.500		88	40-140			
Hexachlorobutadiene	2.31	0.250	mg/kg wet	2.500		92	40-140			
Hexachloroethane	2.20	0.125	mg/kg wet	2.500		88	40-140			
Indeno(1,2,3-cd)Pyrene	2.32	0.250	mg/kg wet	2.500		93	40-140			
Isophorone	2.22	0.250	mg/kg wet	2.500		89	40-140			
Naphthalene	2.17	0.250	mg/kg wet	2.500		87	40-140			
Nitrobenzene	2.06	0.250	mg/kg wet	2.500		82	40-140			
N-Nitrosodimethylamine	1.80	0.250	mg/kg wet	2.500		72	40-140			
Pentachlorophenol	1.78	0.500	mg/kg wet	2.500		71	15-140			
Phenanthrene	2.30	0.250	mg/kg wet	2.500		92	40-140			
Phenol	2.39	0.250	mg/kg wet	2.500		96	15-140			
Pyrene	2.10	0.250	mg/kg wet	2.500		84	40-140			
Surrogate: 1,2-Dichlorobenzene-d4	*2.44*		mg/kg wet	*2.500*		*98*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.49*		mg/kg wet	*3.750*		*93*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.63*		mg/kg wet	*3.750*		*97*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.26*		mg/kg wet	*2.500*		*91*	*30-130*			
Surrogate: 2-Fluorophenol	*3.65*		mg/kg wet	*3.750*		*97*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.16*		mg/kg wet	*2.500*		*86*	*30-130*			
Surrogate: Phenol-d6	*3.73*		mg/kg wet	*3.750*		*99*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.25*		mg/kg wet	*2.500*		*90*	*30-130*			
LCS Dup										
1,1-Biphenyl	2.43	0.025	mg/kg wet	2.500		97	40-140	10	30	
1,2,4-Trichlorobenzene	2.44	0.250	mg/kg wet	2.500		97	40-140	6	30	
1,2-Dichlorobenzene	2.23	0.250	mg/kg wet	2.500		89	40-140	5	30	
1,3-Dichlorobenzene	2.31	0.250	mg/kg wet	2.500		92	40-140	8	30	
1,4-Dichlorobenzene	2.29	0.125	mg/kg wet	2.500		92	40-140	3	30	
2,4,5-Trichlorophenol	2.67	0.250	mg/kg wet	2.500		107	30-130	12	30	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DC50743 - 3546										
2,4,6-Trichlorophenol	2.51	0.125	mg/kg wet	2.500		100	30-130	11	30	
2,4-Dichlorophenol	2.52	0.125	mg/kg wet	2.500		101	30-130	10	30	
2,4-Dimethylphenol	2.29	0.175	mg/kg wet	2.500		91	30-130	6	30	
2,4-Dinitrophenol	1.93	0.500	mg/kg wet	2.500		77	15-140	3	30	
2,4-Dinitrotoluene	2.65	0.125	mg/kg wet	2.500		106	40-140	9	30	
2,6-Dinitrotoluene	2.54	0.250	mg/kg wet	2.500		101	40-140	10	30	
2-Chloronaphthalene	2.43	0.250	mg/kg wet	2.500		97	40-140	9	30	
2-Chlorophenol	2.41	0.125	mg/kg wet	2.500		96	30-130	4	30	
2-Methylnaphthalene	2.43	0.125	mg/kg wet	2.500		97	40-140	5	30	
2-Methylphenol	2.40	0.250	mg/kg wet	2.500		96	15-140	3	30	
2-Nitrophenol	2.36	0.500	mg/kg wet	2.500		94	30-130	5	30	
3,3´-Dichlorobenzidine	2.18	0.250	mg/kg wet	2.500		87	40-140	5	30	
3+4-Methylphenol	2.34	0.250	mg/kg wet	2.500		94	15-140	2	30	
4-Bromophenyl-phenylether	2.18	0.250	mg/kg wet	2.500		87	40-140	6	30	
4-Chloroaniline	1.78	0.250	mg/kg wet	2.500		71	15-140	10	30	
4-Nitrophenol	1.89	1.00	mg/kg wet	2.500		76	15-140	6	30	
Acenaphthene	2.33	0.250	mg/kg wet	2.500		93	40-140	6	30	
Acenaphthylene	2.58	0.250	mg/kg wet	2.500		103	40-140	10	30	
Acetophenone	2.22	0.250	mg/kg wet	2.500		89	40-140	3	30	
Aniline	1.54	0.250	mg/kg wet	2.500		62	40-140	7	30	
Anthracene	2.51	0.250	mg/kg wet	2.500		100	40-140	6	30	
Azobenzene	2.01	0.250	mg/kg wet	2.500		80	40-140	1	30	
Benzo(a)anthracene	2.39	0.250	mg/kg wet	2.500		96	40-140	7	30	
Benzo(a)pyrene	2.61	0.250	mg/kg wet	2.500		104	40-140	6	30	
Benzo(b)fluoranthene	2.48	0.250	mg/kg wet	2.500		99	40-140	6	30	
Benzo(g,h,i)perylene	2.43	0.250	mg/kg wet	2.500		97	40-140	6	30	
Benzo(k)fluoranthene	2.58	0.250	mg/kg wet	2.500		103	40-140	7	30	
bis(2-Chloroethoxy)methane	2.23	0.250	mg/kg wet	2.500		89	40-140	4	30	
bis(2-Chloroethyl)ether	2.11	0.125	mg/kg wet	2.500		84	40-140	2	30	
bis(2-chloroisopropyl)Ether	2.29	0.125	mg/kg wet	2.500		91	40-140	4	30	
bis(2-Ethylhexyl)phthalate	2.53	0.250	mg/kg wet	2.500		101	40-140	8	30	
Butylbenzylphthalate	2.47	0.250	mg/kg wet	2.500		99	40-140	8	30	
Chrysene	2.48	0.250	mg/kg wet	2.500		99	40-140	7	30	
Dibenzo(a,h)Anthracene	2.57	0.125	mg/kg wet	2.500		103	40-140	6	30	
Dibenzofuran	2.56	0.250	mg/kg wet	2.500		103	40-140	10	30	
Diethylphthalate	2.47	0.250	mg/kg wet	2.500		99	40-140	5	30	
Dimethylphthalate	2.45	0.250	mg/kg wet	2.500		98	15-140	10	30	
Di-n-butylphthalate	2.50	0.250	mg/kg wet	2.500		100	40-140	5	30	
Di-n-octylphthalate	2.46	0.500	mg/kg wet	2.500		99	40-140	6	30	
Fluoranthene	2.68	0.250	mg/kg wet	2.500		107	40-140	6	30	
Fluorene	2.69	0.250	mg/kg wet	2.500		108	40-140	10	30	
Hexachlorobenzene	2.34	0.125	mg/kg wet	2.500		94	40-140	7	30	
Hexachlorobutadiene	2.41	0.250	mg/kg wet	2.500		96	40-140	4	30	
Hexachloroethane	2.26	0.125	mg/kg wet	2.500		91	40-140	3	30	
Indeno(1,2,3-cd)Pyrene	2.47	0.250	mg/kg wet	2.500		99	40-140	6	30	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Semi-Volatile Organic Compounds										
Batch DC50743 - 3546										
Isophorone	2.32	0.250	mg/kg wet	2.500		93	40-140	5	30	
Naphthalene	2.31	0.250	mg/kg wet	2.500		92	40-140	6	30	
Nitrobenzene	2.16	0.250	mg/kg wet	2.500		87	40-140	5	30	
N-Nitrosodimethylamine	1.73	0.250	mg/kg wet	2.500		69	40-140	4	30	
Pentachlorophenol	1.89	0.500	mg/kg wet	2.500		76	15-140	6	30	
Phenanthrene	2.42	0.250	mg/kg wet	2.500		97	40-140	5	30	
Phenol	2.45	0.250	mg/kg wet	2.500		98	15-140	3	30	
Pyrene	2.36	0.250	mg/kg wet	2.500		94	40-140	12	30	
Surrogate: 1,2-Dichlorobenzene-d4	*2.39*		mg/kg wet	*2.500*		*96*	*30-130*			
Surrogate: 2,4,6-Tribromophenol	*3.53*		mg/kg wet	*3.750*		*94*	*30-130*			
Surrogate: 2-Chlorophenol-d4	*3.67*		mg/kg wet	*3.750*		*98*	*30-130*			
Surrogate: 2-Fluorobiphenyl	*2.41*		mg/kg wet	*2.500*		*97*	*30-130*			
Surrogate: 2-Fluorophenol	*3.63*		mg/kg wet	*3.750*		*97*	*30-130*			
Surrogate: Nitrobenzene-d5	*2.16*		mg/kg wet	*2.500*		*86*	*30-130*			
Surrogate: Phenol-d6	*3.67*		mg/kg wet	*3.750*		*98*	*30-130*			
Surrogate: p-Terphenyl-d14	*2.36*		mg/kg wet	*2.500*		*94*	*30-130*			
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DC51203 - 3546										
Blank										
C19-C36 Aliphatics1	ND	10.0	mg/kg wet							
C9-C18 Aliphatics1	ND	10.0	mg/kg wet							
Surrogate: 1-Chlorooctadecane	*1.30*		mg/kg wet	*2.000*		*65*	*40-140*			
Blank										
C11-C22 Unadjusted Aromatics1	ND	10.0	mg/kg wet							
Surrogate: 2-Bromonaphthalene	*2.04*		mg/kg wet	*2.000*		*102*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.95*		mg/kg wet	*2.000*		*97*	*40-140*			
Surrogate: O-Terphenyl	*1.57*		mg/kg wet	*2.000*		*79*	*40-140*			
Blank										
2-Methylnaphthalene	ND	0.008	mg/kg wet							
Acenaphthene	ND	0.008	mg/kg wet							
Acenaphthylene	ND	0.008	mg/kg wet							
Anthracene	ND	0.008	mg/kg wet							
Benzo(a)anthracene	ND	0.008	mg/kg wet							
Benzo(a)pyrene	ND	0.008	mg/kg wet							
Benzo(b)fluoranthene	ND	0.008	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.008	mg/kg wet							
Benzo(k)fluoranthene	ND	0.008	mg/kg wet							
Chrysene	ND	0.008	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.008	mg/kg wet							
Fluoranthene	ND	0.008	mg/kg wet							
Fluorene	ND	0.008	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.008	mg/kg wet							
Naphthalene	ND	0.008	mg/kg wet							
Phenanthrene	ND	0.008	mg/kg wet							

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DC51203 - 3546										
Pyrene	ND	0.008	mg/kg wet							
LCS										
C19-C36 Aliphatics1	11.8	10.0	mg/kg wet	16.00		74	40-140			
C9-C18 Aliphatics1	7.6	10.0	mg/kg wet	12.00		64	40-140			
Surrogate: 1-Chlorooctadecane	*1.38*		mg/kg wet	*2.000*		*69*	*40-140*			
LCS										
C11-C22 Unadjusted Aromatics1	24.0	10.0	mg/kg wet	34.00		71	40-140			
Surrogate: 2-Bromonaphthalene	*1.99*		mg/kg wet	*2.000*		*100*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.94*		mg/kg wet	*2.000*		*97*	*40-140*			
Surrogate: O-Terphenyl	*1.51*		mg/kg wet	*2.000*		*76*	*40-140*			
LCS										
2-Methylnaphthalene Breakthrough	0.0		%				0-5			
Naphthalene Breakthrough	0.0		%				0-5			
LCS										
2-Methylnaphthalene	1.65	0.040	mg/kg wet	2.000		82	40-140			
Acenaphthene	1.45	0.040	mg/kg wet	2.000		72	40-140			
Acenaphthylene	1.54	0.040	mg/kg wet	2.000		77	40-140			
Anthracene	1.62	0.040	mg/kg wet	2.000		81	40-140			
Benzo(a)anthracene	1.69	0.040	mg/kg wet	2.000		84	40-140			
Benzo(a)pyrene	1.55	0.040	mg/kg wet	2.000		78	40-140			
Benzo(b)fluoranthene	1.63	0.040	mg/kg wet	2.000		82	40-140			
Benzo(g,h,i)perylene	1.41	0.040	mg/kg wet	2.000		71	40-140			
Benzo(k)fluoranthene	1.57	0.040	mg/kg wet	2.000		79	40-140			
Chrysene	1.60	0.040	mg/kg wet	2.000		80	40-140			
Dibenzo(a,h)Anthracene	1.43	0.040	mg/kg wet	2.000		72	40-140			
Fluoranthene	1.74	0.040	mg/kg wet	2.000		87	40-140			
Fluorene	1.62	0.040	mg/kg wet	2.000		81	40-140			
Indeno(1,2,3-cd)Pyrene	1.40	0.040	mg/kg wet	2.000		70	40-140			
Naphthalene	1.24	0.040	mg/kg wet	2.000		62	40-140			
Phenanthrene	1.53	0.040	mg/kg wet	2.000		76	40-140			
Pyrene	1.67	0.040	mg/kg wet	2.000		84	40-140			
LCS Dup										
C19-C36 Aliphatics1	9.2	10.0	mg/kg wet	16.00		57	40-140	25	25	
C9-C18 Aliphatics1	6.0	10.0	mg/kg wet	12.00		50	40-140	24	25	
Surrogate: 1-Chlorooctadecane	*1.07*		mg/kg wet	*2.000*		*54*	*40-140*			
LCS Dup										
C11-C22 Unadjusted Aromatics1	21.1	10.0	mg/kg wet	34.00		62	40-140	13	25	
Surrogate: 2-Bromonaphthalene	*2.00*		mg/kg wet	*2.000*		*100*	*40-140*			
Surrogate: 2-Fluorobiphenyl	*1.93*		mg/kg wet	*2.000*		*96*	*40-140*			
Surrogate: O-Terphenyl	*1.34*		mg/kg wet	*2.000*		*67*	*40-140*			
LCS Dup										
2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch DC51203 - 3546										
LCS Dup										
2-Methylnaphthalene	1.23	0.040	mg/kg wet	2.000		62	40-140	29	30	
Acenaphthene	1.19	0.040	mg/kg wet	2.000		59	40-140	20	30	
Acenaphthylene	1.23	0.040	mg/kg wet	2.000		62	40-140	22	30	
Anthracene	1.32	0.040	mg/kg wet	2.000		66	40-140	20	30	
Benzo(a)anthracene	1.36	0.040	mg/kg wet	2.000		68	40-140	21	30	
Benzo(a)pyrene	1.28	0.040	mg/kg wet	2.000		64	40-140	20	30	
Benzo(b)fluoranthene	1.34	0.040	mg/kg wet	2.000		67	40-140	19	30	
Benzo(g,h,i)perylene	1.26	0.040	mg/kg wet	2.000		63	40-140	12	30	
Benzo(k)fluoranthene	1.29	0.040	mg/kg wet	2.000		65	40-140	20	30	
Chrysene	1.31	0.040	mg/kg wet	2.000		65	40-140	20	30	
Dibenzo(a,h)Anthracene	1.29	0.040	mg/kg wet	2.000		64	40-140	11	30	
Fluoranthene	1.42	0.040	mg/kg wet	2.000		71	40-140	20	30	
Fluorene	1.32	0.040	mg/kg wet	2.000		66	40-140	21	30	
Indeno(1,2,3-cd)Pyrene	1.25	0.040	mg/kg wet	2.000		62	40-140	11	30	
Naphthalene	1.01	0.040	mg/kg wet	2.000		51	40-140	20	30	
Phenanthrene	1.25	0.040	mg/kg wet	2.000		63	40-140	20	30	
Pyrene	1.34	0.040	mg/kg wet	2.000		67	40-140	22	30	
8081B Organochlorine Pesticides										
Batch DC51003 - 3546										
Blank										
4,4´-DDD	ND	0.0025	mg/kg wet							
4,4´-DDD [2C]	ND	0.0025	mg/kg wet							
4,4´-DDE	ND	0.0025	mg/kg wet							
4,4´-DDE [2C]	ND	0.0025	mg/kg wet							
4,4´-DDT	ND	0.0025	mg/kg wet							
4,4´-DDT [2C]	ND	0.0025	mg/kg wet							
Aldrin	ND	0.0025	mg/kg wet							
Aldrin [2C]	ND	0.0025	mg/kg wet							
alpha-BHC	ND	0.0025	mg/kg wet							
alpha-BHC [2C]	ND	0.0025	mg/kg wet							
alpha-Chlordane	ND	0.0025	mg/kg wet							
alpha-Chlordane [2C]	ND	0.0025	mg/kg wet							
beta-BHC	ND	0.0025	mg/kg wet							
beta-BHC [2C]	ND	0.0025	mg/kg wet							
Chlordane (Total)	ND	0.0200	mg/kg wet							
Chlordane (Total) [2C]	ND	0.0200	mg/kg wet							
delta-BHC	ND	0.0025	mg/kg wet							
delta-BHC [2C]	ND	0.0025	mg/kg wet							
Dieldrin	ND	0.0025	mg/kg wet							
Dieldrin [2C]	ND	0.0025	mg/kg wet							
Endosulfan I	ND	0.0025	mg/kg wet							
Endosulfan I [2C]	ND	0.0025	mg/kg wet							
Endosulfan II	ND	0.0025	mg/kg wet							

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8081B Organochlorine Pesticides										
Batch DC51003 - 3546										
Endosulfan II [2C]	ND	0.0025	mg/kg wet							
Endosulfan Sulfate	ND	0.0025	mg/kg wet							
Endosulfan Sulfate [2C]	ND	0.0025	mg/kg wet							
Endrin	ND	0.0025	mg/kg wet							
Endrin [2C]	ND	0.0025	mg/kg wet							
Endrin Ketone	ND	0.0025	mg/kg wet							
Endrin Ketone [2C]	ND	0.0025	mg/kg wet							
gamma-BHC (Lindane)	ND	0.0015	mg/kg wet							
gamma-BHC (Lindane) [2C]	ND	0.0015	mg/kg wet							
gamma-Chlordane	ND	0.0025	mg/kg wet							
gamma-Chlordane [2C]	ND	0.0025	mg/kg wet							
Heptachlor	ND	0.0025	mg/kg wet							
Heptachlor [2C]	ND	0.0025	mg/kg wet							
Heptachlor Epoxide	ND	0.0025	mg/kg wet							
Heptachlor Epoxide [2C]	ND	0.0025	mg/kg wet							
Hexachlorobenzene	ND	0.0025	mg/kg wet							
Hexachlorobenzene [2C]	ND	0.0025	mg/kg wet							
Methoxychlor	ND	0.0025	mg/kg wet							
Methoxychlor [2C]	ND	0.0025	mg/kg wet							
Surrogate: Decachlorobiphenyl	*0.00921*		mg/kg wet	*0.01250*		*74*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.00967*		mg/kg wet	*0.01250*		*77*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.00780*		mg/kg wet	*0.01250*		*62*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.00846*		mg/kg wet	*0.01250*		*68*	*30-150*			
LCS										
4,4´-DDD	0.0136	0.0025	mg/kg wet	0.01250		109	40-140			
4,4´-DDD [2C]	0.0129	0.0025	mg/kg wet	0.01250		103	40-140			
4,4´-DDE	0.0116	0.0025	mg/kg wet	0.01250		93	40-140			
4,4´-DDE [2C]	0.0117	0.0025	mg/kg wet	0.01250		94	40-140			
4,4´-DDT	0.0130	0.0025	mg/kg wet	0.01250		104	40-140			
4,4´-DDT [2C]	0.0132	0.0025	mg/kg wet	0.01250		106	40-140			
Aldrin	0.0098	0.0025	mg/kg wet	0.01250		78	40-140			
Aldrin [2C]	0.0102	0.0025	mg/kg wet	0.01250		81	40-140			
alpha-BHC	0.0095	0.0025	mg/kg wet	0.01250		76	40-140			
alpha-BHC [2C]	0.0101	0.0025	mg/kg wet	0.01250		81	40-140			
alpha-Chlordane	0.0108	0.0025	mg/kg wet	0.01250		86	40-140			
alpha-Chlordane [2C]	0.0114	0.0025	mg/kg wet	0.01250		91	40-140			
beta-BHC	0.0105	0.0025	mg/kg wet	0.01250		84	40-140			
beta-BHC [2C]	0.0109	0.0025	mg/kg wet	0.01250		87	40-140			
delta-BHC	0.0103	0.0025	mg/kg wet	0.01250		82	40-140			
delta-BHC [2C]	0.0103	0.0025	mg/kg wet	0.01250		82	40-140			
Dieldrin	0.0121	0.0025	mg/kg wet	0.01250		97	40-140			
Dieldrin [2C]	0.0123	0.0025	mg/kg wet	0.01250		99	40-140			
Endosulfan I	0.0104	0.0025	mg/kg wet	0.01250		83	40-140			
Endosulfan I [2C]	0.0108	0.0025	mg/kg wet	0.01250		86	40-140			
Endosulfan II	0.0125	0.0025	mg/kg wet	0.01250		100	40-140			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8081B Organochlorine Pesticides										
Batch DC51003 - 3546										
Endosulfan II [2C]	0.0122	0.0025	mg/kg wet	0.01250		98	40-140			
Endosulfan Sulfate	0.0129	0.0025	mg/kg wet	0.01250		103	40-140			
Endosulfan Sulfate [2C]	0.0126	0.0025	mg/kg wet	0.01250		101	40-140			
Endrin	0.0121	0.0025	mg/kg wet	0.01250		97	40-140			
Endrin [2C]	0.0119	0.0025	mg/kg wet	0.01250		95	40-140			
Endrin Ketone	0.0132	0.0025	mg/kg wet	0.01250		105	40-140			
Endrin Ketone [2C]	0.0131	0.0025	mg/kg wet	0.01250		105	40-140			
gamma-BHC (Lindane)	0.0098	0.0015	mg/kg wet	0.01250		78	40-140			
gamma-BHC (Lindane) [2C]	0.0100	0.0015	mg/kg wet	0.01250		80	40-140			
gamma-Chlordane	0.0126	0.0025	mg/kg wet	0.01250		101	40-140			
gamma-Chlordane [2C]	0.0131	0.0025	mg/kg wet	0.01250		105	40-140			
Heptachlor	0.0099	0.0025	mg/kg wet	0.01250		79	40-140			
Heptachlor [2C]	0.0110	0.0025	mg/kg wet	0.01250		88	40-140			
Heptachlor Epoxide	0.0106	0.0025	mg/kg wet	0.01250		85	40-140			
Heptachlor Epoxide [2C]	0.0112	0.0025	mg/kg wet	0.01250		90	40-140			
Hexachlorobenzene	0.0079	0.0025	mg/kg wet	0.01250		63	40-140			
Hexachlorobenzene [2C]	0.0087	0.0025	mg/kg wet	0.01250		70	40-140			
Methoxychlor	0.0135	0.0025	mg/kg wet	0.01250		108	40-140			
Methoxychlor [2C]	0.0143	0.0025	mg/kg wet	0.01250		114	40-140			
Surrogate: Decachlorobiphenyl	*0.0106*		mg/kg wet	*0.01250*		*85*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0114*		mg/kg wet	*0.01250*		*92*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.00779*		mg/kg wet	*0.01250*		*62*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.00845*		mg/kg wet	*0.01250*		*68*	*30-150*			
LCS Dup										
4,4´-DDD	0.0110	0.0025	mg/kg wet	0.01250		88	40-140	21	30	
4,4´-DDD [2C]	0.0107	0.0025	mg/kg wet	0.01250		86	40-140	19	30	
4,4´-DDE	0.0097	0.0025	mg/kg wet	0.01250		78	40-140	18	30	
4,4´-DDE [2C]	0.0097	0.0025	mg/kg wet	0.01250		78	40-140	19	30	
4,4´-DDT	0.0104	0.0025	mg/kg wet	0.01250		83	40-140	22	30	
4,4´-DDT [2C]	0.0106	0.0025	mg/kg wet	0.01250		85	40-140	22	30	
Aldrin	0.0091	0.0025	mg/kg wet	0.01250		73	40-140	8	30	
Aldrin [2C]	0.0092	0.0025	mg/kg wet	0.01250		74	40-140	10	30	
alpha-BHC	0.0088	0.0025	mg/kg wet	0.01250		70	40-140	7	30	
alpha-BHC [2C]	0.0093	0.0025	mg/kg wet	0.01250		74	40-140	8	30	
alpha-Chlordane	0.0091	0.0025	mg/kg wet	0.01250		73	40-140	16	30	
alpha-Chlordane [2C]	0.0096	0.0025	mg/kg wet	0.01250		77	40-140	17	30	
beta-BHC	0.0091	0.0025	mg/kg wet	0.01250		73	40-140	14	30	
beta-BHC [2C]	0.0093	0.0025	mg/kg wet	0.01250		74	40-140	16	30	
delta-BHC	0.0083	0.0025	mg/kg wet	0.01250		66	40-140	21	30	
delta-BHC [2C]	0.0083	0.0025	mg/kg wet	0.01250		66	40-140	21	30	
Dieldrin	0.0102	0.0025	mg/kg wet	0.01250		82	40-140	17	30	
Dieldrin [2C]	0.0103	0.0025	mg/kg wet	0.01250		82	40-140	18	30	
Endosulfan I	0.0091	0.0025	mg/kg wet	0.01250		73	40-140	13	30	
Endosulfan I [2C]	0.0093	0.0025	mg/kg wet	0.01250		75	40-140	14	30	
Endosulfan II	0.0101	0.0025	mg/kg wet	0.01250		81	40-140	21	30	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8081B Organochlorine Pesticides										
Batch DC51003 - 3546										
Endosulfan II [2C]	0.0099	0.0025	mg/kg wet	0.01250		79	40-140	22	30	
Endosulfan Sulfate	0.0104	0.0025	mg/kg wet	0.01250		83	40-140	21	30	
Endosulfan Sulfate [2C]	0.0100	0.0025	mg/kg wet	0.01250		80	40-140	23	30	
Endrin	0.0103	0.0025	mg/kg wet	0.01250		82	40-140	17	30	
Endrin [2C]	0.0098	0.0025	mg/kg wet	0.01250		78	40-140	20	30	
Endrin Ketone	0.0104	0.0025	mg/kg wet	0.01250		83	40-140	23	30	
Endrin Ketone [2C]	0.0104	0.0025	mg/kg wet	0.01250		83	40-140	23	30	
gamma-BHC (Lindane)	0.0090	0.0015	mg/kg wet	0.01250		72	40-140	8	30	
gamma-BHC (Lindane) [2C]	0.0091	0.0015	mg/kg wet	0.01250		73	40-140	10	30	
gamma-Chlordane	0.0106	0.0025	mg/kg wet	0.01250		85	40-140	17	30	
gamma-Chlordane [2C]	0.0109	0.0025	mg/kg wet	0.01250		87	40-140	18	30	
Heptachlor	0.0092	0.0025	mg/kg wet	0.01250		74	40-140	7	30	
Heptachlor [2C]	0.0100	0.0025	mg/kg wet	0.01250		80	40-140	9	30	
Heptachlor Epoxide	0.0094	0.0025	mg/kg wet	0.01250		75	40-140	13	30	
Heptachlor Epoxide [2C]	0.0098	0.0025	mg/kg wet	0.01250		78	40-140	14	30	
Hexachlorobenzene	0.0075	0.0025	mg/kg wet	0.01250		60	40-140	6	30	
Hexachlorobenzene [2C]	0.0081	0.0025	mg/kg wet	0.01250		65	40-140	7	30	
Methoxychlor	0.0108	0.0025	mg/kg wet	0.01250		86	40-140	22	30	
Methoxychlor [2C]	0.0112	0.0025	mg/kg wet	0.01250		90	40-140	24	30	
Surrogate: Decachlorobiphenyl	*0.00818*		mg/kg wet	*0.01250*		*65*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.00881*		mg/kg wet	*0.01250*		*70*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.00706*		mg/kg wet	*0.01250*		*56*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.00758*		mg/kg wet	*0.01250*		*61*	*30-150*			
8151A Chlorinated Herbicides										
Batch DC51147 - 3546										
Blank										
2,4,5-T	ND	0.010	mg/kg wet							
2,4,5-T [2C]	ND	0.010	mg/kg wet							
2,4,5-TP (Silvex)	ND	0.010	mg/kg wet							
2,4,5-TP (Silvex) [2C]	ND	0.010	mg/kg wet							
2,4-D	ND	0.047	mg/kg wet							
2,4-D [2C]	ND	0.047	mg/kg wet							
2,4-DB	ND	0.048	mg/kg wet							
2,4-DB [2C]	ND	0.048	mg/kg wet							
Dalapon	ND	0.046	mg/kg wet							
Dalapon [2C]	ND	0.046	mg/kg wet							
Dicamba	ND	0.009	mg/kg wet							
Dicamba [2C]	ND	0.009	mg/kg wet							
Dichlorprop	ND	0.047	mg/kg wet							
Dichlorprop [2C]	ND	0.047	mg/kg wet							
MCPA	ND	2.32	mg/kg wet							
MCPA [2C]	ND	2.32	mg/kg wet							
MCPP	ND	2.35	mg/kg wet							
MCPP [2C]	ND	2.35	mg/kg wet							

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8151A Chlorinated Herbicides										
Batch DC51147 - 3546										
Surrogate: DCAA	*0.155*		mg/kg wet	*0.2000*		*78*	*30-150*			
Surrogate: DCAA [2C]	*0.149*		mg/kg wet	*0.2000*		*75*	*30-150*			
LCS										
2,4,5-T	0.015	0.010	mg/kg wet	0.01900		78	40-140			
2,4,5-T [2C]	0.014	0.010	mg/kg wet	0.01900		76	40-140			
2,4,5-TP (Silvex)	0.014	0.010	mg/kg wet	0.01900		76	40-140			
2,4,5-TP (Silvex) [2C]	0.015	0.010	mg/kg wet	0.01900		78	40-140			
2,4-D	0.104	0.047	mg/kg wet	0.1880		55	40-140			
2,4-D [2C]	0.130	0.047	mg/kg wet	0.1880		69	40-140			
2,4-DB	0.154	0.048	mg/kg wet	0.1900		81	40-140			
2,4-DB [2C]	0.150	0.048	mg/kg wet	0.1900		79	40-140			
Dalapon	0.321	0.046	mg/kg wet	0.4550		70	40-140			
Dalapon [2C]	0.375	0.046	mg/kg wet	0.4550		82	40-140			
Dicamba	0.013	0.009	mg/kg wet	0.01880		68	40-140			
Dicamba [2C]	0.017	0.009	mg/kg wet	0.01880		88	40-140			
Dichlorprop	0.159	0.047	mg/kg wet	0.1880		85	40-140			
Dichlorprop [2C]	0.158	0.047	mg/kg wet	0.1880		84	40-140			
MCPA	17.1	2.32	mg/kg wet	18.60		92	40-140			
MCPA [2C]	16.7	2.32	mg/kg wet	18.60		90	40-140			
MCPP	16.4	2.35	mg/kg wet	18.80		87	40-140			
MCPP [2C]	18.9	2.35	mg/kg wet	18.80		101	40-140			
Surrogate: DCAA	*0.179*		mg/kg wet	*0.2000*		*90*	*30-150*			
Surrogate: DCAA [2C]	*0.168*		mg/kg wet	*0.2000*		*84*	*30-150*			
LCS Dup										
2,4,5-T	0.015	0.010	mg/kg wet	0.01900		78	40-140	0	30	
2,4,5-T [2C]	0.015	0.010	mg/kg wet	0.01900		78	40-140	3	30	
2,4,5-TP (Silvex)	0.015	0.010	mg/kg wet	0.01900		78	40-140	3	30	
2,4,5-TP (Silvex) [2C]	0.016	0.010	mg/kg wet	0.01900		82	40-140	5	30	
2,4-D	0.105	0.047	mg/kg wet	0.1880		56	40-140	1	30	
2,4-D [2C]	0.130	0.047	mg/kg wet	0.1880		69	40-140	0.6	30	
2,4-DB	0.158	0.048	mg/kg wet	0.1900		83	40-140	2	30	
2,4-DB [2C]	0.151	0.048	mg/kg wet	0.1900		80	40-140	1	30	
Dalapon	0.314	0.046	mg/kg wet	0.4550		69	40-140	2	30	
Dalapon [2C]	0.345	0.046	mg/kg wet	0.4550		76	40-140	8	30	
Dicamba	0.014	0.009	mg/kg wet	0.01880		72	40-140	6	30	
Dicamba [2C]	0.017	0.009	mg/kg wet	0.01880		88	40-140	0	30	
Dichlorprop	0.165	0.047	mg/kg wet	0.1880		88	40-140	3	30	
Dichlorprop [2C]	0.162	0.047	mg/kg wet	0.1880		86	40-140	3	30	
MCPA	17.1	2.32	mg/kg wet	18.60		92	40-140	0.3	30	
MCPA [2C]	17.3	2.32	mg/kg wet	18.60		93	40-140	3	30	
MCPP	16.4	2.35	mg/kg wet	18.80		87	40-140	0.4	30	
MCPP [2C]	19.5	2.35	mg/kg wet	18.80		104	40-140	3	30	
Surrogate: DCAA	*0.179*		mg/kg wet	*0.2000*		*89*	*30-150*			
Surrogate: DCAA [2C]	*0.172*		mg/kg wet	*0.2000*		*86*	*30-150*			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8100M Total Petroleum Hydrocarbons										
Batch DC50744 - 3546										
Blank										
Decane (C10)	ND	0.2	mg/kg wet							
Docosane (C22)	ND	0.2	mg/kg wet							
Dodecane (C12)	ND	0.2	mg/kg wet							
Eicosane (C20)	ND	0.2	mg/kg wet							
Hexacosane (C26)	ND	0.2	mg/kg wet							
Hexadecane (C16)	ND	0.2	mg/kg wet							
Hexatriacontane (C36)	ND	0.2	mg/kg wet							
Nonadecane (C19)	ND	0.2	mg/kg wet							
Nonane (C9)	ND	0.2	mg/kg wet							
Octacosane (C28)	ND	0.2	mg/kg wet							
Octadecane (C18)	ND	0.2	mg/kg wet							
Tetracosane (C24)	ND	0.2	mg/kg wet							
Tetradecane (C14)	ND	0.2	mg/kg wet							
Total Petroleum Hydrocarbons (C9-C36)	ND	10.0	mg/kg wet							
Triacontane (C30)	ND	0.2	mg/kg wet							
Surrogate: O-Terphenyl	*3.95*		mg/kg wet	*5.000*		*79*	*40-140*			
LCS										
Decane (C10)	1.7	0.2	mg/kg wet	2.500		66	40-140			
Docosane (C22)	1.9	0.2	mg/kg wet	2.500		75	40-140			
Dodecane (C12)	1.8	0.2	mg/kg wet	2.500		72	40-140			
Eicosane (C20)	1.9	0.2	mg/kg wet	2.500		74	40-140			
Hexacosane (C26)	1.9	0.2	mg/kg wet	2.500		76	40-140			
Hexadecane (C16)	1.8	0.2	mg/kg wet	2.500		72	40-140			
Hexatriacontane (C36)	1.7	0.2	mg/kg wet	2.500		66	40-140			
Nonadecane (C19)	1.8	0.2	mg/kg wet	2.500		74	40-140			
Nonane (C9)	1.6	0.2	mg/kg wet	2.500		63	30-140			
Octacosane (C28)	1.9	0.2	mg/kg wet	2.500		76	40-140			
Octadecane (C18)	1.8	0.2	mg/kg wet	2.500		73	40-140			
Tetracosane (C24)	1.9	0.2	mg/kg wet	2.500		76	40-140			
Tetradecane (C14)	1.8	0.2	mg/kg wet	2.500		72	40-140			
Total Petroleum Hydrocarbons (C9-C36)	25.6	10.0	mg/kg wet	35.00		73	40-140			
Triacontane (C30)	1.8	0.2	mg/kg wet	2.500		74	40-140			
Surrogate: O-Terphenyl	*3.61*		mg/kg wet	*5.000*		*72*	*40-140*			
LCS Dup										
Decane (C10)	1.8	0.2	mg/kg wet	2.500		73	40-140	10	25	
Docosane (C22)	2.1	0.2	mg/kg wet	2.500		83	40-140	10	25	
Dodecane (C12)	1.9	0.2	mg/kg wet	2.500		77	40-140	8	25	
Eicosane (C20)	2.1	0.2	mg/kg wet	2.500		82	40-140	10	25	
Hexacosane (C26)	2.1	0.2	mg/kg wet	2.500		84	40-140	10	25	
Hexadecane (C16)	2.0	0.2	mg/kg wet	2.500		80	40-140	10	25	
Hexatriacontane (C36)	1.8	0.2	mg/kg wet	2.500		72	40-140	8	25	
Nonadecane (C19)	2.0	0.2	mg/kg wet	2.500		82	40-140	10	25	
Nonane (C9)	1.6	0.2	mg/kg wet	2.500		65	30-140	2	25	

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8100M Total Petroleum Hydrocarbons										
Batch DC50744 - 3546										
Octacosane (C28)	2.1	0.2	mg/kg wet	2.500		84	40-140	10	25	
Octadecane (C18)	2.0	0.2	mg/kg wet	2.500		81	40-140	10	25	
Tetracosane (C24)	2.1	0.2	mg/kg wet	2.500		83	40-140	10	25	
Tetradecane (C14)	2.0	0.2	mg/kg wet	2.500		79	40-140	9	25	
Total Petroleum Hydrocarbons (C9-C36)	27.9	10.0	mg/kg wet	35.00		80	40-140	9	25	
Triacontane (C30)	2.0	0.2	mg/kg wet	2.500		81	40-140	10	25	
Surrogate: O-Terphenyl	*4.13*		mg/kg wet	*5.000*		*83*	*40-140*			
Classical Chemistry										
Batch DC50736 - General Preparation										
Blank										
Conductivity	ND	5	umhos/cm							
LCS										
Conductivity	1410		umhos/cm	1410		100	90-110			
Batch DC51035 - General Preparation										
Blank										
Reactive Cyanide	ND	2.0	mg/kg							
Reactive Sulfide	ND	2.0	mg/kg							
LCS										
Reactive Cyanide	4.1	2.0	mg/kg	100.3		4	0.68-5.41			
Reactive Sulfide	2.2	2.0	mg/kg	10.00		22	0-44			
Batch DC51036 - General Preparation										
Reference										
Flashpoint	80		°F	81.00		99	97.9-102.1			
Batch DC51156 - General Preparation										
Blank										
Total Organic Carbon (1)	ND	500	mg/kg							
Total Organic Carbon (2)	ND	500	mg/kg							
LCS										
Total Organic Carbon (1)	9240	500	mg/kg	10010		92	80-120			
Total Organic Carbon (2)	9680	500	mg/kg	10010		97	80-120			
LCS Dup										
Total Organic Carbon (1)	9600	500	mg/kg	10010		96	80-120	4	25	
Total Organic Carbon (2)	9110	500	mg/kg	10010		91	80-120	6	25	
8082 Polychlorinated Biphenyls (PCB) / Congeners										
Batch DC51104 - 3540C										
Blank										
BZ#101	ND	0.00027	mg/kg wet							
BZ#101 [2C]	ND	0.00027	mg/kg wet							
BZ#105	ND	0.00027	mg/kg wet							
BZ#105 [2C]	ND	0.00027	mg/kg wet							
BZ#118	ND	0.00027	mg/kg wet							

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082 Polychlorinated Biphenyls (PCB) / Congeners										
Batch DC51104 - 3540C										
BZ#118 [2C]	ND	0.00027	mg/kg wet							
BZ#128	ND	0.00027	mg/kg wet							
BZ#128 [2C]	ND	0.00027	mg/kg wet							
BZ#138	ND	0.00027	mg/kg wet							
BZ#138 [2C]	ND	0.00027	mg/kg wet							
BZ#153	ND	0.00027	mg/kg wet							
BZ#153 [2C]	ND	0.00027	mg/kg wet							
BZ#170	ND	0.00027	mg/kg wet							
BZ#170 [2C]	ND	0.00027	mg/kg wet							
BZ#18	ND	0.00027	mg/kg wet							
BZ#18 [2C]	ND	0.00027	mg/kg wet							
BZ#180	ND	0.00027	mg/kg wet							
BZ#180 [2C]	ND	0.00027	mg/kg wet							
BZ#187	ND	0.00027	mg/kg wet							
BZ#187 [2C]	ND	0.00027	mg/kg wet							
BZ#195	ND	0.00027	mg/kg wet							
BZ#195 [2C]	ND	0.00027	mg/kg wet							
BZ#206	ND	0.00027	mg/kg wet							
BZ#206 [2C]	ND	0.00027	mg/kg wet							
BZ#209	ND	0.00027	mg/kg wet							
BZ#209 [2C]	ND	0.00027	mg/kg wet							
BZ#28	ND	0.00027	mg/kg wet							
BZ#28 [2C]	ND	0.00027	mg/kg wet							
BZ#44	ND	0.00027	mg/kg wet							
BZ#44 [2C]	ND	0.00027	mg/kg wet							
BZ#52	ND	0.00027	mg/kg wet							
BZ#52 [2C]	ND	0.00027	mg/kg wet							
BZ#66	ND	0.00027	mg/kg wet							
BZ#66 [2C]	ND	0.00027	mg/kg wet							
BZ#8	ND	0.00027	mg/kg wet							
BZ#8 [2C]	ND	0.00027	mg/kg wet							
Surrogate: Tetrachloro-m-xylene	*0.00259*		mg/kg wet	*0.003333*		*78*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.00245*		mg/kg wet	*0.003333*		*74*	*30-150*			
LCS										
BZ#101	0.00255	0.00027	mg/kg wet	0.003333		77	40-140			
BZ#101 [2C]	0.00246	0.00027	mg/kg wet	0.003333		74	40-140			
BZ#105	0.00269	0.00027	mg/kg wet	0.003333		81	40-140			
BZ#105 [2C]	0.00255	0.00027	mg/kg wet	0.003333		76	40-140			
BZ#118	0.00248	0.00027	mg/kg wet	0.003333		74	40-140			
BZ#118 [2C]	0.00242	0.00027	mg/kg wet	0.003333		73	40-140			
BZ#128	0.00225	0.00027	mg/kg wet	0.003333		68	40-140			
BZ#128 [2C]	0.00238	0.00027	mg/kg wet	0.003333		72	40-140			
BZ#138	0.00254	0.00027	mg/kg wet	0.003333		76	40-140			
BZ#138 [2C]	0.00250	0.00027	mg/kg wet	0.003333		75	40-140			
BZ#153	0.00246	0.00027	mg/kg wet	0.003333		74	40-140			

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CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082 Polychlorinated Biphenyls (PCB) / Congeners										
Batch DC51104 - 3540C										
BZ#153 [2C]	0.00233	0.00027	mg/kg wet	0.003333		70	40-140			
BZ#170	0.00247	0.00027	mg/kg wet	0.003333		74	40-140			
BZ#170 [2C]	0.00245	0.00027	mg/kg wet	0.003333		74	40-140			
BZ#18	0.00247	0.00027	mg/kg wet	0.003333		74	40-140			
BZ#18 [2C]	0.00227	0.00027	mg/kg wet	0.003333		68	40-140			
BZ#180	0.00258	0.00027	mg/kg wet	0.003333		77	40-140			
BZ#180 [2C]	0.00241	0.00027	mg/kg wet	0.003333		72	40-140			
BZ#187	0.00246	0.00027	mg/kg wet	0.003333		74	40-140			
BZ#187 [2C]	0.00243	0.00027	mg/kg wet	0.003333		73	40-140			
BZ#195	0.00252	0.00027	mg/kg wet	0.003333		76	40-140			
BZ#195 [2C]	0.00241	0.00027	mg/kg wet	0.003333		72	40-140			
BZ#206	0.00244	0.00027	mg/kg wet	0.003333		73	40-140			
BZ#206 [2C]	0.00241	0.00027	mg/kg wet	0.003333		72	40-140			
BZ#209	0.00242	0.00027	mg/kg wet	0.003333		73	40-140			
BZ#209 [2C]	0.00239	0.00027	mg/kg wet	0.003333		72	40-140			
BZ#28	0.00281	0.00027	mg/kg wet	0.003333		84	40-140			
BZ#28 [2C]	0.00223	0.00027	mg/kg wet	0.003333		67	40-140			
BZ#44	0.00267	0.00027	mg/kg wet	0.003333		80	40-140			
BZ#44 [2C]	0.00242	0.00027	mg/kg wet	0.003333		73	40-140			
BZ#52	0.00259	0.00027	mg/kg wet	0.003333		78	40-140			
BZ#52 [2C]	0.00229	0.00027	mg/kg wet	0.003333		69	40-140			
BZ#66	0.00258	0.00027	mg/kg wet	0.003333		78	40-140			
BZ#66 [2C]	0.00233	0.00027	mg/kg wet	0.003333		70	40-140			
BZ#8	0.00262	0.00027	mg/kg wet	0.003333		79	40-140			
BZ#8 [2C]	0.00230	0.00027	mg/kg wet	0.003333		69	40-140			
Surrogate: Tetrachloro-m-xylene	*0.00228*		mg/kg wet	*0.003333*		*68*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.00217*		mg/kg wet	*0.003333*		*65*	*30-150*			
LCS Dup										
BZ#101	0.00296	0.00027	mg/kg wet	0.003333		89	40-140	15	30	
BZ#101 [2C]	0.00283	0.00027	mg/kg wet	0.003333		85	40-140	14	30	
BZ#105	0.00303	0.00027	mg/kg wet	0.003333		91	40-140	12	30	
BZ#105 [2C]	0.00287	0.00027	mg/kg wet	0.003333		86	40-140	12	30	
BZ#118	0.00278	0.00027	mg/kg wet	0.003333		84	40-140	12	30	
BZ#118 [2C]	0.00275	0.00027	mg/kg wet	0.003333		83	40-140	13	30	
BZ#128	0.00251	0.00027	mg/kg wet	0.003333		75	40-140	11	30	
BZ#128 [2C]	0.00271	0.00027	mg/kg wet	0.003333		81	40-140	13	30	
BZ#138	0.00292	0.00027	mg/kg wet	0.003333		88	40-140	14	30	
BZ#138 [2C]	0.00287	0.00027	mg/kg wet	0.003333		86	40-140	14	30	
BZ#153	0.00284	0.00027	mg/kg wet	0.003333		85	40-140	14	30	
BZ#153 [2C]	0.00264	0.00027	mg/kg wet	0.003333		79	40-140	13	30	
BZ#170	0.00281	0.00027	mg/kg wet	0.003333		84	40-140	13	30	
BZ#170 [2C]	0.00273	0.00027	mg/kg wet	0.003333		82	40-140	10	30	
BZ#18	0.00275	0.00027	mg/kg wet	0.003333		82	40-140	10	30	
BZ#18 [2C]	0.00267	0.00027	mg/kg wet	0.003333		80	40-140	16	30	
BZ#180	0.00294	0.00027	mg/kg wet	0.003333		88	40-140	13	30	

Last Modified: 06/24/2026 at 9:48AM EDT

CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8082 Polychlorinated Biphenyls (PCB) / Congeners										
Batch DC51104 - 3540C										
BZ#180 [2C]	0.00276	0.00027	mg/kg wet	0.003333		83	40-140	14	30	
BZ#187	0.00286	0.00027	mg/kg wet	0.003333		86	40-140	15	30	
BZ#187 [2C]	0.00281	0.00027	mg/kg wet	0.003333		84	40-140	15	30	
BZ#195	0.00285	0.00027	mg/kg wet	0.003333		85	40-140	12	30	
BZ#195 [2C]	0.00272	0.00027	mg/kg wet	0.003333		82	40-140	12	30	
BZ#206	0.00276	0.00027	mg/kg wet	0.003333		83	40-140	12	30	
BZ#206 [2C]	0.00269	0.00027	mg/kg wet	0.003333		81	40-140	11	30	
BZ#209	0.00277	0.00027	mg/kg wet	0.003333		83	40-140	13	30	
BZ#209 [2C]	0.00268	0.00027	mg/kg wet	0.003333		80	40-140	12	30	
BZ#28	0.00333	0.00027	mg/kg wet	0.003333		100	40-140	17	30	
BZ#28 [2C]	0.00264	0.00027	mg/kg wet	0.003333		79	40-140	17	30	
BZ#44	0.00313	0.00027	mg/kg wet	0.003333		94	40-140	16	30	
BZ#44 [2C]	0.00279	0.00027	mg/kg wet	0.003333		84	40-140	14	30	
BZ#52	0.00282	0.00027	mg/kg wet	0.003333		85	40-140	9	30	
BZ#52 [2C]	0.00263	0.00027	mg/kg wet	0.003333		79	40-140	14	30	
BZ#66	0.00299	0.00027	mg/kg wet	0.003333		90	40-140	14	30	
BZ#66 [2C]	0.00268	0.00027	mg/kg wet	0.003333		80	40-140	14	30	
BZ#8	0.00309	0.00027	mg/kg wet	0.003333		93	40-140	16	30	
BZ#8 [2C]	0.00268	0.00027	mg/kg wet	0.003333		80	40-140	15	30	
Surrogate: Tetrachloro-m-xylene	*0.00263*		mg/kg wet	*0.003333*		*79*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.00252*		mg/kg wet	*0.003333*		*75*	*30-150*			

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ ESS Laboratory Work Order: 25C0242

Notes and Definitions

Z-08	See Attached
WL	Results obtained from a deionized water leach of the sample.
U	Analyte included in the analysis, but not detected
R-	Standard Reference Material is biased low (R-).
Q	Calibration required quadratic regression (Q).
DDT	DDT breakdown > 20%
D	Diluted.
CD-	Continuing Calibration %Diff/Drift is below control limit (CD-).
B-	Blank Spike recovery is below lower control limit (B-).
>	Greater than.
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
TNTC	Too numerous to Count
CFU	Colony Forming Units

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CERTIFICATE OF ANALYSIS

Client Name: Horsley & Witten
Client Project ID: Lily Pond - 401WQ

ESS Laboratory Work Order: 25C0242

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179
http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002
http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

Massachusetts Potable and Non Potable Water: M-RI002
http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424
http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313
http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006
http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

Pennsylvania: 68-01752
http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

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Thielsch DIVISION OF THE RISE GROUP	195 Frances Avenue Cranston RI, 02910 Phone: (401)-467-6454 Fax: (401)-467-2398 cts.thielsch.com *Let's Build a Solid Foundation*	Client Information: **ESS Laboratory** **Cranston, RI** **(401) 461-7181** Project Contact: Shawn Morrell Collected By: Client	Project Information: **Lily Pond** **Nantucket, MA** Project Number: 25C0242 Summary Page: 1 of 1 Report Date: 03.17.25

LABORATORY TESTING DATA SHEET, Report No.: 7425-C-144

Material Source	Sample ID	Depth (ft)	Laboratory No.	Identification Tests									Proctor / CBR / Permeability Tests								Laboratory Log and Soil Description
				As Rcvd Moisture Content %	LL %	PL %	OD LL	Gravel %	Sand %	Fines %	Org. %	pH	g_d MAX (pcf) W_{opt} (%)	g_d MAX (pcf) W_{opt} (%) (Corr.)	Dry unit wt. (pcf)	Test Moisture Content %	Target Test Setup as % of Proctor	CBR @ 0.1"	CBR @ 0.2"	Permeability cm/sec	
				D2216	D4318			D6913			D2974	D4792	D1557								
Composite	2025-SS-11	-	25C0242-01	28.1				6.7	81.7	11.6											Dark Brown Organic poorly-graded sand with silt

Date Received: **03.11.25** Reviewed By: Date Reviewed: **03.17.25**

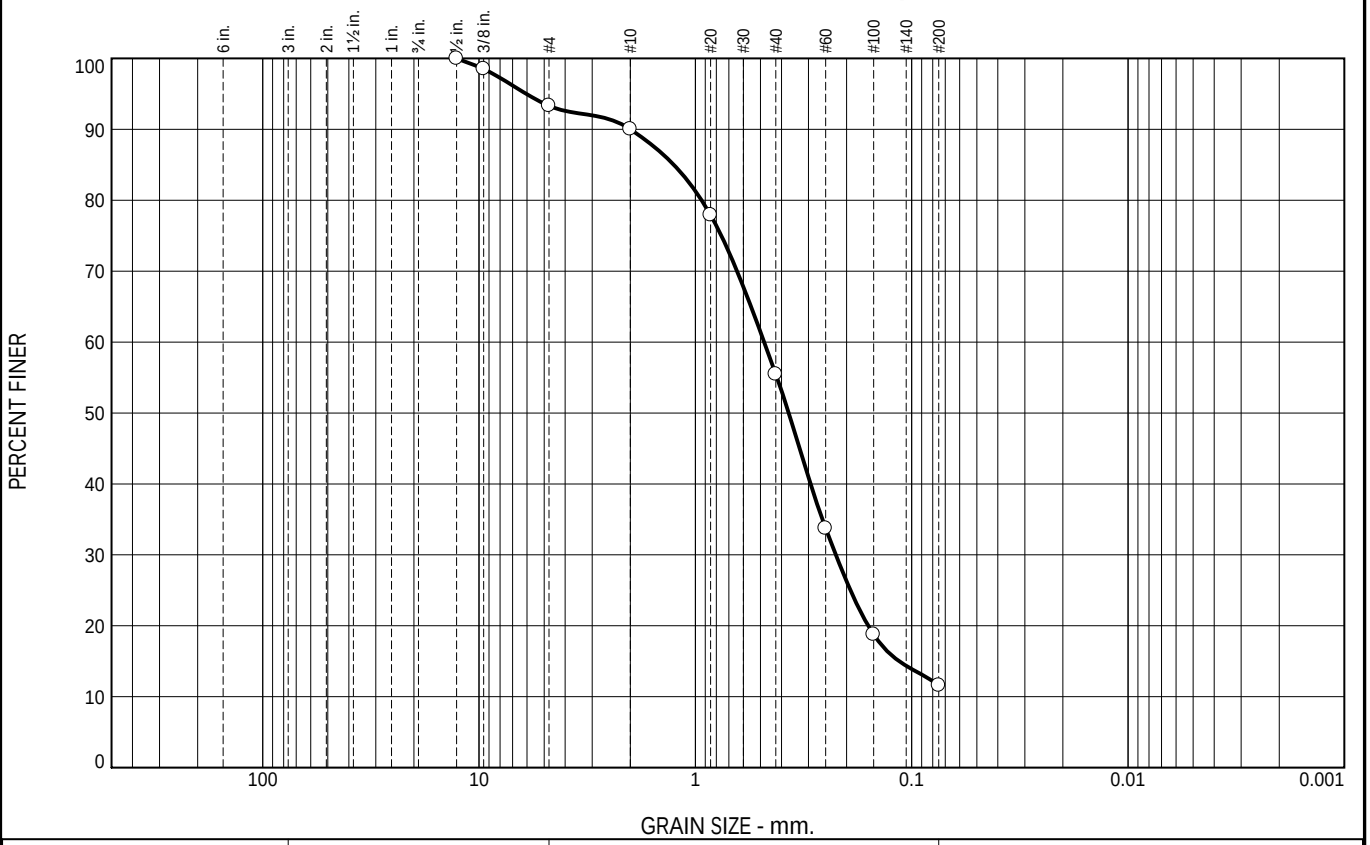
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Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	6.7	3.3	34.5	43.9	11.6	

SIEVE SIZE OR DIAMETER	PERCENT FINER	SPEC.* PERCENT	PASS? (X=NO)
1/2"	100.0		
3/8"	98.5		
#4	93.3		
#10	90.0		
#20	77.9		
#40	55.5		
#60	33.7		
#100	18.8		
#200	11.6		

* (no specification provided)

Soil Description

Dark Brown Organic poorly-graded sand with silt

Atterberg Limits

PL= NP LL= NV PI= NP

Coefficients

D_{90}= 1.9960 D_{85}= 1.2574 D_{60}= 0.4810
D_{50}= 0.3703 D_{30}= 0.2243 D_{15}= 0.1144
D_{10}= C_u= C_c=

Classification

USCS= SP-SM AASHTO= A-2-4(0)

Remarks

Sample description is for informational purposes, and is meant to indicate particle size not inclusion of mineral material.

Source of Sample: Composite
Sample Number: 25C0242-01

Date: 3/13/25

Thielsch Engineering Inc.

Cranston, RI

Client: ESS Laboratory
Project: Lily Pond
Nantucket, MA
Project No: 25C0242

Fig. 25C0242-01

Tested By: RKO/AR Checked By: Kris Roland

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Horsley Witten Group - TJM

Shipped/Delivered Via: ESS Courier

ESS Project ID: 25C0242
Date Received: 3/7/2025
Project Due Date: 3/14/2025
Days for Project: 5 Day

1. Air bill manifest present? No
   Air No.: NA
2. Were custody seals present? No
3. Is radiation count <100 CPM? Yes
4. Is a Cooler Present? Yes
   Temp: 4.4 Iced with: Ice
5. Was COC signed and dated by client? Yes
6. Does COC match bottles? Yes
7. Is COC complete and correct? Yes
8. Were samples received intact? Yes
9. **Were labs informed about short holds & rushes?** Yes / No / NA
10. Were any analyses received outside of hold time? Yes / No

11. Any Subcontracting needed? Yes / No
    ESS Sample IDs: 1
    Analysis: **Particle size**
    TAT: **5 day**
12. Were VOAs received? Yes / No
    a. Air bubbles in aqueous VOAs? Yes / No
    b. Does methanol cover soil completely? Yes / No / NA
13. Are the samples properly preserved? Yes / No
    a. If metals preserved upon receipt: Date: _____ Time: _____ By/Acid Lot#: _____
    b. If dissolved metals are requested, are they: Yes / No Field Filtered Yes / No To Be Lab Filtered
    c. Low Level VOA vials frozen: Date: ~~3/7/25~~ Time: ~~1822~~ By: [illegible] 3/7/25
       within 48 hours — client

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / No
    a. Was there a need to contact the client? Yes / No
    Who was contacted? _____ Date: _____ Time: _____ By: _____

Resolution:

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	645558	Yes	N/A	Yes	8 oz jar	NP	
1	645559	Yes	N/A	Yes	8 oz jar	NP	
1	645686	Yes	N/A	Yes	8 oz jar	NP	
1	645687	Yes	N/A	Yes	8 oz jar	NP	
2	645560	Yes	N/A	Yes	VOA Vial	DI Water	
2	645561	Yes	N/A	Yes	VOA Vial	DI Water	
2	645562	Yes	N/A	Yes	VOA Vial	MeOH	
2	645563	Yes	N/A	Yes	4 oz. Jar	NP	

2nd Review

Initials TD

Were all containers scanned into storage/lab? Yes / No
Are barcode labels on correct containers? Yes / No / NA
Are all Flashpoint stickers attached/container ID # circled? Yes / No / NA
Are all Hex Chrome stickers attached? Yes / No / NA
Are all QC stickers attached? Yes / No / NA
Are VOA stickers attached if bubbles noted? Yes / No / NA

Completed By: [signature] Date & Time: 3/7/25 1813.
Reviewed By: [signature] Date & Time: 3/7/25 1822

Last Modified: 06/24/2026 at 9:48AM EDT

ESS LABORATORY

185 Frances Avenue
Cranston, RI 02921
Phone: 401-461-7181
[redacted]
www.esslaboratory.com

CHAIN OF CUSTODY

ESS Lab # 25C0242 | Page 3 of 3

Turn Time: ☐ >5 ☐ 5 ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ Same Day

Regulatory State: MA | Criteria: GW-1 / SW-1 / 401WQC

Is this project for any of the following?:
☐ CT RCP ☒ MA MCP ☐ RGP ☐ Permit ☒ 401 WQ

ELECTRONIC DELIVERABLES (Final Reports are PDF)
☒ Limit Checker ☐ State Forms ☐ EQuIS
☒ Excel ☐ Hard Copy ☐ Enviro Data
☐ CLP-Like Package ☐ Other (Specify) →

CLIENT INFORMATION

Client: Horsley Witten Group
Address: 90 Route 6A
Sandwich
Phone: 508 833-6600
Email Distribution List:
cgrant@horsleywitten.com

PROJECT INFORMATION

Project Name: Lily Pond
Project Location: Nantucket, MA
Project Number: 20008C
Project Manager:
Bill to:
PO#:
Quote#:

Client acknowledges that sampling is compliant with all EPA / State regulatory programs

REQUESTED ANALYSES

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	VOCs	% Solids	RCRA 8	PCBs	SVOCs	TPH	EPH	Pesticides/Herb.	pH, cond.	Flashpoint	Cond. Reactivity	Grain Size	TOC	% water	Total Number of Bottles
1	3/5/25	1230	Comp	Sed	2025-SS-11			X	X	X	X	X	X	X	X	X	X	X	X	
2	3/5/25	1230	Grab	Sed	2025-SS-11B	X	X													
	1																			
					smd 3/10/25															

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer J-Jar O-Other P-Poly S-Sterile V-Vial
Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other*

Sampled by: Caroline Grant

Chain needs to be filled out neatly and completely for on time delivery.

Laboratory Use Only
Cooler Temperature (°C): 4.4 le

Comments: * Please specify "Other" preservative and containers types in this space
Grab 2l. vials frozen w/in 48 hours

All samples submitted are subject to ESS Laboratory's payment terms and conditions.

Dissolved Filtration
☐ Lab Filter

Relinquished by (Signature)	Date	Time	Received by (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)
Caroline Grant	3/7/25	1430	3/7/25 14:31		3/7/25	17:32	

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July 8, 2022

Bryan Massa
Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563

Project Location: Lily Pond Park, Nantucket, MA
Client Job Number:
Project Number: 20008A
Laboratory Work Order Number: 22F1194

Enclosed are results of analyses for samples as received by the laboratory on June 17, 2022. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Meghan E. Kelley
Project Manager

Last Modified: 06/24/2026 at 9:48AM EDT

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Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563
ATTN: Bryan Massa

REPORT DATE: 7/8/2022

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 20008A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22F1194

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Lily Pond Park, Nantucket, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
TP-1-2	22F1194-01	Soil		SM 2540G	
				SM21-23 2510B Modified	
				SW-846 1010A-B	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8082A	
				SW-846 8100 Modified	
				SW-846 8270E	
				SW-846 9014	
				SW-846 9030A	
				SW-846 9045C	
TP-3-4	22F1194-02	Soil		SM 2540G	
				SM21-23 2510B Modified	
				SW-846 1010A-B	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8082A	
				SW-846 8100 Modified	
				SW-846 8270E	
				SW-846 9014	
				SW-846 9030A	
				SW-846 9045C	
SS-1	22F1194-03	Soil		SM 2540G	
				SM21-23 2510B Modified	
				SW-846 1010A-B	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8082A	
				SW-846 8100 Modified	
				SW-846 8270E	
				SW-846 9014	
				SW-846 9030A	
				SW-846 9045C	

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Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563
ATTN: Bryan Massa

REPORT DATE: 7/8/2022

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 20008A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22F1194

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Lily Pond Park, Nantucket, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SS-2	22F1194-04	Soil		SM 2540G	
				SM21-23 2510B Modified	
				SW-846 1010A-B	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8082A	
				SW-846 8100 Modified	
				SW-846 8270E	
				SW-846 9014	
				SW-846 9030A	
				SW-846 9045C	
SS-3	22F1194-05	Soil		SM 2540G	
				SM21-23 2510B Modified	
				SW-846 1010A-B	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8082A	
				SW-846 8100 Modified	
				SW-846 8270E	
				SW-846 9014	
				SW-846 9030A	
				SW-846 9045C	
SS-4	22F1194-06	Soil		SM 2540G	
				SM21-23 2510B Modified	
				SW-846 1010A-B	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8082A	
				SW-846 8100 Modified	
				SW-846 8270E	
				SW-846 9014	
				SW-846 9030A	
				SW-846 9045C	

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Horsley Witten Group
90 Route 6A Unit #1
Sandwich, MA 02563
ATTN: Bryan Massa

REPORT DATE: 7/8/2022

PURCHASE ORDER NUMBER:

PROJECT NUMBER: 20008A

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22F1194

The results of analyses performed on the following samples submitted to CON-TEST, a Pace Analytical Laboratory, are found in this report.

PROJECT LOCATION: Lily Pond Park, Nantucket, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SS-5	22F1194-07	Soil		SM 2540G	
				SM21-23 2510B Modified	
				SW-846 1010A-B	
				SW-846 6010D	
				SW-846 7471B	
				SW-846 8082A	
				SW-846 8100 Modified	
				SW-846 8270E	
				SW-846 9014	
				SW-846 9030A	
				SW-846 9045C	
TP-1 (2-3)	22F1194-08	Soil		SM 2540G	
				SW-846 8260D	
TP-4 (1-2)	22F1194-09	Soil		SM 2540G	
				SW-846 8260D	
SW-1	22F1194-10	Water		MADEP EPH rev 2.1	
				MADEP-VPH-Feb 2018 Rev 2.1	
				SW-846 8270E	
SS-1 (4-5)	22F1194-11	Soil		SM 2540G	
				SW-846 8260D	
SS-2 (1.5-2.5)	22F1194-12	Soil		SM 2540G	
				SW-846 8260D	
SS-3 (2.5-3.5)	22F1194-13	Soil		SM 2540G	
				SW-846 8260D	
SS-4 (2-3)	22F1194-14	Soil		SM 2540G	
				SW-846 8260D	
SS-5 (3-4)	22F1194-15	Soil		SM 2540G	
				SW-846 8260D	

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CASE NARRATIVE SUMMARY

All reported results are within defined laboratory quality control objectives unless listed below or otherwise qualified in this report.

For method 8270E, only a select list of PAHs was analyzed and reported in order to achieve lower detection limits than possible with EPH analysis.

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Qualifications:

RL-08

Elevated reporting limit due to sample matrix interference. MA CAM reporting limit not met.

Analyte & Samples(s) Qualified:

22F1194-10[SW-1]

SM 2540G

Qualifications:

H-06

Sample was extracted past the recommended holding time.

Analyte & Samples(s) Qualified:

% Solids
22F1194-01[TP-1-2], 22F1194-02[TP-3-4], 22F1194-03[SS-1], 22F1194-04[SS-2], 22F1194-05[SS-3], 22F1194-06[SS-4], 22F1194-07[SS-5], 22F1194-08[TP-1 (2-3)], 22F1194-09[TP-4 (1-2)], 22F1194-11[SS-1 (4-5)], 22F1194-12[SS-2 (1.5-2.5)], 22F1194-13[SS-3 (2.5-3.5)], 22F1194-14[SS-4 (2-3)], 22F1194-15[SS-5 (3-4)]

SW-846 6010D

Qualifications:

M-10

The reporting limit verification for the AIHA lead program is outside of control limits for this element. Any reported result at or near the detection limit may be biased on the high side.

Analyte & Samples(s) Qualified:

22F1194-03[SS-1], 22F1194-04[SS-2], 22F1194-05[SS-3], 22F1194-06[SS-4], 22F1194-07[SS-5], B311368-SRM1

MS-11

Matrix spike recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.

Analyte & Samples(s) Qualified:

22F1194-03[SS-1], B311368-MS1

MS-19

Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.

Analyte & Samples(s) Qualified:

B311368-MS1

Lead
22F1194-03[SS-1]

SW-846 7471B

Qualifications:

R-02

Duplicate RPD is outside of control limits. Outlier can be attributed to sample non-homogeneity encountered during sample prep.

Analyte & Samples(s) Qualified:

Mercury
B311780-DUP1

SW-846 8082A

Qualifications:

O-32

A dilution was performed as part of the standard analytical procedure.

Analyte & Samples(s) Qualified:

22F1194-01[TP-1-2], 22F1194-02[TP-3-4], 22F1194-03[SS-1], 22F1194-04[SS-2], 22F1194-05[SS-3], 22F1194-06[SS-4], 22F1194-07[SS-5]

SW-846 8260D

Qualifications:

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V-16

Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.

Analyte & Samples(s) Qualified:

1,4-Dioxane
S072975-CCV1

Tetrahydrofuran
S072975-CCV1

V-35

Initial calibration verification (ICV) did not meet method specifications and was biased on the high side for this compound. Reported result is estimated.

Analyte & Samples(s) Qualified:

Acetone
B311146-BS1, B311146-BSD1, S072975-CCV1

SW-846 8270E

Qualifications:

V-04

Initial calibration did not meet method specifications. Compound was calibrated using a response factor where %RSD is outside of method specified criteria. Reported result is estimated.

Analyte & Samples(s) Qualified:

2,4-Dinitrophenol
22F1194-01[TP-1-2], 22F1194-03[SS-1], S073250-CCV1

V-05

Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

Analyte & Samples(s) Qualified:

2,4-Dinitrophenol
22F1194-04[SS-2], 22F1194-05[SS-3], 22F1194-06[SS-4], 22F1194-07RE1[SS-5], B311736-BLK1, B311736-BS1, B311736-BSD1, S073232-CCV1, S073306-CCV1

Aniline
B311335-BLK1, B311335-BS1, B311335-BSD1, S073144-CCV1

Bis(2-chloroethyl)ether
B311335-BLK1, B311335-BS1, B311335-BSD1, S073144-CCV1

Bis(2-chloroisopropyl)ether
B311335-BLK1, B311335-BS1, B311335-BSD1, S073144-CCV1

Pentachlorophenol
B311335-BLK1, B311335-BS1, B311335-BSD1, S073144-CCV1

Pyridine
B311335-BLK1, B311335-BS1, B311335-BSD1, S073144-CCV1

V-06

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.

Analyte & Samples(s) Qualified:

2,4-Dinitrophenol
S073250-CCV1

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:

2,4-Dinitrophenol
22F1194-01[TP-1-2], 22F1194-03[SS-1]

V-34

Initial calibration verification (ICV) did not meet method specifications and was biased on the low side for this compound. Reported result is estimated.

Analyte & Samples(s) Qualified:

4-Chloroaniline
22F1194-01[TP-1-2], 22F1194-02[TP-3-4], 22F1194-03[SS-1], 22F1194-04[SS-2], 22F1194-05[SS-3], 22F1194-06[SS-4], 22F1194-07RE1[SS-5], B311335-BLK1, B311335-BS1, B311335-BSD1, B311736-BLK1, B311736-BS1, B311736-BSD1, S073144-CCV1, S073225-CCV1, S073232-CCV1, S073250-CCV1, S073306-CCV1

SW-846 9045C

Qualifications:

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H-03

Sample received after recommended holding time was exceeded.

Analyte & Samples(s) Qualified:

pH

22F1194-01[TP-1-2], 22F1194-02[TP-3-4], 22F1194-03[SS-1], 22F1194-04[SS-2], 22F1194-05[SS-3], 22F1194-06[SS-4], 22F1194-07[SS-5], B311153-DUP1

MADEP-VPH-Feb 2018 Rev 2.1

No significant modifications were made to the method. All VPH samples were received preserved properly at pH <2 in the proper containers as specified on the chain-of-custody form unless specified in this narrative.

Analytical column used for VPH analysis is Restek, Rtx-502.2, 105meter, 0.53mmID, 3um df. Trap used for VPH analysis is Carbopack B/CarboSieveS-III.

SW-846 8100 Modified

TPH (C9-C36) is quantitated against a calibration made with a diesel standard.

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The results of analyses reported only relate to samples submitted to Con-Test, a Pace Analytical Laboratory, for testing.
I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington
Technical Representative

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-1-2 Sampled: 6/15/2022 09:00

Sample ID: 22F1194-01

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Biphenyl	ND	0.89	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Acenaphthene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Acenaphthylene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Acetophenone	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Aniline	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Anthracene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Benzo(a)anthracene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Benzo(a)pyrene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Benzo(b)fluoranthene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Benzo(g,h,i)perylene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Benzo(k)fluoranthene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Bis(2-chloroethoxy)methane	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Bis(2-chloroethyl)ether	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Bis(2-chloroisopropyl)ether	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Bis(2-Ethylhexyl)phthalate	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
4-Bromophenylphenylether	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Butylbenzylphthalate	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
4-Chloroaniline	ND	0.87	mg/Kg dry	1	V-34	SW-846 8270E	6/22/22	6/27/22 10:37	CLA
2-Chloronaphthalene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
2-Chlorophenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Chrysene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Dibenz(a,h)anthracene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Dibenzofuran	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Di-n-butylphthalate	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
1,2-Dichlorobenzene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
1,3-Dichlorobenzene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
1,4-Dichlorobenzene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
3,3-Dichlorobenzidine	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
2,4-Dichlorophenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Diethylphthalate	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
2,4-Dimethylphenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Dimethylphthalate	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
2,4-Dinitrophenol	ND	0.87	mg/Kg dry	1	V-04, V-20	SW-846 8270E	6/22/22	6/27/22 10:37	CLA
2,4-Dinitrotoluene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
2,6-Dinitrotoluene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Di-n-octylphthalate	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
1,2-Diphenylhydrazine/Azobenzene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Fluoranthene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Fluorene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Hexachlorobenzene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Hexachlorobutadiene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Hexachloroethane	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Indeno(1,2,3-cd)pyrene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Isophorone	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-1-2 | Sampled: 6/15/2022 09:00

Sample ID: 22F1194-01

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2-Methylnaphthalene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
2-Methylphenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
3/4-Methylphenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Naphthalene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Nitrobenzene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
2-Nitrophenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
4-Nitrophenol	ND	0.87	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Pentachlorophenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Phenanthrene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Phenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Pyrene	ND	0.22	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
Pyridine	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
1,2,4-Trichlorobenzene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
2,4,5-Trichlorophenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA
2,4,6-Trichlorophenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 10:37	CLA

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	34.1	30-130		6/27/22 10:37
Phenol-d6	32.7	30-130		6/27/22 10:37
Nitrobenzene-d5	50.6	30-130		6/27/22 10:37
2-Fluorobiphenyl	39.9	30-130		6/27/22 10:37
2,4,6-Tribromophenol	31.4	30-130		6/27/22 10:37
p-Terphenyl-d14	40.3	30-130		6/27/22 10:37

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-1-2 | Sampled: 6/15/2022 09:00

Sample ID: 22F1194-01

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:28	TG
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:28	TG
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:28	TG
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:28	TG
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:28	TG
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:28	TG
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:28	TG
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:28	TG
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:28	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	106	30-150		6/27/22 13:28
Decachlorobiphenyl [2]	114	30-150		6/27/22 13:28
Tetrachloro-m-xylene [1]	96.1	30-150		6/27/22 13:28
Tetrachloro-m-xylene [2]	103	30-150		6/27/22 13:28

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-1-2 | Sampled: 6/15/2022 09:00

Sample ID: 22F1194-01

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	100	11	mg/Kg dry	1		SW-846 8100 Modified	6/22/22	6/25/22 16:47	SFM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorobiphenyl	40.9	40-140		6/25/22 16:47

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-1-2 Sampled: 6/15/2022 09:00

Sample ID: 22F1194-01

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	4.2	mg/Kg dry	1		SW-846 6010D	6/23/22	6/28/22 1:45	ATP
Barium	40	2.1	mg/Kg dry	1		SW-846 6010D	6/23/22	6/28/22 1:45	ATP
Cadmium	ND	0.42	mg/Kg dry	1		SW-846 6010D	6/23/22	6/28/22 1:45	ATP
Chromium	7.9	0.83	mg/Kg dry	1		SW-846 6010D	6/23/22	6/28/22 1:45	ATP
Lead	87	0.62	mg/Kg dry	1		SW-846 6010D	6/23/22	6/28/22 1:45	ATP
Mercury	0.045	0.033	mg/Kg dry	1		SW-846 7471B	6/28/22	6/29/22 14:01	TDK
Selenium	ND	4.2	mg/Kg dry	1		SW-846 6010D	6/23/22	6/28/22 1:45	ATP
Silver	ND	0.42	mg/Kg dry	1		SW-846 6010D	6/23/22	7/6/22 19:24	QNW

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-1-2 Sampled: 6/15/2022 09:00

Sample ID: 22F1194-01

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	75.4		% Wt	1	H-06	SM 2540G	6/21/22	6/23/22 10:03	RWS
Flashpoint	> 212 °F		°F	1		SW-846 1010A-B	6/21/22	6/21/22 21:30	CB2
pH @20°C	7.3		pH Units	1	H-03	SW-846 9045C	6/20/22	6/20/22 14:30	JEC
Reactive Cyanide	ND	4.0	mg/Kg	1		SW-846 9014	6/23/22	6/24/22 12:30	DRA
Reactive Sulfide	ND	20	mg/Kg	1		SW-846 9030A	6/23/22	6/24/22 12:10	DRA
Specific conductance	4.7	2.0	µmhos/cm	1		SM21-23 2510B Modified	6/18/22	6/18/22 12:47	DRA

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-3-4 Sampled: 6/15/2022 10:00

Sample ID: 22F1194-02

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Biphenyl	ND	1.5	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Acenaphthene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Acenaphthylene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Acetophenone	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Aniline	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Anthracene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Benzo(a)anthracene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Benzo(a)pyrene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Benzo(b)fluoranthene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Benzo(g,h,i)perylene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Benzo(k)fluoranthene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Bis(2-chloroethoxy)methane	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Bis(2-chloroethyl)ether	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Bis(2-chloroisopropyl)ether	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Bis(2-Ethylhexyl)phthalate	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
4-Bromophenylphenylether	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Butylbenzylphthalate	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
4-Chloroaniline	ND	1.5	mg/Kg dry	1	V-34	SW-846 8270E	6/22/22	6/25/22 16:36	IMR
2-Chloronaphthalene	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
2-Chlorophenol	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Chrysene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Dibenz(a,h)anthracene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Dibenzofuran	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Di-n-butylphthalate	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
1,2-Dichlorobenzene	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
1,3-Dichlorobenzene	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
1,4-Dichlorobenzene	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
3,3-Dichlorobenzidine	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
2,4-Dichlorophenol	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Diethylphthalate	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
2,4-Dimethylphenol	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Dimethylphthalate	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
2,4-Dinitrophenol	ND	1.5	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
2,4-Dinitrotoluene	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
2,6-Dinitrotoluene	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Di-n-octylphthalate	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
1,2-Diphenylhydrazine/Azobenzene	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Fluoranthene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Fluorene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Hexachlorobenzene	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Hexachlorobutadiene	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Hexachloroethane	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Indeno(1,2,3-cd)pyrene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Isophorone	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-3-4 | Sampled: 6/15/2022 10:00

Sample ID: 22F1194-02

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2-Methylnaphthalene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
2-Methylphenol	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
3/4-Methylphenol	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Naphthalene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Nitrobenzene	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
2-Nitrophenol	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
4-Nitrophenol	ND	1.5	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Pentachlorophenol	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Phenanthrene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Phenol	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Pyrene	ND	0.38	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
Pyridine	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
1,2,4-Trichlorobenzene	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
2,4,5-Trichlorophenol	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR
2,4,6-Trichlorophenol	ND	0.77	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 16:36	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	35.0	30-130		6/25/22 16:36
Phenol-d6	33.9	30-130		6/25/22 16:36
Nitrobenzene-d5	51.2	30-130		6/25/22 16:36
2-Fluorobiphenyl	38.8	30-130		6/25/22 16:36
2,4,6-Tribromophenol	31.6	30-130		6/25/22 16:36
p-Terphenyl-d14	44.1	30-130		6/25/22 16:36

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-3-4 | Sampled: 6/15/2022 10:00

Sample ID: 22F1194-02

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.18	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:46	TG
Aroclor-1221 [1]	ND	0.18	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:46	TG
Aroclor-1232 [1]	ND	0.18	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:46	TG
Aroclor-1242 [1]	ND	0.18	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:46	TG
Aroclor-1248 [1]	ND	0.18	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:46	TG
Aroclor-1254 [1]	ND	0.18	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:46	TG
Aroclor-1260 [1]	ND	0.18	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:46	TG
Aroclor-1262 [1]	ND	0.18	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:46	TG
Aroclor-1268 [1]	ND	0.18	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 13:46	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	80.8	30-150		6/27/22 13:46
Decachlorobiphenyl [2]	87.9	30-150		6/27/22 13:46
Tetrachloro-m-xylene [1]	76.9	30-150		6/27/22 13:46
Tetrachloro-m-xylene [2]	83.8	30-150		6/27/22 13:46

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-3-4 | Sampled: 6/15/2022 10:00

Sample ID: 22F1194-02

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	440	19	mg/Kg dry	1		SW-846 8100 Modified	6/22/22	6/25/22 13:35	SFM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorobiphenyl	41.2	40-140		6/25/22 13:35

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-3-4 Sampled: 6/15/2022 10:00

Sample ID: 22F1194-02

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	7.5	mg/Kg dry	1		SW-846 6010D	6/23/22	6/28/22 1:52	ATP
Barium	80	3.8	mg/Kg dry	1		SW-846 6010D	6/23/22	6/28/22 1:52	ATP
Cadmium	ND	0.75	mg/Kg dry	1		SW-846 6010D	6/23/22	6/28/22 1:52	ATP
Chromium	11	1.5	mg/Kg dry	1		SW-846 6010D	6/23/22	6/28/22 1:52	ATP
Lead	290	1.1	mg/Kg dry	1		SW-846 6010D	6/23/22	6/28/22 1:52	ATP
Mercury	0.18	0.058	mg/Kg dry	1		SW-846 7471B	6/28/22	6/29/22 14:03	TDK
Selenium	ND	7.5	mg/Kg dry	1		SW-846 6010D	6/23/22	6/28/22 1:52	ATP
Silver	ND	0.75	mg/Kg dry	1		SW-846 6010D	6/23/22	7/6/22 19:31	QNW

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-3-4 Sampled: 6/15/2022 10:00

Sample ID: 22F1194-02

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	44.1		% Wt	1	H-06	SM 2540G	6/21/22	6/23/22 10:03	RWS
Flashpoint	> 212 °F		°F	1		SW-846 1010A-B	6/21/22	6/21/22 21:30	CB2
pH @19.4°C	6.1		pH Units	1	H-03	SW-846 9045C	6/20/22	6/20/22 14:30	JEC
Reactive Cyanide	ND	3.9	mg/Kg	1		SW-846 9014	6/23/22	6/24/22 12:30	DRA
Reactive Sulfide	ND	20	mg/Kg	1		SW-846 9030A	6/23/22	6/24/22 12:10	DRA
Specific conductance	5.1	2.0	µmhos/cm	1		SM21-23 2510B Modified	6/18/22	6/18/22 12:47	DRA

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-1 Sampled: 6/15/2022 13:15

Sample ID: 22F1194-03

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Biphenyl	ND	1.6	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Acenaphthene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Acenaphthylene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Acetophenone	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Aniline	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Anthracene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Benzo(a)anthracene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Benzo(a)pyrene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Benzo(b)fluoranthene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Benzo(g,h,i)perylene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Benzo(k)fluoranthene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Bis(2-chloroethoxy)methane	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Bis(2-chloroethyl)ether	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Bis(2-chloroisopropyl)ether	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Bis(2-Ethylhexyl)phthalate	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
4-Bromophenylphenylether	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Butylbenzylphthalate	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
4-Chloroaniline	ND	1.6	mg/Kg dry	1	V-34	SW-846 8270E	6/22/22	6/27/22 11:04	CLA
2-Chloronaphthalene	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
2-Chlorophenol	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Chrysene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Dibenz(a,h)anthracene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Dibenzofuran	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Di-n-butylphthalate	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
1,2-Dichlorobenzene	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
1,3-Dichlorobenzene	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
1,4-Dichlorobenzene	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
3,3-Dichlorobenzidine	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
2,4-Dichlorophenol	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Diethylphthalate	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
2,4-Dimethylphenol	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Dimethylphthalate	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
2,4-Dinitrophenol	ND	1.6	mg/Kg dry	1	V-04, V-20	SW-846 8270E	6/22/22	6/27/22 11:04	CLA
2,4-Dinitrotoluene	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
2,6-Dinitrotoluene	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Di-n-octylphthalate	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
1,2-Diphenylhydrazine/Azobenzene	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Fluoranthene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Fluorene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Hexachlorobenzene	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Hexachlorobutadiene	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Hexachloroethane	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Indeno(1,2,3-cd)pyrene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Isophorone	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-1 | Sampled: 6/15/2022 13:15

Sample ID: 22F1194-03

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2-Methylnaphthalene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
2-Methylphenol	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
3/4-Methylphenol	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Naphthalene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Nitrobenzene	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
2-Nitrophenol	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
4-Nitrophenol	ND	1.6	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Pentachlorophenol	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Phenanthrene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Phenol	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Pyrene	ND	0.40	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
Pyridine	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
1,2,4-Trichlorobenzene	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
2,4,5-Trichlorophenol	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA
2,4,6-Trichlorophenol	ND	0.81	mg/Kg dry	1		SW-846 8270E	6/22/22	6/27/22 11:04	CLA

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	33.7	30-130		6/27/22 11:04
Phenol-d6	32.6	30-130		6/27/22 11:04
Nitrobenzene-d5	50.0	30-130		6/27/22 11:04
2-Fluorobiphenyl	40.8	30-130		6/27/22 11:04
2,4,6-Tribromophenol	32.8	30-130		6/27/22 11:04
p-Terphenyl-d14	40.6	30-130		6/27/22 11:04

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-1 | Sampled: 6/15/2022 13:15

Sample ID: 22F1194-03

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.19	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:04	TG
Aroclor-1221 [1]	ND	0.19	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:04	TG
Aroclor-1232 [1]	ND	0.19	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:04	TG
Aroclor-1242 [1]	ND	0.19	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:04	TG
Aroclor-1248 [1]	ND	0.19	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:04	TG
Aroclor-1254 [1]	ND	0.19	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:04	TG
Aroclor-1260 [1]	ND	0.19	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:04	TG
Aroclor-1262 [1]	ND	0.19	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:04	TG
Aroclor-1268 [1]	ND	0.19	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:04	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	60.6	30-150		6/27/22 14:04
Decachlorobiphenyl [2]	68.7	30-150		6/27/22 14:04
Tetrachloro-m-xylene [1]	63.0	30-150		6/27/22 14:04
Tetrachloro-m-xylene [2]	69.4	30-150		6/27/22 14:04

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-1 Sampled: 6/15/2022 13:15

Sample ID: 22F1194-03

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	320	20	mg/Kg dry	1		SW-846 8100 Modified	6/22/22	6/25/22 17:17	SFM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorobiphenyl	40.3	40-140		6/25/22 17:17

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-1 Sampled: 6/15/2022 13:15

Sample ID: 22F1194-03

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	8.5	7.7	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:25	ATP
Barium	79	3.8	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:25	ATP
Cadmium	ND	0.77	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:25	ATP
Chromium	22	1.5	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:25	ATP
Lead	220	1.2	mg/Kg dry	1	MS-19	SW-846 6010D	6/22/22	6/28/22 4:25	ATP
Mercury	0.14	0.060	mg/Kg dry	1		SW-846 7471B	6/28/22	6/29/22 14:05	TDK
Selenium	ND	7.7	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:25	ATP
Silver	ND	0.77	mg/Kg dry	1		SW-846 6010D	6/22/22	7/6/22 14:11	QNW

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-1 Sampled: 6/15/2022 13:15

Sample ID: 22F1194-03

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	42.0		% Wt	1	H-06	SM 2540G	6/21/22	6/23/22 10:03	RWS
Flashpoint	> 212 °F		°F	1		SW-846 1010A-B	6/21/22	6/21/22 21:30	CB2
pH @18.7°C	6.4		pH Units	1	H-03	SW-846 9045C	6/20/22	6/20/22 14:30	JEC
Reactive Cyanide	ND	3.9	mg/Kg	1		SW-846 9014	6/23/22	6/24/22 12:30	DRA
Reactive Sulfide	ND	20	mg/Kg	1		SW-846 9030A	6/23/22	6/24/22 12:10	DRA
Specific conductance	4.2	2.0	µmhos/cm	1		SM21-23 2510B Modified	6/18/22	6/18/22 12:47	DRA

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-2 Sampled: 6/15/2022 14:00

Sample ID: 22F1194-04

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Biphenyl	ND	0.93	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Acenaphthene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Acenaphthylene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Acetophenone	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Aniline	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Anthracene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Benzo(a)anthracene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Benzo(a)pyrene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Benzo(b)fluoranthene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Benzo(g,h,i)perylene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Benzo(k)fluoranthene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Bis(2-chloroethoxy)methane	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Bis(2-chloroethyl)ether	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Bis(2-chloroisopropyl)ether	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Bis(2-Ethylhexyl)phthalate	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
4-Bromophenylphenylether	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Butylbenzylphthalate	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
4-Chloroaniline	ND	0.91	mg/Kg dry	1	V-34	SW-846 8270E	6/22/22	6/25/22 19:52	BGL
2-Chloronaphthalene	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
2-Chlorophenol	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Chrysene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Dibenz(a,h)anthracene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Dibenzofuran	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Di-n-butylphthalate	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
1,2-Dichlorobenzene	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
1,3-Dichlorobenzene	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
1,4-Dichlorobenzene	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
3,3-Dichlorobenzidine	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
2,4-Dichlorophenol	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Diethylphthalate	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
2,4-Dimethylphenol	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Dimethylphthalate	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
2,4-Dinitrophenol	ND	0.91	mg/Kg dry	1	V-05	SW-846 8270E	6/22/22	6/25/22 19:52	BGL
2,4-Dinitrotoluene	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
2,6-Dinitrotoluene	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Di-n-octylphthalate	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
1,2-Diphenylhydrazine/Azobenzene	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Fluoranthene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Fluorene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Hexachlorobenzene	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Hexachlorobutadiene	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Hexachloroethane	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Indeno(1,2,3-cd)pyrene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Isophorone	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-2 | Sampled: 6/15/2022 14:00

Sample ID: 22F1194-04

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2-Methylnaphthalene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
2-Methylphenol	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
3/4-Methylphenol	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Naphthalene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Nitrobenzene	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
2-Nitrophenol	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
4-Nitrophenol	ND	0.91	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Pentachlorophenol	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Phenanthrene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Phenol	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Pyrene	ND	0.24	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
Pyridine	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
1,2,4-Trichlorobenzene	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
2,4,5-Trichlorophenol	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL
2,4,6-Trichlorophenol	ND	0.47	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 19:52	BGL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	37.2	30-130		6/25/22 19:52
Phenol-d6	38.2	30-130		6/25/22 19:52
Nitrobenzene-d5	50.4	30-130		6/25/22 19:52
2-Fluorobiphenyl	39.7	30-130		6/25/22 19:52
2,4,6-Tribromophenol	37.4	30-130		6/25/22 19:52
p-Terphenyl-d14	46.6	30-130		6/25/22 19:52

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-2 | Sampled: 6/15/2022 14:00

Sample ID: 22F1194-04

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:22	TG
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:22	TG
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:22	TG
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:22	TG
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:22	TG
Aroclor-1254 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:22	TG
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:22	TG
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:22	TG
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:22	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	95.5	30-150		6/27/22 14:22
Decachlorobiphenyl [2]	105	30-150		6/27/22 14:22
Tetrachloro-m-xylene [1]	89.5	30-150		6/27/22 14:22
Tetrachloro-m-xylene [2]	98.0	30-150		6/27/22 14:22

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-2 Sampled: 6/15/2022 14:00

Sample ID: 22F1194-04

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	96	12	mg/Kg dry	1		SW-846 8100 Modified	6/22/22	6/25/22 11:03	SFM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorobiphenyl	42.4	40-140		6/25/22 11:03

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-2 Sampled: 6/15/2022 14:00

Sample ID: 22F1194-04

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	6.6	4.5	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:32	ATP
Barium	75	2.2	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:32	ATP
Cadmium	ND	0.45	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:32	ATP
Chromium	14	0.89	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:32	ATP
Lead	140	0.67	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:32	ATP
Mercury	0.074	0.035	mg/Kg dry	1		SW-846 7471B	6/28/22	6/29/22 14:06	TDK
Selenium	ND	4.5	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:32	ATP
Silver	ND	0.45	mg/Kg dry	1		SW-846 6010D	6/22/22	7/6/22 14:17	QNW

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-2 Sampled: 6/15/2022 14:00

Sample ID: 22F1194-04

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	72.2		% Wt	1	H-06	SM 2540G	6/21/22	6/23/22 10:03	RWS
Flashpoint	> 212 °F		°F	1		SW-846 1010A-B	6/21/22	6/21/22 21:30	CB2
pH @19.6°C	6.3		pH Units	1	H-03	SW-846 9045C	6/20/22	6/20/22 14:30	JEC
Reactive Cyanide	ND	4.0	mg/Kg	1		SW-846 9014	6/23/22	6/24/22 12:30	DRA
Reactive Sulfide	ND	20	mg/Kg	1		SW-846 9030A	6/23/22	6/24/22 12:10	DRA
Specific conductance	2.5	2.0	µmhos/cm	1		SM21-23 2510B Modified	6/18/22	6/18/22 12:47	DRA

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-3 Sampled: 6/15/2022 15:15

Sample ID: 22F1194-05

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Biphenyl	ND	1.2	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Acenaphthene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Acenaphthylene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Acetophenone	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Aniline	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Anthracene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Benzo(a)anthracene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Benzo(a)pyrene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Benzo(b)fluoranthene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Benzo(g,h,i)perylene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Benzo(k)fluoranthene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Bis(2-chloroethoxy)methane	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Bis(2-chloroethyl)ether	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Bis(2-chloroisopropyl)ether	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Bis(2-Ethylhexyl)phthalate	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
4-Bromophenylphenylether	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Butylbenzylphthalate	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
4-Chloroaniline	ND	1.2	mg/Kg dry	1	V-34	SW-846 8270E	6/22/22	6/25/22 20:19	BGL
2-Chloronaphthalene	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
2-Chlorophenol	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Chrysene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Dibenz(a,h)anthracene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Dibenzofuran	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Di-n-butylphthalate	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
1,2-Dichlorobenzene	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
1,3-Dichlorobenzene	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
1,4-Dichlorobenzene	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
3,3-Dichlorobenzidine	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
2,4-Dichlorophenol	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Diethylphthalate	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
2,4-Dimethylphenol	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Dimethylphthalate	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
2,4-Dinitrophenol	ND	1.2	mg/Kg dry	1	V-05	SW-846 8270E	6/22/22	6/25/22 20:19	BGL
2,4-Dinitrotoluene	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
2,6-Dinitrotoluene	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Di-n-octylphthalate	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
1,2-Diphenylhydrazine/Azobenzene	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Fluoranthene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Fluorene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Hexachlorobenzene	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Hexachlorobutadiene	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Hexachloroethane	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Indeno(1,2,3-cd)pyrene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Isophorone	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-3 | Sampled: 6/15/2022 15:15

Sample ID: 22F1194-05

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2-Methylnaphthalene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
2-Methylphenol	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
3/4-Methylphenol	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Naphthalene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Nitrobenzene	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
2-Nitrophenol	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
4-Nitrophenol	ND	1.2	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Pentachlorophenol	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Phenanthrene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Phenol	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Pyrene	ND	0.30	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
Pyridine	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
1,2,4-Trichlorobenzene	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
2,4,5-Trichlorophenol	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL
2,4,6-Trichlorophenol	ND	0.60	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:19	BGL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	36.0	30-130		6/25/22 20:19
Phenol-d6	36.5	30-130		6/25/22 20:19
Nitrobenzene-d5	51.0	30-130		6/25/22 20:19
2-Fluorobiphenyl	37.3	30-130		6/25/22 20:19
2,4,6-Tribromophenol	34.2	30-130		6/25/22 20:19
p-Terphenyl-d14	43.0	30-130		6/25/22 20:19

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-3 | Sampled: 6/15/2022 15:15

Sample ID: 22F1194-05

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.14	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:40	TG
Aroclor-1221 [1]	ND	0.14	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:40	TG
Aroclor-1232 [1]	ND	0.14	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:40	TG
Aroclor-1242 [1]	ND	0.14	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:40	TG
Aroclor-1248 [1]	ND	0.14	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:40	TG
Aroclor-1254 [1]	ND	0.14	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:40	TG
Aroclor-1260 [1]	ND	0.14	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:40	TG
Aroclor-1262 [1]	ND	0.14	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:40	TG
Aroclor-1268 [1]	ND	0.14	mg/Kg dry	4		SW-846 8082A	6/22/22	6/27/22 14:40	TG

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	91.4	30-150		6/27/22 14:40
Decachlorobiphenyl [2]	105	30-150		6/27/22 14:40
Tetrachloro-m-xylene [1]	85.7	30-150		6/27/22 14:40
Tetrachloro-m-xylene [2]	95.2	30-150		6/27/22 14:40

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-3 | Sampled: 6/15/2022 15:15

Sample ID: 22F1194-05

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	370	15	mg/Kg dry	1		SW-846 8100 Modified	6/22/22	6/25/22 13:05	SFM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorobiphenyl	43.0	40-140		6/25/22 13:05

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-3 Sampled: 6/15/2022 15:15

Sample ID: 22F1194-05

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	9.9	5.7	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:39	ATP
Barium	120	2.9	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:39	ATP
Cadmium	ND	0.57	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:39	ATP
Chromium	14	1.1	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:39	ATP
Lead	370	0.86	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:39	ATP
Mercury	0.31	0.043	mg/Kg dry	1		SW-846 7471B	6/28/22	6/29/22 14:13	TDK
Selenium	ND	5.7	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:39	ATP
Silver	ND	0.57	mg/Kg dry	1		SW-846 6010D	6/22/22	7/6/22 14:24	QNW

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-3 Sampled: 6/15/2022 15:15

Sample ID: 22F1194-05

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	57.1		% Wt	1	H-06	SM 2540G	6/21/22	6/23/22 10:03	RWS
Flashpoint	> 212 °F		°F	1		SW-846 1010A-B	6/23/22	6/23/22 21:30	CB2
pH @19.4°C	5.4		pH Units	1	H-03	SW-846 9045C	6/20/22	6/20/22 14:30	JEC
Reactive Cyanide	ND	3.9	mg/Kg	1		SW-846 9014	6/23/22	6/24/22 12:30	DRA
Reactive Sulfide	ND	19	mg/Kg	1		SW-846 9030A	6/23/22	6/24/22 12:10	DRA
Specific conductance	3.1	2.0	µmhos/cm	1		SM21-23 2510B Modified	6/18/22	6/18/22 12:47	DRA

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-4 Sampled: 6/15/2022 11:30

Sample ID: 22F1194-06

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Biphenyl	ND	0.84	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Acenaphthene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Acenaphthylene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Acetophenone	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Aniline	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Anthracene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Benzo(a)anthracene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Benzo(a)pyrene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Benzo(b)fluoranthene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Benzo(g,h,i)perylene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Benzo(k)fluoranthene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Bis(2-chloroethoxy)methane	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Bis(2-chloroethyl)ether	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Bis(2-chloroisopropyl)ether	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Bis(2-Ethylhexyl)phthalate	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
4-Bromophenylphenylether	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Butylbenzylphthalate	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
4-Chloroaniline	ND	0.83	mg/Kg dry	1	V-34	SW-846 8270E	6/22/22	6/25/22 20:46	BGL
2-Chloronaphthalene	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
2-Chlorophenol	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Chrysene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Dibenz(a,h)anthracene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Dibenzofuran	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Di-n-butylphthalate	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
1,2-Dichlorobenzene	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
1,3-Dichlorobenzene	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
1,4-Dichlorobenzene	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
3,3-Dichlorobenzidine	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
2,4-Dichlorophenol	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Diethylphthalate	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
2,4-Dimethylphenol	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Dimethylphthalate	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
2,4-Dinitrophenol	ND	0.83	mg/Kg dry	1	V-05	SW-846 8270E	6/22/22	6/25/22 20:46	BGL
2,4-Dinitrotoluene	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
2,6-Dinitrotoluene	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Di-n-octylphthalate	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
1,2-Diphenylhydrazine/Azobenzene	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Fluoranthene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Fluorene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Hexachlorobenzene	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Hexachlorobutadiene	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Hexachloroethane	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Indeno(1,2,3-cd)pyrene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Isophorone	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-4 | Sampled: 6/15/2022 11:30

Sample ID: 22F1194-06

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2-Methylnaphthalene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
2-Methylphenol	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
3/4-Methylphenol	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Naphthalene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Nitrobenzene	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
2-Nitrophenol	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
4-Nitrophenol	ND	0.83	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Pentachlorophenol	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Phenanthrene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Phenol	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Pyrene	ND	0.21	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
Pyridine	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
1,2,4-Trichlorobenzene	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
2,4,5-Trichlorophenol	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL
2,4,6-Trichlorophenol	ND	0.43	mg/Kg dry	1		SW-846 8270E	6/22/22	6/25/22 20:46	BGL

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	43.1	30-130		6/25/22 20:46
Phenol-d6	44.8	30-130		6/25/22 20:46
Nitrobenzene-d5	60.8	30-130		6/25/22 20:46
2-Fluorobiphenyl	44.8	30-130		6/25/22 20:46
2,4,6-Tribromophenol	42.6	30-130		6/25/22 20:46
p-Terphenyl-d14	52.9	30-130		6/25/22 20:46

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-4 | Sampled: 6/15/2022 11:30

Sample ID: 22F1194-06

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:34	JEA
Aroclor-1221 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:34	JEA
Aroclor-1232 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:34	JEA
Aroclor-1242 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:34	JEA
Aroclor-1248 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:34	JEA
Aroclor-1254 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:34	JEA
Aroclor-1260 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:34	JEA
Aroclor-1262 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:34	JEA
Aroclor-1268 [1]	ND	0.10	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:34	JEA

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	93.6	30-150		6/29/22 13:34
Decachlorobiphenyl [2]	91.4	30-150		6/29/22 13:34
Tetrachloro-m-xylene [1]	79.5	30-150		6/29/22 13:34
Tetrachloro-m-xylene [2]	80.7	30-150		6/29/22 13:34

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-4 | Sampled: 6/15/2022 11:30

Sample ID: 22F1194-06

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	54	10	mg/Kg dry	1		SW-846 8100 Modified	6/22/22	6/25/22 10:33	SFM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorobiphenyl	51.0	40-140		6/25/22 10:33

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-4 Sampled: 6/15/2022 11:30

Sample ID: 22F1194-06

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	8.1	4.2	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:46	ATP
Barium	29	2.1	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:46	ATP
Cadmium	ND	0.42	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:46	ATP
Chromium	15	0.84	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:46	ATP
Lead	61	0.63	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:46	ATP
Mercury	ND	0.031	mg/Kg dry	1		SW-846 7471B	6/28/22	6/28/22 19:08	TDK
Selenium	ND	4.2	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:46	ATP
Silver	ND	0.42	mg/Kg dry	1		SW-846 6010D	6/22/22	7/6/22 14:31	QNW

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-4 | Sampled: 6/15/2022 11:30

Sample ID: 22F1194-06

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	79.5		% Wt	1	H-06	SM 2540G	6/21/22	6/23/22 10:04	RWS
Flashpoint	> 212 °F		°F	1		SW-846 1010A-B	6/23/22	6/23/22 21:30	CB2
pH @19.5°C	5.9		pH Units	1	H-03	SW-846 9045C	6/20/22	6/20/22 14:30	JEC
Reactive Cyanide	ND	3.9	mg/Kg	1		SW-846 9014	6/23/22	6/24/22 12:30	DRA
Reactive Sulfide	ND	20	mg/Kg	1		SW-846 9030A	6/23/22	6/24/22 12:10	DRA
Specific conductance	ND	2.0	µmhos/cm	1		SM21-23 2510B Modified	6/18/22	6/18/22 12:47	DRA

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-5 Sampled: 6/15/2022 12:30

Sample ID: 22F1194-07

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Biphenyl	ND	0.89	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Acenaphthene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Acenaphthylene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Acetophenone	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Aniline	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Anthracene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Benzo(a)anthracene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Benzo(a)pyrene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Benzo(b)fluoranthene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Benzo(g,h,i)perylene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Benzo(k)fluoranthene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Bis(2-chloroethoxy)methane	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Bis(2-chloroethyl)ether	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Bis(2-chloroisopropyl)ether	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Bis(2-Ethylhexyl)phthalate	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
4-Bromophenylphenylether	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Butylbenzylphthalate	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
4-Chloroaniline	ND	0.88	mg/Kg dry	1	V-34	SW-846 8270E	6/27/22	6/29/22 11:28	IMR
2-Chloronaphthalene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
2-Chlorophenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Chrysene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Dibenz(a,h)anthracene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Dibenzofuran	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Di-n-butylphthalate	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
1,2-Dichlorobenzene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
1,3-Dichlorobenzene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
1,4-Dichlorobenzene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
3,3-Dichlorobenzidine	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
2,4-Dichlorophenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Diethylphthalate	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
2,4-Dimethylphenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Dimethylphthalate	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
2,4-Dinitrophenol	ND	0.88	mg/Kg dry	1	V-05	SW-846 8270E	6/27/22	6/29/22 11:28	IMR
2,4-Dinitrotoluene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
2,6-Dinitrotoluene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Di-n-octylphthalate	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
1,2-Diphenylhydrazine/Azobenzene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Fluoranthene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Fluorene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Hexachlorobenzene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Hexachlorobutadiene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Hexachloroethane	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Indeno(1,2,3-cd)pyrene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Isophorone	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-5 | Sampled: 6/15/2022 12:30

Sample ID: 22F1194-07

Sample Matrix: Soil

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
2-Methylnaphthalene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
2-Methylphenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
3/4-Methylphenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Naphthalene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Nitrobenzene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
2-Nitrophenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
4-Nitrophenol	ND	0.88	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Pentachlorophenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Phenanthrene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Phenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Pyrene	ND	0.23	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
Pyridine	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
1,2,4-Trichlorobenzene	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
2,4,5-Trichlorophenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR
2,4,6-Trichlorophenol	ND	0.45	mg/Kg dry	1		SW-846 8270E	6/27/22	6/29/22 11:28	IMR

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorophenol	48.7	30-130		6/29/22 11:28
Phenol-d6	50.9	30-130		6/29/22 11:28
Nitrobenzene-d5	72.5	30-130		6/29/22 11:28
2-Fluorobiphenyl	54.6	30-130		6/29/22 11:28
2,4,6-Tribromophenol	51.0	30-130		6/29/22 11:28
p-Terphenyl-d14	52.6	30-130		6/29/22 11:28

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-5 | Sampled: 6/15/2022 12:30

Sample ID: 22F1194-07

Sample Matrix: Soil

Sample Flags: O-32

Polychlorinated Biphenyls By GC/ECD

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Aroclor-1016 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:52	JEA
Aroclor-1221 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:52	JEA
Aroclor-1232 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:52	JEA
Aroclor-1242 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:52	JEA
Aroclor-1248 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:52	JEA
Aroclor-1254 [2]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:52	JEA
Aroclor-1260 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:52	JEA
Aroclor-1262 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:52	JEA
Aroclor-1268 [1]	ND	0.11	mg/Kg dry	4		SW-846 8082A	6/24/22	6/29/22 13:52	JEA

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Decachlorobiphenyl [1]	96.2	30-150		6/29/22 13:52
Decachlorobiphenyl [2]	92.8	30-150		6/29/22 13:52
Tetrachloro-m-xylene [1]	85.8	30-150		6/29/22 13:52
Tetrachloro-m-xylene [2]	88.3	30-150		6/29/22 13:52

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-5 Sampled: 6/15/2022 12:30

Sample ID: 22F1194-07

Sample Matrix: Soil

Petroleum Hydrocarbons Analyses

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
TPH (C9-C36)	77	11	mg/Kg dry	1		SW-846 8100 Modified	6/27/22	6/29/22 11:10	SFM

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2-Fluorobiphenyl	59.6	40-140		6/29/22 11:10

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-5 Sampled: 6/15/2022 12:30

Sample ID: 22F1194-07

Sample Matrix: Soil

Metals Analyses (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Arsenic	ND	4.1	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:52	ATP
Barium	17	2.1	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:52	ATP
Cadmium	ND	0.41	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:52	ATP
Chromium	6.0	0.83	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:52	ATP
Lead	78	0.62	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:52	ATP
Mercury	0.069	0.033	mg/Kg dry	1		SW-846 7471B	6/28/22	6/28/22 19:10	TDK
Selenium	ND	4.1	mg/Kg dry	1		SW-846 6010D	6/22/22	6/28/22 4:52	ATP
Silver	ND	0.41	mg/Kg dry	1		SW-846 6010D	6/22/22	7/6/22 14:38	QNW

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-5 Sampled: 6/15/2022 12:30

Sample ID: 22F1194-07

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	74.9		% Wt	1	H-06	SM 2540G	6/21/22	6/23/22 10:04	RWS
Flashpoint	> 212 °F		°F	1		SW-846 1010A-B	6/23/22	6/23/22 21:30	CB2
pH @19.7°C	6.0		pH Units	1	H-03	SW-846 9045C	6/20/22	6/20/22 14:30	JEC
Reactive Cyanide	ND	3.9	mg/Kg	1		SW-846 9014	6/23/22	6/24/22 12:30	DRA
Reactive Sulfide	ND	20	mg/Kg	1		SW-846 9030A	6/23/22	6/24/22 12:10	DRA
Specific conductance	3.1	2.0	µmhos/cm	1		SM21-23 2510B Modified	6/18/22	6/18/22 12:47	DRA

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-1 (2-3) Sampled: 6/15/2022 09:00

Sample ID: 22F1194-08

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Benzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Bromobenzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Bromochloromethane	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Bromodichloromethane	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Bromoform	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Bromomethane	ND	0.0070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
2-Butanone (MEK)	ND	0.028	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
n-Butylbenzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
sec-Butylbenzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
tert-Butylbenzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Carbon Disulfide	ND	0.0070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Carbon Tetrachloride	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Chlorobenzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Chlorodibromomethane	ND	0.00070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Chloroethane	ND	0.014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Chloroform	ND	0.0028	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Chloromethane	ND	0.0070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
2-Chlorotoluene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
4-Chlorotoluene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,2-Dibromoethane (EDB)	ND	0.0028	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Dibromomethane	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,2-Dichlorobenzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,3-Dichlorobenzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,4-Dichlorobenzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,1-Dichloroethane	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,2-Dichloroethane	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,1-Dichloroethylene	ND	0.0028	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
cis-1,2-Dichloroethylene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
trans-1,2-Dichloroethylene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,2-Dichloropropane	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,3-Dichloropropane	ND	0.00070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
2,2-Dichloropropane	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,1-Dichloropropene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
cis-1,3-Dichloropropene	ND	0.00070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
trans-1,3-Dichloropropene	ND	0.00070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Diethyl Ether	ND	0.014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Diisopropyl Ether (DIPE)	ND	0.00070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,4-Dioxane	ND	0.070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Ethylbenzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-1 (2-3) Sampled: 6/15/2022 09:00

Sample ID: 22F1194-08

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
2-Hexanone (MBK)	ND	0.014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Isopropylbenzene (Cumene)	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0028	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Methylene Chloride	ND	0.014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Naphthalene	ND	0.0070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
n-Propylbenzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Styrene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,1,1,2-Tetrachloroethane	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,1,2,2-Tetrachloroethane	ND	0.00070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Tetrachloroethylene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Tetrahydrofuran	ND	0.0070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Toluene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,2,3-Trichlorobenzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,2,4-Trichlorobenzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,1,1-Trichloroethane	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,1,2-Trichloroethane	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Trichloroethylene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,2,3-Trichloropropane	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,2,4-Trimethylbenzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
1,3,5-Trimethylbenzene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
Vinyl Chloride	ND	0.0070	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
m+p Xylene	ND	0.0028	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF
o-Xylene	ND	0.0014	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:18	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	107	70-130		6/20/22 7:18
Toluene-d8	99.3	70-130		6/20/22 7:18
4-Bromofluorobenzene	103	70-130		6/20/22 7:18

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-1 (2-3) Sampled: 6/15/2022 09:00

Sample ID: 22F1194-08

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	75.4		% Wt	1	H-06	SM 2540G	6/21/22	6/23/22 16:11	AV

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-4 (1-2) Sampled: 6/15/2022 10:00

Sample ID: 22F1194-09

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.12	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Benzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Bromobenzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Bromochloromethane	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Bromodichloromethane	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Bromoform	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Bromomethane	ND	0.012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
2-Butanone (MEK)	ND	0.047	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
n-Butylbenzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
sec-Butylbenzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
tert-Butylbenzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Carbon Disulfide	ND	0.012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Carbon Tetrachloride	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Chlorobenzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Chlorodibromomethane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Chloroethane	ND	0.023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Chloroform	ND	0.0047	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Chloromethane	ND	0.012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
2-Chlorotoluene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
4-Chlorotoluene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,2-Dibromoethane (EDB)	ND	0.0047	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Dibromomethane	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,2-Dichlorobenzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,3-Dichlorobenzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,4-Dichlorobenzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,1-Dichloroethane	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,2-Dichloroethane	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,1-Dichloroethylene	ND	0.0047	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
cis-1,2-Dichloroethylene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
trans-1,2-Dichloroethylene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,2-Dichloropropane	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,3-Dichloropropane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
2,2-Dichloropropane	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,1-Dichloropropene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
cis-1,3-Dichloropropene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
trans-1,3-Dichloropropene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Diethyl Ether	ND	0.023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Diisopropyl Ether (DIPE)	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,4-Dioxane	ND	0.12	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Ethylbenzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-4 (1-2) Sampled: 6/15/2022 10:00

Sample ID: 22F1194-09

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
2-Hexanone (MBK)	ND	0.023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Isopropylbenzene (Cumene)	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0047	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Methylene Chloride	ND	0.023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Naphthalene	ND	0.012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
n-Propylbenzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Styrene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,1,1,2-Tetrachloroethane	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,1,2,2-Tetrachloroethane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Tetrachloroethylene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Tetrahydrofuran	ND	0.012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Toluene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,2,3-Trichlorobenzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,2,4-Trichlorobenzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,1,1-Trichloroethane	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,1,2-Trichloroethane	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Trichloroethylene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Trichlorofluoromethane (Freon 11)	ND	0.012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,2,3-Trichloropropane	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,2,4-Trimethylbenzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
1,3,5-Trimethylbenzene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
Vinyl Chloride	ND	0.012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
m+p Xylene	ND	0.0047	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF
o-Xylene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 7:43	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	110	70-130		6/20/22 7:43
Toluene-d8	99.2	70-130		6/20/22 7:43
4-Bromofluorobenzene	98.3	70-130		6/20/22 7:43

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: TP-4 (1-2) Sampled: 6/15/2022 10:00

Sample ID: 22F1194-09

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	44.1		% Wt	1	H-06	SM 2540G	6/21/22	6/23/22 16:11	AV

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SW-1 Sampled: 6/15/2022 00:00

Sample ID: 22F1194-10

Sample Matrix: Water

Semivolatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Benzo(a)anthracene (SIM)	ND	0.97	µg/L	1		SW-846 8270E	6/19/22	6/28/22 15:16	SPF
Benzo(a)pyrene (SIM)	ND	0.19	µg/L	1		SW-846 8270E	6/19/22	6/28/22 15:16	SPF
Benzo(b)fluoranthene (SIM)	ND	0.97	µg/L	1		SW-846 8270E	6/19/22	6/28/22 15:16	SPF
Benzo(k)fluoranthene (SIM)	ND	0.97	µg/L	1		SW-846 8270E	6/19/22	6/28/22 15:16	SPF
Chrysene (SIM)	ND	1.9	µg/L	1		SW-846 8270E	6/19/22	6/28/22 15:16	SPF
Dibenz(a,h)anthracene (SIM)	ND	0.48	µg/L	1		SW-846 8270E	6/19/22	6/28/22 15:16	SPF
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.48	µg/L	1		SW-846 8270E	6/19/22	6/28/22 15:16	SPF

Surrogates	% Recovery	Recovery Limits	Flag/Qual				
o-Terphenyl (OTP)	56.9	30-130				6/28/22 15:16	

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SW-1 | Sampled: 6/15/2022 00:00

Sample ID: 22F1194-10

Sample Matrix: Water

Petroleum Hydrocarbons Analyses - EPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
C9-C18 Aliphatics	ND	97	µg/L	1		MADEP EPH rev 2.1	6/19/22	6/27/22 17:33	TYH
C19-C36 Aliphatics	130	97	µg/L	1		MADEP EPH rev 2.1	6/19/22	6/27/22 17:33	TYH
Unadjusted C11-C22 Aromatics	170	97	µg/L	1		MADEP EPH rev 2.1	6/19/22	6/27/22 17:33	TYH
C11-C22 Aromatics	160	97	µg/L	1		MADEP EPH rev 2.1	6/19/22	6/27/22 17:33	TYH
Acenaphthene	2.3	1.9	µg/L	1		MADEP EPH rev 2.1	6/19/22	6/27/22 17:33	TYH
Acenaphthylene	2.0	1.9	µg/L	1		MADEP EPH rev 2.1	6/19/22	6/27/22 17:33	TYH
Anthracene	ND	1.9	µg/L	1		MADEP EPH rev 2.1	6/19/22	6/27/22 17:33	TYH
Benzo(g,h,i)perylene	ND	1.9	µg/L	1		MADEP EPH rev 2.1	6/19/22	6/27/22 17:33	TYH
Fluoranthene	ND	1.9	µg/L	1		MADEP EPH rev 2.1	6/19/22	6/27/22 17:33	TYH
Fluorene	ND	1.9	µg/L	1		MADEP EPH rev 2.1	6/19/22	6/27/22 17:33	TYH
2-Methylnaphthalene	ND	1.9	µg/L	1		MADEP EPH rev 2.1	6/19/22	6/27/22 17:33	TYH
Naphthalene	ND	1.9	µg/L	1		MADEP EPH rev 2.1	6/19/22	6/27/22 17:33	TYH
Phenanthrene	ND	1.9	µg/L	1		MADEP EPH rev 2.1	6/19/22	6/27/22 17:33	TYH
Pyrene	ND	1.9	µg/L	1		MADEP EPH rev 2.1	6/19/22	6/27/22 17:33	TYH

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
Chlorooctadecane (COD)	64.1	40-140		6/27/22 17:33
o-Terphenyl (OTP)	60.6	40-140		6/27/22 17:33
2-Bromonaphthalene	110	40-140		6/27/22 17:33
2-Fluorobiphenyl	100	40-140		6/27/22 17:33

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SW-1 Sampled: 6/15/2022 00:00

Sample ID: 22F1194-10

Sample Matrix: Water

Sample Flags: RL-08

Petroleum Hydrocarbons Analyses - VPH

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Unadjusted C5-C8 Aliphatics	ND	500	µg/L	5		MADEP-VPH-Feb 2018 Rev 2.1	6/20/22	6/21/22 0:13	EEH
C5-C8 Aliphatics	ND	500	µg/L	5		MADEP-VPH-Feb 2018 Rev 2.1	6/20/22	6/21/22 0:13	EEH
Unadjusted C9-C12 Aliphatics	ND	500	µg/L	5		MADEP-VPH-Feb 2018 Rev 2.1	6/20/22	6/21/22 0:13	EEH
C9-C12 Aliphatics	ND	500	µg/L	5		MADEP-VPH-Feb 2018 Rev 2.1	6/20/22	6/21/22 0:13	EEH
C9-C10 Aromatics	ND	500	µg/L	5		MADEP-VPH-Feb 2018 Rev 2.1	6/20/22	6/21/22 0:13	EEH
Benzene	ND	5.0	µg/L	5		MADEP-VPH-Feb 2018 Rev 2.1	6/20/22	6/21/22 0:13	EEH
Ethylbenzene	ND	5.0	µg/L	5		MADEP-VPH-Feb 2018 Rev 2.1	6/20/22	6/21/22 0:13	EEH
Methyl tert-Butyl Ether (MTBE)	ND	5.0	µg/L	5		MADEP-VPH-Feb 2018 Rev 2.1	6/20/22	6/21/22 0:13	EEH
Naphthalene	ND	25	µg/L	5		MADEP-VPH-Feb 2018 Rev 2.1	6/20/22	6/21/22 0:13	EEH
Toluene	ND	5.0	µg/L	5		MADEP-VPH-Feb 2018 Rev 2.1	6/20/22	6/21/22 0:13	EEH
m+p Xylene	ND	10	µg/L	5		MADEP-VPH-Feb 2018 Rev 2.1	6/20/22	6/21/22 0:13	EEH
o-Xylene	ND	5.0	µg/L	5		MADEP-VPH-Feb 2018 Rev 2.1	6/20/22	6/21/22 0:13	EEH

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
2,5-Dibromotoluene (FID)	99.3	70-130		6/21/22 0:13
2,5-Dibromotoluene (PID)	100	70-130		6/21/22 0:13

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-1 (4-5) Sampled: 6/15/2022 13:15

Sample ID: 22F1194-11

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.23	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Benzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Bromobenzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Bromochloromethane	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Bromodichloromethane	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Bromoform	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Bromomethane	ND	0.023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
2-Butanone (MEK)	ND	0.091	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
n-Butylbenzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
sec-Butylbenzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
tert-Butylbenzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Carbon Disulfide	ND	0.023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Carbon Tetrachloride	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Chlorobenzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Chlorodibromomethane	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Chloroethane	ND	0.045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Chloroform	ND	0.0091	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Chloromethane	ND	0.023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
2-Chlorotoluene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
4-Chlorotoluene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,2-Dibromoethane (EDB)	ND	0.0091	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Dibromomethane	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,2-Dichlorobenzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,3-Dichlorobenzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,4-Dichlorobenzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,1-Dichloroethane	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,2-Dichloroethane	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,1-Dichloroethylene	ND	0.0091	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
cis-1,2-Dichloroethylene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
trans-1,2-Dichloroethylene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,2-Dichloropropane	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,3-Dichloropropane	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
2,2-Dichloropropane	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,1-Dichloropropene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
cis-1,3-Dichloropropene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
trans-1,3-Dichloropropene	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Diethyl Ether	ND	0.045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Diisopropyl Ether (DIPE)	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,4-Dioxane	ND	0.23	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Ethylbenzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-1 (4-5) Sampled: 6/15/2022 13:15

Sample ID: 22F1194-11

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
2-Hexanone (MBK)	ND	0.045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Isopropylbenzene (Cumene)	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0091	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Methylene Chloride	ND	0.045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Naphthalene	ND	0.023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
n-Propylbenzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Styrene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,1,1,2-Tetrachloroethane	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,1,2,2-Tetrachloroethane	ND	0.0023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Tetrachloroethylene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Tetrahydrofuran	ND	0.023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Toluene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,2,3-Trichlorobenzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,2,4-Trichlorobenzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,1,1-Trichloroethane	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,1,2-Trichloroethane	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Trichloroethylene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Trichlorofluoromethane (Freon 11)	ND	0.023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,2,3-Trichloropropane	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,2,4-Trimethylbenzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
1,3,5-Trimethylbenzene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
Vinyl Chloride	ND	0.023	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
m+p Xylene	ND	0.0091	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF
o-Xylene	ND	0.0045	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:09	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	110	70-130		6/20/22 8:09
Toluene-d8	101	70-130		6/20/22 8:09
4-Bromofluorobenzene	100	70-130		6/20/22 8:09

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-1 (4-5) Sampled: 6/15/2022 13:15

Sample ID: 22F1194-11

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	42.0		% Wt	1	H-06	SM 2540G	6/21/22	6/23/22 16:11	AV

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-2 (1.5-2.5) Sampled: 6/15/2022 14:00

Sample ID: 22F1194-12

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Benzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Bromobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Bromochloromethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Bromodichloromethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Bromoform	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Bromomethane	ND	0.0064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
2-Butanone (MEK)	ND	0.026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
n-Butylbenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
sec-Butylbenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
tert-Butylbenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Carbon Disulfide	ND	0.0064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Carbon Tetrachloride	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Chlorobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Chlorodibromomethane	ND	0.00064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Chloroethane	ND	0.013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Chloroform	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Chloromethane	ND	0.0064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
2-Chlorotoluene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
4-Chlorotoluene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,2-Dibromoethane (EDB)	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Dibromomethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,2-Dichlorobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,3-Dichlorobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,4-Dichlorobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,1-Dichloroethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,2-Dichloroethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,1-Dichloroethylene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
cis-1,2-Dichloroethylene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
trans-1,2-Dichloroethylene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,2-Dichloropropane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,3-Dichloropropane	ND	0.00064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
2,2-Dichloropropane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,1-Dichloropropene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
cis-1,3-Dichloropropene	ND	0.00064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
trans-1,3-Dichloropropene	ND	0.00064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Diethyl Ether	ND	0.013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Diisopropyl Ether (DIPE)	ND	0.00064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,4-Dioxane	ND	0.064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Ethylbenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-2 (1.5-2.5) Sampled: 6/15/2022 14:00

Sample ID: 22F1194-12

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
2-Hexanone (MBK)	ND	0.013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Isopropylbenzene (Cumene)	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Methylene Chloride	ND	0.013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Naphthalene	ND	0.0064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
n-Propylbenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Styrene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,1,1,2-Tetrachloroethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,1,2,2-Tetrachloroethane	ND	0.00064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Tetrachloroethylene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Tetrahydrofuran	ND	0.0064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Toluene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,2,3-Trichlorobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,2,4-Trichlorobenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,1,1-Trichloroethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,1,2-Trichloroethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Trichloroethylene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,2,3-Trichloropropane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,2,4-Trimethylbenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
1,3,5-Trimethylbenzene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
Vinyl Chloride	ND	0.0064	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
m+p Xylene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF
o-Xylene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:34	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	109	70-130		6/20/22 8:34
Toluene-d8	101	70-130		6/20/22 8:34
4-Bromofluorobenzene	104	70-130		6/20/22 8:34

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-2 (1.5-2.5) Sampled: 6/15/2022 14:00

Sample ID: 22F1194-12

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	72.2		% Wt	1	H-06	SM 2540G	6/21/22	6/23/22 16:11	AV

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-3 (2.5-3.5) Sampled: 6/15/2022 15:15

Sample ID: 22F1194-13

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.13	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Benzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Bromobenzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Bromochloromethane	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Bromodichloromethane	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Bromoform	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Bromomethane	ND	0.013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
2-Butanone (MEK)	ND	0.052	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
n-Butylbenzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
sec-Butylbenzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
tert-Butylbenzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Carbon Disulfide	ND	0.013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Carbon Tetrachloride	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Chlorobenzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Chlorodibromomethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Chloroethane	ND	0.026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Chloroform	ND	0.0052	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Chloromethane	ND	0.013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
2-Chlorotoluene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
4-Chlorotoluene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,2-Dibromoethane (EDB)	ND	0.0052	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Dibromomethane	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,2-Dichlorobenzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,3-Dichlorobenzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,4-Dichlorobenzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,1-Dichloroethane	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,2-Dichloroethane	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,1-Dichloroethylene	ND	0.0052	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
cis-1,2-Dichloroethylene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
trans-1,2-Dichloroethylene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,2-Dichloropropane	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,3-Dichloropropane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
2,2-Dichloropropane	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,1-Dichloropropene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
cis-1,3-Dichloropropene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
trans-1,3-Dichloropropene	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Diethyl Ether	ND	0.026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Diisopropyl Ether (DIPE)	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,4-Dioxane	ND	0.13	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Ethylbenzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-3 (2.5-3.5) Sampled: 6/15/2022 15:15

Sample ID: 22F1194-13

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
2-Hexanone (MBK)	ND	0.026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Isopropylbenzene (Cumene)	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0052	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Methylene Chloride	ND	0.026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Naphthalene	ND	0.013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
n-Propylbenzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Styrene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,1,1,2-Tetrachloroethane	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,1,2,2-Tetrachloroethane	ND	0.0013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Tetrachloroethylene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Tetrahydrofuran	ND	0.013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Toluene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,2,3-Trichlorobenzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,2,4-Trichlorobenzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,1,1-Trichloroethane	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,1,2-Trichloroethane	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Trichloroethylene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Trichlorofluoromethane (Freon 11)	ND	0.013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,2,3-Trichloropropane	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,2,4-Trimethylbenzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
1,3,5-Trimethylbenzene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
Vinyl Chloride	ND	0.013	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
m+p Xylene	ND	0.0052	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF
o-Xylene	ND	0.0026	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 8:59	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	113	70-130		6/20/22 8:59
Toluene-d8	97.4	70-130		6/20/22 8:59
4-Bromofluorobenzene	94.6	70-130		6/20/22 8:59

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-3 (2.5-3.5) Sampled: 6/15/2022 15:15

Sample ID: 22F1194-13

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	57.1		% Wt	1	H-06	SM 2540G	6/21/22	6/23/22 16:11	AV

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-4 (2-3) Sampled: 6/15/2022 11:30

Sample ID: 22F1194-14

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Benzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Bromobenzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Bromochloromethane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Bromodichloromethane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Bromoform	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Bromomethane	ND	0.0062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
2-Butanone (MEK)	ND	0.025	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
n-Butylbenzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
sec-Butylbenzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
tert-Butylbenzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Carbon Disulfide	ND	0.0062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Carbon Tetrachloride	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Chlorobenzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Chlorodibromomethane	ND	0.00062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Chloroethane	ND	0.012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Chloroform	ND	0.0025	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Chloromethane	ND	0.0062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
2-Chlorotoluene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
4-Chlorotoluene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,2-Dibromoethane (EDB)	ND	0.0025	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Dibromomethane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,2-Dichlorobenzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,3-Dichlorobenzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,4-Dichlorobenzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,1-Dichloroethane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,2-Dichloroethane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,1-Dichloroethylene	ND	0.0025	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
cis-1,2-Dichloroethylene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
trans-1,2-Dichloroethylene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,2-Dichloropropane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,3-Dichloropropane	ND	0.00062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
2,2-Dichloropropane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,1-Dichloropropene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
cis-1,3-Dichloropropene	ND	0.00062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
trans-1,3-Dichloropropene	ND	0.00062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Diethyl Ether	ND	0.012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Diisopropyl Ether (DIPE)	ND	0.00062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,4-Dioxane	ND	0.062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Ethylbenzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-4 (2-3) Sampled: 6/15/2022 11:30

Sample ID: 22F1194-14

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
2-Hexanone (MBK)	ND	0.012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Isopropylbenzene (Cumene)	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0025	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Methylene Chloride	ND	0.012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Naphthalene	ND	0.0062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
n-Propylbenzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Styrene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,1,1,2-Tetrachloroethane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,1,2,2-Tetrachloroethane	ND	0.00062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Tetrachloroethylene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Tetrahydrofuran	ND	0.0062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Toluene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,2,3-Trichlorobenzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,2,4-Trichlorobenzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,1,1-Trichloroethane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,1,2-Trichloroethane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Trichloroethylene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,2,3-Trichloropropane	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,2,4-Trimethylbenzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
1,3,5-Trimethylbenzene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
Vinyl Chloride	ND	0.0062	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
m+p Xylene	ND	0.0025	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF
o-Xylene	ND	0.0012	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:25	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	113	70-130		6/20/22 9:25
Toluene-d8	101	70-130		6/20/22 9:25
4-Bromofluorobenzene	104	70-130		6/20/22 9:25

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-4 (2-3) Sampled: 6/15/2022 11:30

Sample ID: 22F1194-14

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	79.5		% Wt	1	H-06	SM 2540G	6/21/22	6/23/22 16:11	AV

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-5 (3-4) Sampled: 6/15/2022 12:30

Sample ID: 22F1194-15

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Acetone	ND	0.096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
tert-Amyl Methyl Ether (TAME)	ND	0.00096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Benzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Bromobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Bromochloromethane	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Bromodichloromethane	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Bromoform	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Bromomethane	ND	0.0096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
2-Butanone (MEK)	ND	0.038	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
n-Butylbenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
sec-Butylbenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
tert-Butylbenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
tert-Butyl Ethyl Ether (TBEE)	ND	0.00096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Carbon Disulfide	ND	0.0096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Carbon Tetrachloride	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Chlorobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Chlorodibromomethane	ND	0.00096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Chloroethane	ND	0.019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Chloroform	ND	0.0038	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Chloromethane	ND	0.0096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
2-Chlorotoluene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
4-Chlorotoluene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,2-Dibromoethane (EDB)	ND	0.0038	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Dibromomethane	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,2-Dichlorobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,3-Dichlorobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,4-Dichlorobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Dichlorodifluoromethane (Freon 12)	ND	0.019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,1-Dichloroethane	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,2-Dichloroethane	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,1-Dichloroethylene	ND	0.0038	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
cis-1,2-Dichloroethylene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
trans-1,2-Dichloroethylene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,2-Dichloropropane	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,3-Dichloropropane	ND	0.00096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
2,2-Dichloropropane	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,1-Dichloropropene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
cis-1,3-Dichloropropene	ND	0.00096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
trans-1,3-Dichloropropene	ND	0.00096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Diethyl Ether	ND	0.019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Diisopropyl Ether (DIPE)	ND	0.00096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,4-Dioxane	ND	0.096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Ethylbenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF

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Project Location: Lily Pond Park, Nantucket, MA | Sample Description: | Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-5 (3-4) | Sampled: 6/15/2022 12:30

Sample ID: 22F1194-15

Sample Matrix: Soil

Volatile Organic Compounds by GC/MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Hexachlorobutadiene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
2-Hexanone (MBK)	ND	0.019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Isopropylbenzene (Cumene)	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
p-Isopropyltoluene (p-Cymene)	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Methyl tert-Butyl Ether (MTBE)	ND	0.0038	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Methylene Chloride	ND	0.019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
4-Methyl-2-pentanone (MIBK)	ND	0.019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Naphthalene	ND	0.0096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
n-Propylbenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Styrene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,1,1,2-Tetrachloroethane	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,1,2,2-Tetrachloroethane	ND	0.00096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Tetrachloroethylene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Tetrahydrofuran	ND	0.0096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Toluene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,2,3-Trichlorobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,2,4-Trichlorobenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,1,1-Trichloroethane	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,1,2-Trichloroethane	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Trichloroethylene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Trichlorofluoromethane (Freon 11)	ND	0.0096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,2,3-Trichloropropane	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,2,4-Trimethylbenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
1,3,5-Trimethylbenzene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
Vinyl Chloride	ND	0.0096	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
m+p Xylene	ND	0.0038	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF
o-Xylene	ND	0.0019	mg/Kg dry	1		SW-846 8260D	6/20/22	6/20/22 9:50	MFF

Surrogates	% Recovery	Recovery Limits	Flag/Qual	
1,2-Dichloroethane-d4	110	70-130		6/20/22 9:50
Toluene-d8	99.6	70-130		6/20/22 9:50
4-Bromofluorobenzene	101	70-130		6/20/22 9:50

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Project Location: Lily Pond Park, Nantucket, MA Sample Description: Work Order: 22F1194

Date Received: 6/17/2022

Field Sample #: SS-5 (3-4) Sampled: 6/15/2022 12:30

Sample ID: 22F1194-15

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	74.9		% Wt	1	H-06	SM 2540G	6/21/22	6/23/22 16:11	AV

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Sample Extraction Data

Prep Method: SW-846 3510C **Analytical Method: MADEP EPH rev 2.1**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22F1194-10 [SW-1]	B311086	880	1.70	06/19/22

Prep Method: MA VPH **Analytical Method: MADEP-VPH-Feb 2018 Rev 2.1**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22F1194-10 [SW-1]	B311102	1	5.00	06/20/22

Prep Method: % Solids **Analytical Method: SM 2540G**

Lab Number [Field ID]	Batch	Date
22F1194-01 [TP-1-2]	B311300	06/21/22
22F1194-02 [TP-3-4]	B311300	06/21/22
22F1194-03 [SS-1]	B311300	06/21/22
22F1194-04 [SS-2]	B311300	06/21/22
22F1194-05 [SS-3]	B311300	06/21/22
22F1194-06 [SS-4]	B311300	06/21/22
22F1194-07 [SS-5]	B311300	06/21/22
22F1194-08 [TP-1 (2-3)]	B311300	06/21/22
22F1194-09 [TP-4 (1-2)]	B311300	06/21/22
22F1194-11 [SS-1 (4-5)]	B311300	06/21/22
22F1194-12 [SS-2 (1.5-2.5)]	B311300	06/21/22
22F1194-13 [SS-3 (2.5-3.5)]	B311300	06/21/22
22F1194-14 [SS-4 (2-3)]	B311300	06/21/22
22F1194-15 [SS-5 (3-4)]	B311300	06/21/22

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SM21-23 2510B Modified

Lab Number [Field ID]	Batch	Initial [g]	Date
22F1194-01 [TP-1-2]	B311057	1.09	06/18/22
22F1194-02 [TP-3-4]	B311057	1.07	06/18/22
22F1194-03 [SS-1]	B311057	1.08	06/18/22
22F1194-04 [SS-2]	B311057	1.10	06/18/22
22F1194-05 [SS-3]	B311057	1.04	06/18/22
22F1194-06 [SS-4]	B311057	1.07	06/18/22
22F1194-07 [SS-5]	B311057	1.10	06/18/22

SW-846 1010A-B

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-01 [TP-1-2]	B311279	50.0	50.0	06/21/22
22F1194-02 [TP-3-4]	B311279	50.0	50.0	06/21/22
22F1194-03 [SS-1]	B311279	50.0	50.0	06/21/22
22F1194-04 [SS-2]	B311279	50.0	50.0	06/21/22

SW-846 1010A-B

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-05 [SS-3]	B311518	50.0	50.0	06/23/22
22F1194-06 [SS-4]	B311518	50.0	50.0	06/23/22

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Sample Extraction Data

SW-846 1010A-B

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-07 [SS-5]	B311518	50.0	50.0	06/23/22

Prep Method: SW-846 3050B **Analytical Method: SW-846 6010D**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-03 [SS-1]	B311368	1.55	50.0	06/22/22
22F1194-04 [SS-2]	B311368	1.55	50.0	06/22/22
22F1194-05 [SS-3]	B311368	1.53	50.0	06/22/22
22F1194-06 [SS-4]	B311368	1.50	50.0	06/22/22
22F1194-07 [SS-5]	B311368	1.61	50.0	06/22/22

Prep Method: SW-846 3050B **Analytical Method: SW-846 6010D**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-01 [TP-1-2]	B311466	1.59	50.0	06/23/22
22F1194-02 [TP-3-4]	B311466	1.51	50.0	06/23/22

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Prep Method: SW-846 7471 **Analytical Method: SW-846 7471B**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-06 [SS-4]	B311780	0.610	50.0	06/28/22
22F1194-07 [SS-5]	B311780	0.615	50.0	06/28/22

Prep Method: SW-846 7471 **Analytical Method: SW-846 7471B**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-01 [TP-1-2]	B311797	0.594	50.0	06/28/22
22F1194-02 [TP-3-4]	B311797	0.588	50.0	06/28/22
22F1194-03 [SS-1]	B311797	0.597	50.0	06/28/22
22F1194-04 [SS-2]	B311797	0.600	50.0	06/28/22
22F1194-05 [SS-3]	B311797	0.613	50.0	06/28/22

Prep Method: SW-846 3546 **Analytical Method: SW-846 8082A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-01 [TP-1-2]	B311324	10.0	10.0	06/22/22
22F1194-02 [TP-3-4]	B311324	10.0	10.0	06/22/22
22F1194-03 [SS-1]	B311324	10.0	10.0	06/22/22
22F1194-04 [SS-2]	B311324	10.0	10.0	06/22/22
22F1194-05 [SS-3]	B311324	10.0	10.0	06/22/22

Prep Method: SW-846 3546 **Analytical Method: SW-846 8082A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-06 [SS-4]	B311610	10.0	10.0	06/24/22
22F1194-07 [SS-5]	B311610	10.0	10.0	06/24/22

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Sample Extraction Data

Prep Method: SW-846 3510C **Analytical Method: SW-846 8100 Modified**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22F1194-01 [TP-1-2]	B311333	30.1	1.00	06/22/22
22F1194-02 [TP-3-4]	B311333	30.1	1.00	06/22/22
22F1194-03 [SS-1]	B311333	30.0	1.00	06/22/22
22F1194-04 [SS-2]	B311333	30.0	1.00	06/22/22
22F1194-05 [SS-3]	B311333	30.0	1.00	06/22/22
22F1194-06 [SS-4]	B311333	30.0	1.00	06/22/22

Prep Method: SW-846 3510C **Analytical Method: SW-846 8100 Modified**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22F1194-07RE1 [SS-5]	B311696	30.0	1.00	06/27/22

Prep Method: SW-846 5035 **Analytical Method: SW-846 8260D**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-08 [TP-1 (2-3)]	B311146	9.44	10.0	06/20/22
22F1194-09 [TP-4 (1-2)]	B311146	9.69	10.0	06/20/22
22F1194-11 [SS-1 (4-5)]	B311146	5.26	10.0	06/20/22
22F1194-12 [SS-2 (1.5-2.5)]	B311146	10.8	10.0	06/20/22
22F1194-13 [SS-3 (2.5-3.5)]	B311146	6.72	10.0	06/20/22
22F1194-14 [SS-4 (2-3)]	B311146	10.1	10.0	06/20/22
22F1194-15 [SS-5 (3-4)]	B311146	6.98	10.0	06/20/22

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Prep Method: SW-846 3546 **Analytical Method: SW-846 8270E**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-01 [TP-1-2]	B311335	30.1	1.00	06/22/22
22F1194-02 [TP-3-4]	B311335	30.1	1.00	06/22/22
22F1194-03 [SS-1]	B311335	30.0	1.00	06/22/22
22F1194-04 [SS-2]	B311335	30.0	1.00	06/22/22
22F1194-05 [SS-3]	B311335	30.0	1.00	06/22/22
22F1194-06 [SS-4]	B311335	30.0	1.00	06/22/22

Prep Method: SW-846 3546 **Analytical Method: SW-846 8270E**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-07RE1 [SS-5]	B311736	30.0	1.00	06/27/22

Prep Method: SW-846 3510C **Analytical Method: SW-846 8270E**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22F1194-10 [SW-1]	B311759	880	1.70	06/19/22

Prep Method: SW-846 7.3 **Analytical Method: SW-846 9014**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-01 [TP-1-2]	B311467	25.2	250	06/23/22

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Sample Extraction Data

Prep Method: SW-846 7.3 **Analytical Method: SW-846 9014**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-02 [TP-3-4]	B311467	25.4	250	06/23/22
22F1194-03 [SS-1]	B311467	25.3	250	06/23/22
22F1194-04 [SS-2]	B311467	25.2	250	06/23/22
22F1194-05 [SS-3]	B311467	25.8	250	06/23/22
22F1194-06 [SS-4]	B311467	25.3	250	06/23/22
22F1194-07 [SS-5]	B311467	25.5	250	06/23/22

Prep Method: SW-846 7.3 **Analytical Method: SW-846 9030A**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22F1194-01 [TP-1-2]	B311468	25.2	250	06/23/22
22F1194-02 [TP-3-4]	B311468	25.4	250	06/23/22
22F1194-03 [SS-1]	B311468	25.3	250	06/23/22
22F1194-04 [SS-2]	B311468	25.2	250	06/23/22
22F1194-05 [SS-3]	B311468	25.8	250	06/23/22
22F1194-06 [SS-4]	B311468	25.3	250	06/23/22
22F1194-07 [SS-5]	B311468	25.5	250	06/23/22

SW-846 9045C

Lab Number [Field ID]	Batch	Initial [g]	Date
22F1194-01 [TP-1-2]	B311153	20.0	06/20/22
22F1194-02 [TP-3-4]	B311153	20.0	06/20/22
22F1194-03 [SS-1]	B311153	20.0	06/20/22
22F1194-04 [SS-2]	B311153	20.0	06/20/22
22F1194-05 [SS-3]	B311153	20.0	06/20/22
22F1194-06 [SS-4]	B311153	20.0	06/20/22
22F1194-07 [SS-5]	B311153	20.0	06/20/22

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311146 - SW-846 5035										
Blank (B311146-BLK1)				Prepared & Analyzed: 06/20/22						
Acetone	ND	0.10	mg/Kg wet							
tert-Amyl Methyl Ether (TAME)	ND	0.0010	mg/Kg wet							
Benzene	ND	0.0020	mg/Kg wet							
Bromobenzene	ND	0.0020	mg/Kg wet							
Bromochloromethane	ND	0.0020	mg/Kg wet							
Bromodichloromethane	ND	0.0020	mg/Kg wet							
Bromoform	ND	0.0020	mg/Kg wet							
Bromomethane	ND	0.010	mg/Kg wet							
2-Butanone (MEK)	ND	0.040	mg/Kg wet							
n-Butylbenzene	ND	0.0020	mg/Kg wet							
sec-Butylbenzene	ND	0.0020	mg/Kg wet							
tert-Butylbenzene	ND	0.0020	mg/Kg wet							
tert-Butyl Ethyl Ether (TBEE)	ND	0.0010	mg/Kg wet							
Carbon Disulfide	ND	0.010	mg/Kg wet							
Carbon Tetrachloride	ND	0.0020	mg/Kg wet							
Chlorobenzene	ND	0.0020	mg/Kg wet							
Chlorodibromomethane	ND	0.0010	mg/Kg wet							
Chloroethane	ND	0.020	mg/Kg wet							
Chloroform	ND	0.0040	mg/Kg wet							
Chloromethane	ND	0.010	mg/Kg wet							
2-Chlorotoluene	ND	0.0020	mg/Kg wet							
4-Chlorotoluene	ND	0.0020	mg/Kg wet							
1,2-Dibromo-3-chloropropane (DBCP)	ND	0.0020	mg/Kg wet							
1,2-Dibromoethane (EDB)	ND	0.0010	mg/Kg wet							
Dibromomethane	ND	0.0020	mg/Kg wet							
1,2-Dichlorobenzene	ND	0.0020	mg/Kg wet							
1,3-Dichlorobenzene	ND	0.0020	mg/Kg wet							
1,4-Dichlorobenzene	ND	0.0020	mg/Kg wet							
Dichlorodifluoromethane (Freon 12)	ND	0.020	mg/Kg wet							
1,1-Dichloroethane	ND	0.0020	mg/Kg wet							
1,2-Dichloroethane	ND	0.0020	mg/Kg wet							
1,1-Dichloroethylene	ND	0.0040	mg/Kg wet							
cis-1,2-Dichloroethylene	ND	0.0020	mg/Kg wet							
trans-1,2-Dichloroethylene	ND	0.0020	mg/Kg wet							
1,2-Dichloropropane	ND	0.0020	mg/Kg wet							
1,3-Dichloropropane	ND	0.0010	mg/Kg wet							
2,2-Dichloropropane	ND	0.0020	mg/Kg wet							
1,1-Dichloropropene	ND	0.0020	mg/Kg wet							
cis-1,3-Dichloropropene	ND	0.0010	mg/Kg wet							
trans-1,3-Dichloropropene	ND	0.0010	mg/Kg wet							
Diethyl Ether	ND	0.020	mg/Kg wet							
Diisopropyl Ether (DIPE)	ND	0.0010	mg/Kg wet							
1,4-Dioxane	ND	0.10	mg/Kg wet							
Ethylbenzene	ND	0.0020	mg/Kg wet							
Hexachlorobutadiene	ND	0.0020	mg/Kg wet							
2-Hexanone (MBK)	ND	0.020	mg/Kg wet							
Isopropylbenzene (Cumene)	ND	0.0020	mg/Kg wet							
p-Isopropyltoluene (p-Cymene)	ND	0.0020	mg/Kg wet							
Methyl tert-Butyl Ether (MTBE)	ND	0.0040	mg/Kg wet							
Methylene Chloride	ND	0.020	mg/Kg wet							
4-Methyl-2-pentanone (MIBK)	ND	0.020	mg/Kg wet							
Naphthalene	ND	0.0040	mg/Kg wet							

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B311146 - SW-846 5035											
Blank (B311146-BLK1)				Prepared & Analyzed: 06/20/22							
n-Propylbenzene	ND	0.0020	mg/Kg wet								
Styrene	ND	0.0020	mg/Kg wet								
1,1,1,2-Tetrachloroethane	ND	0.0020	mg/Kg wet								
1,1,2,2-Tetrachloroethane	ND	0.0010	mg/Kg wet								
Tetrachloroethylene	ND	0.0020	mg/Kg wet								
Tetrahydrofuran	ND	0.010	mg/Kg wet								
Toluene	ND	0.0020	mg/Kg wet								
1,2,3-Trichlorobenzene	ND	0.0020	mg/Kg wet								
1,2,4-Trichlorobenzene	ND	0.0020	mg/Kg wet								
1,1,1-Trichloroethane	ND	0.0020	mg/Kg wet								
1,1,2-Trichloroethane	ND	0.0020	mg/Kg wet								
Trichloroethylene	ND	0.0020	mg/Kg wet								
Trichlorofluoromethane (Freon 11)	ND	0.010	mg/Kg wet								
1,2,3-Trichloropropane	ND	0.0020	mg/Kg wet								
1,2,4-Trimethylbenzene	ND	0.0020	mg/Kg wet								
1,3,5-Trimethylbenzene	ND	0.0020	mg/Kg wet								
Vinyl Chloride	ND	0.010	mg/Kg wet								
m+p Xylene	ND	0.0040	mg/Kg wet								
o-Xylene	ND	0.0020	mg/Kg wet								
Surrogate: 1,2-Dichloroethane-d4	*0.0502*		mg/Kg wet	0.0500		100	70-130				
Surrogate: Toluene-d8	*0.0493*		mg/Kg wet	0.0500		98.7	70-130				
Surrogate: 4-Bromofluorobenzene	*0.0514*		mg/Kg wet	0.0500		103	70-130				
LCS (B311146-BS1)				Prepared & Analyzed: 06/20/22							
Acetone	0.207	0.10	mg/Kg wet	0.200		104	40-160			V-35	†
tert-Amyl Methyl Ether (TAME)	0.0215	0.0010	mg/Kg wet	0.0200		107	70-130				
Benzene	0.0196	0.0020	mg/Kg wet	0.0200		97.9	70-130				
Bromobenzene	0.0194	0.0020	mg/Kg wet	0.0200		97.2	70-130				
Bromochloromethane	0.0215	0.0020	mg/Kg wet	0.0200		108	70-130				
Bromodichloromethane	0.0225	0.0020	mg/Kg wet	0.0200		112	70-130				
Bromoform	0.0210	0.0020	mg/Kg wet	0.0200		105	70-130				
Bromomethane	0.0197	0.010	mg/Kg wet	0.0200		98.7	40-160				†
2-Butanone (MEK)	0.211	0.040	mg/Kg wet	0.200		106	40-160				†
n-Butylbenzene	0.0191	0.0020	mg/Kg wet	0.0200		95.6	70-130				
sec-Butylbenzene	0.0192	0.0020	mg/Kg wet	0.0200		95.9	70-130				
tert-Butylbenzene	0.0193	0.0020	mg/Kg wet	0.0200		96.7	70-130				
tert-Butyl Ethyl Ether (TBEE)	0.0221	0.0010	mg/Kg wet	0.0200		110	70-130				
Carbon Disulfide	0.212	0.010	mg/Kg wet	0.200		106	70-130				
Carbon Tetrachloride	0.0216	0.0020	mg/Kg wet	0.0200		108	70-130				
Chlorobenzene	0.0200	0.0020	mg/Kg wet	0.0200		100	70-130				
Chlorodibromomethane	0.0225	0.0010	mg/Kg wet	0.0200		112	70-130				
Chloroethane	0.0205	0.020	mg/Kg wet	0.0200		102	70-130				
Chloroform	0.0216	0.0040	mg/Kg wet	0.0200		108	70-130				
Chloromethane	0.0196	0.010	mg/Kg wet	0.0200		98.1	40-160				†
2-Chlorotoluene	0.0199	0.0020	mg/Kg wet	0.0200		99.4	70-130				
4-Chlorotoluene	0.0199	0.0020	mg/Kg wet	0.0200		99.4	70-130				
1,2-Dibromo-3-chloropropane (DBCP)	0.0209	0.0020	mg/Kg wet	0.0200		104	70-130				
1,2-Dibromoethane (EDB)	0.0215	0.0010	mg/Kg wet	0.0200		108	70-130				
Dibromomethane	0.0224	0.0020	mg/Kg wet	0.0200		112	70-130				
1,2-Dichlorobenzene	0.0189	0.0020	mg/Kg wet	0.0200		94.7	70-130				
1,3-Dichlorobenzene	0.0189	0.0020	mg/Kg wet	0.0200		94.7	70-130				
1,4-Dichlorobenzene	0.0187	0.0020	mg/Kg wet	0.0200		93.7	70-130				

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311146 - SW-846 5035										
LCS (B311146-BS1)				Prepared & Analyzed: 06/20/22						
Dichlorodifluoromethane (Freon 12)	0.0167	0.020	mg/Kg wet	0.0200		83.4	40-160			†
1,1-Dichloroethane	0.0208	0.0020	mg/Kg wet	0.0200		104	70-130			
1,2-Dichloroethane	0.0230	0.0020	mg/Kg wet	0.0200		115	70-130			
1,1-Dichloroethylene	0.0206	0.0040	mg/Kg wet	0.0200		103	70-130			
cis-1,2-Dichloroethylene	0.0215	0.0020	mg/Kg wet	0.0200		108	70-130			
trans-1,2-Dichloroethylene	0.0221	0.0020	mg/Kg wet	0.0200		111	70-130			
1,2-Dichloropropane	0.0212	0.0020	mg/Kg wet	0.0200		106	70-130			
1,3-Dichloropropane	0.0218	0.0010	mg/Kg wet	0.0200		109	70-130			
2,2-Dichloropropane	0.0211	0.0020	mg/Kg wet	0.0200		106	70-130			
1,1-Dichloropropene	0.0191	0.0020	mg/Kg wet	0.0200		95.4	70-130			
cis-1,3-Dichloropropene	0.0221	0.0010	mg/Kg wet	0.0200		111	70-130			
trans-1,3-Dichloropropene	0.0233	0.0010	mg/Kg wet	0.0200		117	70-130			
Diethyl Ether	0.0204	0.020	mg/Kg wet	0.0200		102	70-130			
Diisopropyl Ether (DIPE)	0.0225	0.0010	mg/Kg wet	0.0200		113	70-130			
1,4-Dioxane	0.225	0.10	mg/Kg wet	0.200		112	40-160			†
Ethylbenzene	0.0201	0.0020	mg/Kg wet	0.0200		101	70-130			
Hexachlorobutadiene	0.0183	0.0020	mg/Kg wet	0.0200		91.6	70-130			
2-Hexanone (MBK)	0.228	0.020	mg/Kg wet	0.200		114	40-160			†
Isopropylbenzene (Cumene)	0.0201	0.0020	mg/Kg wet	0.0200		100	70-130			
p-Isopropyltoluene (p-Cymene)	0.0195	0.0020	mg/Kg wet	0.0200		97.7	70-130			
Methyl tert-Butyl Ether (MTBE)	0.0226	0.0040	mg/Kg wet	0.0200		113	70-130			
Methylene Chloride	0.0219	0.020	mg/Kg wet	0.0200		110	70-130			
4-Methyl-2-pentanone (MIBK)	0.230	0.020	mg/Kg wet	0.200		115	40-160			†
Naphthalene	0.0173	0.0040	mg/Kg wet	0.0200		86.3	70-130			
n-Propylbenzene	0.0200	0.0020	mg/Kg wet	0.0200		99.9	70-130			
Styrene	0.0204	0.0020	mg/Kg wet	0.0200		102	70-130			
1,1,1,2-Tetrachloroethane	0.0220	0.0020	mg/Kg wet	0.0200		110	70-130			
1,1,2,2-Tetrachloroethane	0.0194	0.0010	mg/Kg wet	0.0200		96.8	70-130			
Tetrachloroethylene	0.0213	0.0020	mg/Kg wet	0.0200		107	70-130			
Tetrahydrofuran	0.0231	0.010	mg/Kg wet	0.0200		116	70-130			
Toluene	0.0212	0.0020	mg/Kg wet	0.0200		106	70-130			
1,2,3-Trichlorobenzene	0.0194	0.0020	mg/Kg wet	0.0200		97.2	70-130			
1,2,4-Trichlorobenzene	0.0192	0.0020	mg/Kg wet	0.0200		95.9	70-130			
1,1,1-Trichloroethane	0.0211	0.0020	mg/Kg wet	0.0200		105	70-130			
1,1,2-Trichloroethane	0.0224	0.0020	mg/Kg wet	0.0200		112	70-130			
Trichloroethylene	0.0203	0.0020	mg/Kg wet	0.0200		102	70-130			
Trichlorofluoromethane (Freon 11)	0.0199	0.010	mg/Kg wet	0.0200		99.7	70-130			
1,2,3-Trichloropropane	0.0227	0.0020	mg/Kg wet	0.0200		114	70-130			
1,2,4-Trimethylbenzene	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130			
1,3,5-Trimethylbenzene	0.0200	0.0020	mg/Kg wet	0.0200		99.9	70-130			
Vinyl Chloride	0.0185	0.010	mg/Kg wet	0.0200		92.3	70-130			
m+p Xylene	0.0409	0.0040	mg/Kg wet	0.0400		102	70-130			
o-Xylene	0.0197	0.0020	mg/Kg wet	0.0200		98.6	70-130			
Surrogate: 1,2-Dichloroethane-d4	*0.0490*		mg/Kg wet	0.0500		97.9	70-130			
Surrogate: Toluene-d8	*0.0504*		mg/Kg wet	0.0500		101	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0516*		mg/Kg wet	0.0500		103	70-130			

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B311146 - SW-846 5035											
LCS Dup (B311146-BSD1)				Prepared & Analyzed: 06/20/22							
Acetone	0.211	0.10	mg/Kg wet	0.200		105	40-160	1.49	20	V-35	†
tert-Amyl Methyl Ether (TAME)	0.0213	0.0010	mg/Kg wet	0.0200		106	70-130	0.936	20		
Benzene	0.0196	0.0020	mg/Kg wet	0.0200		98.1	70-130	0.204	20		
Bromobenzene	0.0196	0.0020	mg/Kg wet	0.0200		97.9	70-130	0.718	20		
Bromochloromethane	0.0219	0.0020	mg/Kg wet	0.0200		110	70-130	1.75	20		
Bromodichloromethane	0.0225	0.0020	mg/Kg wet	0.0200		112	70-130	0.0890	20		
Bromoform	0.0206	0.0020	mg/Kg wet	0.0200		103	70-130	1.73	20		
Bromomethane	0.0202	0.010	mg/Kg wet	0.0200		101	40-160	2.50	20		†
2-Butanone (MEK)	0.218	0.040	mg/Kg wet	0.200		109	40-160	3.03	20		†
n-Butylbenzene	0.0186	0.0020	mg/Kg wet	0.0200		93.2	70-130	2.54	20		
sec-Butylbenzene	0.0184	0.0020	mg/Kg wet	0.0200		92.2	70-130	3.93	20		
tert-Butylbenzene	0.0189	0.0020	mg/Kg wet	0.0200		94.6	70-130	2.20	20		
tert-Butyl Ethyl Ether (TBEE)	0.0222	0.0010	mg/Kg wet	0.0200		111	70-130	0.631	20		
Carbon Disulfide	0.209	0.010	mg/Kg wet	0.200		105	70-130	1.37	20		
Carbon Tetrachloride	0.0208	0.0020	mg/Kg wet	0.0200		104	70-130	4.05	20		
Chlorobenzene	0.0196	0.0020	mg/Kg wet	0.0200		98.0	70-130	2.02	20		
Chlorodibromomethane	0.0235	0.0010	mg/Kg wet	0.0200		117	70-130	4.27	20		
Chloroethane	0.0207	0.020	mg/Kg wet	0.0200		103	70-130	0.777	20		
Chloroform	0.0217	0.0040	mg/Kg wet	0.0200		109	70-130	0.369	20		
Chloromethane	0.0189	0.010	mg/Kg wet	0.0200		94.4	40-160	3.84	20		†
2-Chlorotoluene	0.0195	0.0020	mg/Kg wet	0.0200		97.7	70-130	1.73	20		
4-Chlorotoluene	0.0195	0.0020	mg/Kg wet	0.0200		97.5	70-130	1.93	20		
1,2-Dibromo-3-chloropropane (DBCP)	0.0192	0.0020	mg/Kg wet	0.0200		96.1	70-130	8.18	20		
1,2-Dibromoethane (EDB)	0.0225	0.0010	mg/Kg wet	0.0200		113	70-130	4.54	20		
Dibromomethane	0.0230	0.0020	mg/Kg wet	0.0200		115	70-130	2.56	20		
1,2-Dichlorobenzene	0.0195	0.0020	mg/Kg wet	0.0200		97.5	70-130	2.91	20		
1,3-Dichlorobenzene	0.0189	0.0020	mg/Kg wet	0.0200		94.5	70-130	0.211	20		
1,4-Dichlorobenzene	0.0183	0.0020	mg/Kg wet	0.0200		91.7	70-130	2.16	20		
Dichlorodifluoromethane (Freon 12)	0.0165	0.020	mg/Kg wet	0.0200		82.6	40-160	0.964	20		†
1,1-Dichloroethane	0.0210	0.0020	mg/Kg wet	0.0200		105	70-130	0.670	20		
1,2-Dichloroethane	0.0226	0.0020	mg/Kg wet	0.0200		113	70-130	2.02	20		
1,1-Dichloroethylene	0.0206	0.0040	mg/Kg wet	0.0200		103	70-130	0.0970	20		
cis-1,2-Dichloroethylene	0.0215	0.0020	mg/Kg wet	0.0200		108	70-130	0.00	20		
trans-1,2-Dichloroethylene	0.0206	0.0020	mg/Kg wet	0.0200		103	70-130	7.31	20		
1,2-Dichloropropane	0.0207	0.0020	mg/Kg wet	0.0200		103	70-130	2.29	20		
1,3-Dichloropropane	0.0221	0.0010	mg/Kg wet	0.0200		110	70-130	1.00	20		
2,2-Dichloropropane	0.0212	0.0020	mg/Kg wet	0.0200		106	70-130	0.567	20		
1,1-Dichloropropene	0.0196	0.0020	mg/Kg wet	0.0200		98.2	70-130	2.89	20		
cis-1,3-Dichloropropene	0.0220	0.0010	mg/Kg wet	0.0200		110	70-130	0.726	20		
trans-1,3-Dichloropropene	0.0230	0.0010	mg/Kg wet	0.0200		115	70-130	1.21	20		
Diethyl Ether	0.0217	0.020	mg/Kg wet	0.0200		109	70-130	6.27	20		
Diisopropyl Ether (DIPE)	0.0224	0.0010	mg/Kg wet	0.0200		112	70-130	0.624	20		
1,4-Dioxane	0.236	0.10	mg/Kg wet	0.200		118	40-160	4.83	20		†
Ethylbenzene	0.0197	0.0020	mg/Kg wet	0.0200		98.6	70-130	2.01	20		
Hexachlorobutadiene	0.0180	0.0020	mg/Kg wet	0.0200		90.1	70-130	1.65	20		
2-Hexanone (MBK)	0.233	0.020	mg/Kg wet	0.200		116	40-160	2.18	20		†
Isopropylbenzene (Cumene)	0.0191	0.0020	mg/Kg wet	0.0200		95.4	70-130	5.21	20		
p-Isopropyltoluene (p-Cymene)	0.0190	0.0020	mg/Kg wet	0.0200		95.2	70-130	2.59	20		
Methyl tert-Butyl Ether (MTBE)	0.0215	0.0040	mg/Kg wet	0.0200		107	70-130	4.99	20		
Methylene Chloride	0.0218	0.020	mg/Kg wet	0.0200		109	70-130	0.549	20		
4-Methyl-2-pentanone (MIBK)	0.233	0.020	mg/Kg wet	0.200		117	40-160	1.40	20		†
Naphthalene	0.0172	0.0040	mg/Kg wet	0.0200		85.9	70-130	0.465	20		

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QUALITY CONTROL

Volatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311146 - SW-846 5035										
LCS Dup (B311146-BSD1)				Prepared & Analyzed: 06/20/22						
n-Propylbenzene	0.0194	0.0020	mg/Kg wet	0.0200		97.1	70-130	2.84	20	
Styrene	0.0206	0.0020	mg/Kg wet	0.0200		103	70-130	1.17	20	
1,1,1,2-Tetrachloroethane	0.0213	0.0020	mg/Kg wet	0.0200		107	70-130	3.23	20	
1,1,2,2-Tetrachloroethane	0.0198	0.0010	mg/Kg wet	0.0200		99.0	70-130	2.25	20	
Tetrachloroethylene	0.0215	0.0020	mg/Kg wet	0.0200		108	70-130	0.747	20	
Tetrahydrofuran	0.0220	0.010	mg/Kg wet	0.0200		110	70-130	5.06	20	
Toluene	0.0209	0.0020	mg/Kg wet	0.0200		105	70-130	1.23	20	
1,2,3-Trichlorobenzene	0.0192	0.0020	mg/Kg wet	0.0200		95.9	70-130	1.35	20	
1,2,4-Trichlorobenzene	0.0192	0.0020	mg/Kg wet	0.0200		95.9	70-130	0.00	20	
1,1,1-Trichloroethane	0.0210	0.0020	mg/Kg wet	0.0200		105	70-130	0.285	20	
1,1,2-Trichloroethane	0.0221	0.0020	mg/Kg wet	0.0200		110	70-130	1.53	20	
Trichloroethylene	0.0203	0.0020	mg/Kg wet	0.0200		102	70-130	0.00	20	
Trichlorofluoromethane (Freon 11)	0.0199	0.010	mg/Kg wet	0.0200		99.6	70-130	0.100	20	
1,2,3-Trichloropropane	0.0221	0.0020	mg/Kg wet	0.0200		111	70-130	2.76	20	
1,2,4-Trimethylbenzene	0.0197	0.0020	mg/Kg wet	0.0200		98.3	70-130	2.91	20	
1,3,5-Trimethylbenzene	0.0199	0.0020	mg/Kg wet	0.0200		99.3	70-130	0.602	20	
Vinyl Chloride	0.0190	0.010	mg/Kg wet	0.0200		95.2	70-130	3.09	20	
m+p Xylene	0.0403	0.0040	mg/Kg wet	0.0400		101	70-130	1.43	20	
o-Xylene	0.0202	0.0020	mg/Kg wet	0.0200		101	70-130	2.50	20	
Surrogate: 1,2-Dichloroethane-d4	*0.0502*		mg/Kg wet	0.0500		100	70-130			
Surrogate: Toluene-d8	*0.0499*		mg/Kg wet	0.0500		99.9	70-130			
Surrogate: 4-Bromofluorobenzene	*0.0516*		mg/Kg wet	0.0500		103	70-130			

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311335 - SW-846 3546										
Blank (B311335-BLK1)				Prepared: 06/22/22 Analyzed: 06/23/22						
Biphenyl	ND	0.67	mg/Kg wet							
Acenaphthene	ND	0.17	mg/Kg wet							
Acenaphthylene	ND	0.17	mg/Kg wet							
Acetophenone	ND	0.34	mg/Kg wet							
Aniline	ND	0.34	mg/Kg wet							V-05
Anthracene	ND	0.17	mg/Kg wet							
Benzo(a)anthracene	ND	0.17	mg/Kg wet							
Benzo(a)pyrene	ND	0.17	mg/Kg wet							
Benzo(b)fluoranthene	ND	0.17	mg/Kg wet							
Benzo(g,h,i)perylene	ND	0.17	mg/Kg wet							
Benzo(k)fluoranthene	ND	0.17	mg/Kg wet							
Bis(2-chloroethoxy)methane	ND	0.34	mg/Kg wet							
Bis(2-chloroethyl)ether	ND	0.34	mg/Kg wet							V-05
Bis(2-chloroisopropyl)ether	ND	0.34	mg/Kg wet							V-05
Bis(2-Ethylhexyl)phthalate	ND	0.34	mg/Kg wet							
4-Bromophenylphenylether	ND	0.34	mg/Kg wet							
Butylbenzylphthalate	ND	0.34	mg/Kg wet							
4-Chloroaniline	ND	0.66	mg/Kg wet							V-34
2-Chloronaphthalene	ND	0.34	mg/Kg wet							
2-Chlorophenol	ND	0.34	mg/Kg wet							
Chrysene	ND	0.17	mg/Kg wet							
Dibenz(a,h)anthracene	ND	0.17	mg/Kg wet							
Dibenzofuran	ND	0.34	mg/Kg wet							
Di-n-butylphthalate	ND	0.34	mg/Kg wet							
1,2-Dichlorobenzene	ND	0.34	mg/Kg wet							
1,3-Dichlorobenzene	ND	0.34	mg/Kg wet							
1,4-Dichlorobenzene	ND	0.34	mg/Kg wet							
3,3-Dichlorobenzidine	ND	0.17	mg/Kg wet							
2,4-Dichlorophenol	ND	0.34	mg/Kg wet							
Diethylphthalate	ND	0.34	mg/Kg wet							
2,4-Dimethylphenol	ND	0.34	mg/Kg wet							
Dimethylphthalate	ND	0.34	mg/Kg wet							
2,4-Dinitrophenol	ND	0.66	mg/Kg wet							
2,4-Dinitrotoluene	ND	0.34	mg/Kg wet							
2,6-Dinitrotoluene	ND	0.34	mg/Kg wet							
Di-n-octylphthalate	ND	0.34	mg/Kg wet							
1,2-Diphenylhydrazine/Azobenzene	ND	0.34	mg/Kg wet							
Fluoranthene	ND	0.17	mg/Kg wet							
Fluorene	ND	0.17	mg/Kg wet							
Hexachlorobenzene	ND	0.34	mg/Kg wet							
Hexachlorobutadiene	ND	0.34	mg/Kg wet							
Hexachloroethane	ND	0.34	mg/Kg wet							
Indeno(1,2,3-cd)pyrene	ND	0.17	mg/Kg wet							
Isophorone	ND	0.34	mg/Kg wet							
2-Methylnaphthalene	ND	0.17	mg/Kg wet							
2-Methylphenol	ND	0.34	mg/Kg wet							
3/4-Methylphenol	ND	0.34	mg/Kg wet							
Naphthalene	ND	0.17	mg/Kg wet							
Nitrobenzene	ND	0.34	mg/Kg wet							
2-Nitrophenol	ND	0.34	mg/Kg wet							
4-Nitrophenol	ND	0.66	mg/Kg wet							
Pentachlorophenol	ND	0.34	mg/Kg wet							V-05

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B311335 - SW-846 3546											
Blank (B311335-BLK1)				Prepared: 06/22/22 Analyzed: 06/23/22							
Phenanthrene	ND	0.17	mg/Kg wet								
Phenol	ND	0.34	mg/Kg wet								
Pyrene	ND	0.17	mg/Kg wet								
Pyridine	ND	0.34	mg/Kg wet							V-05	
1,2,4-Trichlorobenzene	ND	0.34	mg/Kg wet								
2,4,5-Trichlorophenol	ND	0.34	mg/Kg wet								
2,4,6-Trichlorophenol	ND	0.34	mg/Kg wet								
Surrogate: 2-Fluorophenol	*4.40*		mg/Kg wet	6.62		66.4	30-130				
Surrogate: Phenol-d6	*4.25*		mg/Kg wet	6.62		64.2	30-130				
Surrogate: Nitrobenzene-d5	*2.86*		mg/Kg wet	3.31		86.3	30-130				
Surrogate: 2-Fluorobiphenyl	*2.49*		mg/Kg wet	3.31		75.1	30-130				
Surrogate: 2,4,6-Tribromophenol	*4.99*		mg/Kg wet	6.62		75.4	30-130				
Surrogate: p-Terphenyl-d14	*3.24*		mg/Kg wet	3.31		97.9	30-130				
LCS (B311335-BS1)				Prepared: 06/22/22 Analyzed: 06/23/22							
Biphenyl	1.25	0.67	mg/Kg wet	1.66		75.1	40-140				
Acenaphthene	1.13	0.17	mg/Kg wet	1.66		68.0	40-140				
Acenaphthylene	1.25	0.17	mg/Kg wet	1.66		75.2	40-140				
Acetophenone	1.04	0.34	mg/Kg wet	1.66		62.7	40-140				
Aniline	0.923	0.34	mg/Kg wet	1.66		55.6	40-140			V-05	
Anthracene	1.30	0.17	mg/Kg wet	1.66		78.5	40-140				
Benzo(a)anthracene	1.36	0.17	mg/Kg wet	1.66		81.8	40-140				
Benzo(a)pyrene	1.33	0.17	mg/Kg wet	1.66		79.9	40-140				
Benzo(b)fluoranthene	1.38	0.17	mg/Kg wet	1.66		83.1	40-140				
Benzo(g,h,i)perylene	1.13	0.17	mg/Kg wet	1.66		67.8	40-140				
Benzo(k)fluoranthene	1.47	0.17	mg/Kg wet	1.66		88.4	40-140				
Bis(2-chloroethoxy)methane	1.08	0.34	mg/Kg wet	1.66		65.0	40-140				
Bis(2-chloroethyl)ether	0.950	0.34	mg/Kg wet	1.66		57.2	40-140			V-05	
Bis(2-chloroisopropyl)ether	1.03	0.34	mg/Kg wet	1.66		61.9	40-140			V-05	
Bis(2-Ethylhexyl)phthalate	1.51	0.34	mg/Kg wet	1.66		91.1	40-140				
4-Bromophenylphenylether	1.40	0.34	mg/Kg wet	1.66		84.3	40-140				
Butylbenzylphthalate	1.44	0.34	mg/Kg wet	1.66		86.9	40-140				
4-Chloroaniline	0.723	0.66	mg/Kg wet	1.66		43.5	15-140			V-34	†
2-Chloronaphthalene	1.15	0.34	mg/Kg wet	1.66		69.1	40-140				
2-Chlorophenol	1.09	0.34	mg/Kg wet	1.66		65.8	30-130				
Chrysene	1.26	0.17	mg/Kg wet	1.66		75.8	40-140				
Dibenz(a,h)anthracene	1.16	0.17	mg/Kg wet	1.66		70.1	40-140				
Dibenzofuran	1.30	0.34	mg/Kg wet	1.66		78.5	40-140				
Di-n-butylphthalate	1.34	0.34	mg/Kg wet	1.66		80.9	40-140				
1,2-Dichlorobenzene	1.01	0.34	mg/Kg wet	1.66		60.8	40-140				
1,3-Dichlorobenzene	0.953	0.34	mg/Kg wet	1.66		57.4	40-140				
1,4-Dichlorobenzene	0.996	0.34	mg/Kg wet	1.66		59.9	40-140				
3,3-Dichlorobenzidine	1.06	0.17	mg/Kg wet	1.66		63.5	40-140				
2,4-Dichlorophenol	1.26	0.34	mg/Kg wet	1.66		75.9	30-130				
Diethylphthalate	1.35	0.34	mg/Kg wet	1.66		81.4	40-140				
2,4-Dimethylphenol	1.11	0.34	mg/Kg wet	1.66		66.9	30-130				
Dimethylphthalate	1.38	0.34	mg/Kg wet	1.66		83.1	40-140				
2,4-Dinitrophenol	1.08	0.66	mg/Kg wet	1.66		65.1	15-140				†
2,4-Dinitrotoluene	1.43	0.34	mg/Kg wet	1.66		85.9	40-140				
2,6-Dinitrotoluene	1.48	0.34	mg/Kg wet	1.66		89.0	40-140				
Di-n-octylphthalate	1.59	0.34	mg/Kg wet	1.66		95.5	40-140				
1,2-Diphenylhydrazine/Azobenzene	1.14	0.34	mg/Kg wet	1.66		68.6	40-140				

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B311335 - SW-846 3546											
LCS (B311335-BS1)				Prepared: 06/22/22 Analyzed: 06/23/22							
Fluoranthene	1.27	0.17	mg/Kg wet	1.66		76.2	40-140				
Fluorene	1.25	0.17	mg/Kg wet	1.66		75.5	40-140				
Hexachlorobenzene	1.37	0.34	mg/Kg wet	1.66		82.7	40-140				
Hexachlorobutadiene	1.14	0.34	mg/Kg wet	1.66		68.9	40-140				
Hexachloroethane	0.942	0.34	mg/Kg wet	1.66		56.7	40-140				
Indeno(1,2,3-cd)pyrene	1.27	0.17	mg/Kg wet	1.66		76.6	40-140				
Isophorone	1.12	0.34	mg/Kg wet	1.66		67.4	40-140				
2-Methylnaphthalene	1.21	0.17	mg/Kg wet	1.66		73.1	40-140				
2-Methylphenol	1.12	0.34	mg/Kg wet	1.66		67.2	30-130				
3/4-Methylphenol	1.14	0.34	mg/Kg wet	1.66		68.3	30-130				
Naphthalene	1.13	0.17	mg/Kg wet	1.66		68.2	40-140				
Nitrobenzene	1.06	0.34	mg/Kg wet	1.66		64.0	40-140				
2-Nitrophenol	1.26	0.34	mg/Kg wet	1.66		75.6	30-130				
4-Nitrophenol	1.45	0.66	mg/Kg wet	1.66		87.2	15-140				†
Pentachlorophenol	0.963	0.34	mg/Kg wet	1.66		58.0	30-130			V-05	
Phenanthrene	1.29	0.17	mg/Kg wet	1.66		77.9	40-140				
Phenol	1.09	0.34	mg/Kg wet	1.66		65.8	15-140				†
Pyrene	1.39	0.17	mg/Kg wet	1.66		83.9	40-140				
Pyridine	0.588	0.34	mg/Kg wet	1.66		35.4	30-140			V-05	†
1,2,4-Trichlorobenzene	1.11	0.34	mg/Kg wet	1.66		66.7	40-140				
2,4,5-Trichlorophenol	1.40	0.34	mg/Kg wet	1.66		84.0	30-130				
2,4,6-Trichlorophenol	1.39	0.34	mg/Kg wet	1.66		83.7	30-130				
Surrogate: 2-Fluorophenol	*4.59*		mg/Kg wet	6.64		69.0	30-130				
Surrogate: Phenol-d6	*4.63*		mg/Kg wet	6.64		69.7	30-130				
Surrogate: Nitrobenzene-d5	*3.05*		mg/Kg wet	3.32		91.7	30-130				
Surrogate: 2-Fluorobiphenyl	*2.92*		mg/Kg wet	3.32		87.8	30-130				
Surrogate: 2,4,6-Tribromophenol	*5.63*		mg/Kg wet	6.64		84.7	30-130				
Surrogate: p-Terphenyl-d14	*3.25*		mg/Kg wet	3.32		97.9	30-130				
LCS Dup (B311335-BSD1)				Prepared: 06/22/22 Analyzed: 06/23/22							
Biphenyl	1.29	0.67	mg/Kg wet	1.66		77.5	40-140	3.09	20		
Acenaphthene	1.18	0.17	mg/Kg wet	1.66		71.2	40-140	4.63	30		
Acenaphthylene	1.30	0.17	mg/Kg wet	1.66		78.2	40-140	3.96	30		
Acetophenone	1.10	0.34	mg/Kg wet	1.66		66.4	40-140	5.70	30		
Aniline	1.05	0.34	mg/Kg wet	1.66		63.0	40-140	12.5	30	V-05	
Anthracene	1.38	0.17	mg/Kg wet	1.66		83.2	40-140	5.89	30		
Benzo(a)anthracene	1.41	0.17	mg/Kg wet	1.66		84.6	40-140	3.41	30		
Benzo(a)pyrene	1.36	0.17	mg/Kg wet	1.66		82.0	40-140	2.50	30		
Benzo(b)fluoranthene	1.43	0.17	mg/Kg wet	1.66		85.9	40-140	3.31	30		
Benzo(g,h,i)perylene	1.17	0.17	mg/Kg wet	1.66		70.7	40-140	4.10	30		
Benzo(k)fluoranthene	1.50	0.17	mg/Kg wet	1.66		90.5	40-140	2.37	30		
Bis(2-chloroethoxy)methane	1.15	0.34	mg/Kg wet	1.66		69.3	40-140	6.34	30		
Bis(2-chloroethyl)ether	0.973	0.34	mg/Kg wet	1.66		58.6	40-140	2.38	30	V-05	
Bis(2-chloroisopropyl)ether	1.07	0.34	mg/Kg wet	1.66		64.4	40-140	3.96	30	V-05	
Bis(2-Ethylhexyl)phthalate	1.56	0.34	mg/Kg wet	1.66		93.8	40-140	2.99	30		
4-Bromophenylphenylether	1.44	0.34	mg/Kg wet	1.66		86.9	40-140	3.08	30		
Butylbenzylphthalate	1.51	0.34	mg/Kg wet	1.66		90.9	40-140	4.50	30		
4-Chloroaniline	0.833	0.66	mg/Kg wet	1.66		50.2	15-140	14.2	30	V-34	†
2-Chloronaphthalene	1.04	0.34	mg/Kg wet	1.66		62.8	40-140	9.55	30		
2-Chlorophenol	1.17	0.34	mg/Kg wet	1.66		70.4	30-130	6.72	30		
Chrysene	1.31	0.17	mg/Kg wet	1.66		79.0	40-140	4.06	30		
Dibenz(a,h)anthracene	1.20	0.17	mg/Kg wet	1.66		72.5	40-140	3.45	30		

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B311335 - SW-846 3546											
LCS Dup (B311335-BSD1)				Prepared: 06/22/22 Analyzed: 06/23/22							
Dibenzofuran	1.36	0.34	mg/Kg wet	1.66		81.7	40-140	4.02	30		
Di-n-butylphthalate	1.40	0.34	mg/Kg wet	1.66		84.5	40-140	4.43	30		
1,2-Dichlorobenzene	1.02	0.34	mg/Kg wet	1.66		61.7	40-140	1.44	30		
1,3-Dichlorobenzene	0.996	0.34	mg/Kg wet	1.66		60.0	40-140	4.36	30		
1,4-Dichlorobenzene	0.998	0.34	mg/Kg wet	1.66		60.1	40-140	0.233	30		
3,3-Dichlorobenzidine	1.23	0.17	mg/Kg wet	1.66		74.1	40-140	15.3	30		
2,4-Dichlorophenol	1.36	0.34	mg/Kg wet	1.66		81.7	30-130	7.41	30		
Diethylphthalate	1.40	0.34	mg/Kg wet	1.66		84.6	40-140	3.88	30		
2,4-Dimethylphenol	1.19	0.34	mg/Kg wet	1.66		71.5	30-130	6.56	30		
Dimethylphthalate	1.41	0.34	mg/Kg wet	1.66		84.8	40-140	2.05	30		
2,4-Dinitrophenol	1.08	0.66	mg/Kg wet	1.66		64.8	15-140	0.431	30		†
2,4-Dinitrotoluene	1.48	0.34	mg/Kg wet	1.66		89.2	40-140	3.75	30		
2,6-Dinitrotoluene	1.51	0.34	mg/Kg wet	1.66		91.0	40-140	2.18	30		
Di-n-octylphthalate	1.66	0.34	mg/Kg wet	1.66		100	40-140	4.62	30		
1,2-Diphenylhydrazine/Azobenzene	1.17	0.34	mg/Kg wet	1.66		70.4	40-140	2.65	30		
Fluoranthene	1.35	0.17	mg/Kg wet	1.66		81.3	40-140	6.55	30		
Fluorene	1.33	0.17	mg/Kg wet	1.66		80.3	40-140	6.11	30		
Hexachlorobenzene	1.43	0.34	mg/Kg wet	1.66		86.0	40-140	3.82	30		
Hexachlorobutadiene	1.18	0.34	mg/Kg wet	1.66		71.3	40-140	3.48	30		
Hexachloroethane	0.958	0.34	mg/Kg wet	1.66		57.7	40-140	1.75	30		
Indeno(1,2,3-cd)pyrene	1.25	0.17	mg/Kg wet	1.66		75.4	40-140	1.50	30		
Isophorone	1.19	0.34	mg/Kg wet	1.66		71.7	40-140	6.12	30		
2-Methylnaphthalene	1.33	0.17	mg/Kg wet	1.66		80.0	40-140	8.96	30		
2-Methylphenol	1.17	0.34	mg/Kg wet	1.66		70.2	30-130	4.40	30		
3/4-Methylphenol	1.23	0.34	mg/Kg wet	1.66		74.2	30-130	8.17	30		
Naphthalene	1.19	0.17	mg/Kg wet	1.66		71.5	40-140	4.76	30		
Nitrobenzene	1.13	0.34	mg/Kg wet	1.66		67.8	40-140	5.67	30		
2-Nitrophenol	1.33	0.34	mg/Kg wet	1.66		80.0	30-130	5.60	30		
4-Nitrophenol	1.57	0.66	mg/Kg wet	1.66		94.7	15-140	8.29	30		†
Pentachlorophenol	0.994	0.34	mg/Kg wet	1.66		59.8	30-130	3.12	30	V-05	
Phenanthrene	1.37	0.17	mg/Kg wet	1.66		82.6	40-140	5.91	30		
Phenol	1.17	0.34	mg/Kg wet	1.66		70.3	15-140	6.61	30		†
Pyrene	1.42	0.17	mg/Kg wet	1.66		85.7	40-140	2.17	30		
Pyridine	0.610	0.34	mg/Kg wet	1.66		36.7	30-140	3.72	30	V-05	†
1,2,4-Trichlorobenzene	1.18	0.34	mg/Kg wet	1.66		70.8	40-140	6.05	30		
2,4,5-Trichlorophenol	1.47	0.34	mg/Kg wet	1.66		88.3	30-130	4.92	30		
2,4,6-Trichlorophenol	1.43	0.34	mg/Kg wet	1.66		86.0	30-130	2.69	30		
Surrogate: 2-Fluorophenol	*4.77*		mg/Kg wet	6.64		71.7	30-130				
Surrogate: Phenol-d6	*4.88*		mg/Kg wet	6.64		73.4	30-130				
Surrogate: Nitrobenzene-d5	*3.22*		mg/Kg wet	3.32		96.8	30-130				
Surrogate: 2-Fluorobiphenyl	*2.98*		mg/Kg wet	3.32		89.6	30-130				
Surrogate: 2,4,6-Tribromophenol	*5.88*		mg/Kg wet	6.64		88.5	30-130				
Surrogate: p-Terphenyl-d14	*3.25*		mg/Kg wet	3.32		97.8	30-130				

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311736 - SW-846 3546										
Blank (B311736-BLK1)				Prepared: 06/27/22 Analyzed: 06/29/22						
Biphenyl	ND	0.67	mg/Kg wet							
Acenaphthene	ND	0.17	mg/Kg wet							
Acenaphthylene	ND	0.17	mg/Kg wet							
Acetophenone	ND	0.34	mg/Kg wet							
Aniline	ND	0.34	mg/Kg wet							
Anthracene	ND	0.17	mg/Kg wet							
Benzo(a)anthracene	ND	0.17	mg/Kg wet							
Benzo(a)pyrene	ND	0.17	mg/Kg wet							
Benzo(b)fluoranthene	ND	0.17	mg/Kg wet							
Benzo(g,h,i)perylene	ND	0.17	mg/Kg wet							
Benzo(k)fluoranthene	ND	0.17	mg/Kg wet							
Bis(2-chloroethoxy)methane	ND	0.34	mg/Kg wet							
Bis(2-chloroethyl)ether	ND	0.34	mg/Kg wet							
Bis(2-chloroisopropyl)ether	ND	0.34	mg/Kg wet							
Bis(2-Ethylhexyl)phthalate	ND	0.34	mg/Kg wet							
4-Bromophenylphenylether	ND	0.34	mg/Kg wet							
Butylbenzylphthalate	ND	0.34	mg/Kg wet							
4-Chloroaniline	ND	0.66	mg/Kg wet							V-34
2-Chloronaphthalene	ND	0.34	mg/Kg wet							
2-Chlorophenol	ND	0.34	mg/Kg wet							
Chrysene	ND	0.17	mg/Kg wet							
Dibenz(a,h)anthracene	ND	0.17	mg/Kg wet							
Dibenzofuran	ND	0.34	mg/Kg wet							
Di-n-butylphthalate	ND	0.34	mg/Kg wet							
1,2-Dichlorobenzene	ND	0.34	mg/Kg wet							
1,3-Dichlorobenzene	ND	0.34	mg/Kg wet							
1,4-Dichlorobenzene	ND	0.34	mg/Kg wet							
3,3-Dichlorobenzidine	ND	0.17	mg/Kg wet							
2,4-Dichlorophenol	ND	0.34	mg/Kg wet							
Diethylphthalate	ND	0.34	mg/Kg wet							
2,4-Dimethylphenol	ND	0.34	mg/Kg wet							
Dimethylphthalate	ND	0.34	mg/Kg wet							
2,4-Dinitrophenol	ND	0.66	mg/Kg wet							V-05
2,4-Dinitrotoluene	ND	0.34	mg/Kg wet							
2,6-Dinitrotoluene	ND	0.34	mg/Kg wet							
Di-n-octylphthalate	ND	0.34	mg/Kg wet							
1,2-Diphenylhydrazine/Azobenzene	ND	0.34	mg/Kg wet							
Fluoranthene	ND	0.17	mg/Kg wet							
Fluorene	ND	0.17	mg/Kg wet							
Hexachlorobenzene	ND	0.34	mg/Kg wet							
Hexachlorobutadiene	ND	0.34	mg/Kg wet							
Hexachloroethane	ND	0.34	mg/Kg wet							
Indeno(1,2,3-cd)pyrene	ND	0.17	mg/Kg wet							
Isophorone	ND	0.34	mg/Kg wet							
2-Methylnaphthalene	ND	0.17	mg/Kg wet							
2-Methylphenol	ND	0.34	mg/Kg wet							
3/4-Methylphenol	ND	0.34	mg/Kg wet							
Naphthalene	ND	0.17	mg/Kg wet							
Nitrobenzene	ND	0.34	mg/Kg wet							
2-Nitrophenol	ND	0.34	mg/Kg wet							
4-Nitrophenol	ND	0.66	mg/Kg wet							
Pentachlorophenol	ND	0.34	mg/Kg wet							

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B311736 - SW-846 3546											
Blank (B311736-BLK1)				Prepared: 06/27/22 Analyzed: 06/29/22							
Phenanthrene	ND	0.17	mg/Kg wet								
Phenol	ND	0.34	mg/Kg wet								
Pyrene	ND	0.17	mg/Kg wet								
Pyridine	ND	0.34	mg/Kg wet								
1,2,4-Trichlorobenzene	ND	0.34	mg/Kg wet								
2,4,5-Trichlorophenol	ND	0.34	mg/Kg wet								
2,4,6-Trichlorophenol	ND	0.34	mg/Kg wet								
Surrogate: 2-Fluorophenol	*5.15*		mg/Kg wet	6.67		77.3	30-130				
Surrogate: Phenol-d6	*5.25*		mg/Kg wet	6.67		78.8	30-130				
Surrogate: Nitrobenzene-d5	*3.63*		mg/Kg wet	3.33		109	30-130				
Surrogate: 2-Fluorobiphenyl	*2.71*		mg/Kg wet	3.33		81.4	30-130				
Surrogate: 2,4,6-Tribromophenol	*5.07*		mg/Kg wet	6.67		76.1	30-130				
Surrogate: p-Terphenyl-d14	*2.71*		mg/Kg wet	3.33		81.2	30-130				
LCS (B311736-BS1)				Prepared: 06/27/22 Analyzed: 06/29/22							
Biphenyl	1.28	0.67	mg/Kg wet	1.67		76.5	40-140				
Acenaphthene	1.20	0.17	mg/Kg wet	1.67		71.8	40-140				
Acenaphthylene	1.24	0.17	mg/Kg wet	1.67		74.4	40-140				
Acetophenone	1.23	0.34	mg/Kg wet	1.67		73.7	40-140				
Aniline	1.12	0.34	mg/Kg wet	1.67		67.1	40-140				
Anthracene	1.27	0.17	mg/Kg wet	1.67		76.2	40-140				
Benzo(a)anthracene	1.29	0.17	mg/Kg wet	1.67		77.6	40-140				
Benzo(a)pyrene	1.21	0.17	mg/Kg wet	1.67		72.9	40-140				
Benzo(b)fluoranthene	1.27	0.17	mg/Kg wet	1.67		76.4	40-140				
Benzo(g,h,i)perylene	1.25	0.17	mg/Kg wet	1.67		74.8	40-140				
Benzo(k)fluoranthene	1.31	0.17	mg/Kg wet	1.67		78.8	40-140				
Bis(2-chloroethoxy)methane	1.28	0.34	mg/Kg wet	1.67		76.9	40-140				
Bis(2-chloroethyl)ether	1.23	0.34	mg/Kg wet	1.67		73.6	40-140				
Bis(2-chloroisopropyl)ether	1.35	0.34	mg/Kg wet	1.67		81.0	40-140				
Bis(2-Ethylhexyl)phthalate	1.33	0.34	mg/Kg wet	1.67		79.8	40-140				
4-Bromophenylphenylether	1.27	0.34	mg/Kg wet	1.67		76.3	40-140				
Butylbenzylphthalate	1.39	0.34	mg/Kg wet	1.67		83.5	40-140				
4-Chloroaniline	0.978	0.66	mg/Kg wet	1.67		58.7	15-140			V-34	†
2-Chloronaphthalene	1.16	0.34	mg/Kg wet	1.67		69.4	40-140				
2-Chlorophenol	1.19	0.34	mg/Kg wet	1.67		71.3	30-130				
Chrysene	1.24	0.17	mg/Kg wet	1.67		74.2	40-140				
Dibenz(a,h)anthracene	1.31	0.17	mg/Kg wet	1.67		78.4	40-140				
Dibenzofuran	1.27	0.34	mg/Kg wet	1.67		76.5	40-140				
Di-n-butylphthalate	1.31	0.34	mg/Kg wet	1.67		78.7	40-140				
1,2-Dichlorobenzene	1.10	0.34	mg/Kg wet	1.67		66.1	40-140				
1,3-Dichlorobenzene	1.09	0.34	mg/Kg wet	1.67		65.6	40-140				
1,4-Dichlorobenzene	1.08	0.34	mg/Kg wet	1.67		64.6	40-140				
3,3-Dichlorobenzidine	1.16	0.17	mg/Kg wet	1.67		69.7	40-140				
2,4-Dichlorophenol	1.28	0.34	mg/Kg wet	1.67		76.9	30-130				
Diethylphthalate	1.32	0.34	mg/Kg wet	1.67		78.9	40-140				
2,4-Dimethylphenol	1.34	0.34	mg/Kg wet	1.67		80.1	30-130				
Dimethylphthalate	1.32	0.34	mg/Kg wet	1.67		79.3	40-140				
2,4-Dinitrophenol	1.05	0.66	mg/Kg wet	1.67		62.9	15-140			V-05	†
2,4-Dinitrotoluene	1.30	0.34	mg/Kg wet	1.67		78.3	40-140				
2,6-Dinitrotoluene	1.35	0.34	mg/Kg wet	1.67		80.9	40-140				
Di-n-octylphthalate	1.28	0.34	mg/Kg wet	1.67		76.7	40-140				
1,2-Diphenylhydrazine/Azobenzene	1.38	0.34	mg/Kg wet	1.67		82.7	40-140				

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B311736 - SW-846 3546											
LCS (B311736-BS1)				Prepared: 06/27/22 Analyzed: 06/29/22							
Fluoranthene	1.28	0.17	mg/Kg wet	1.67		76.5	40-140				
Fluorene	1.29	0.17	mg/Kg wet	1.67		77.1	40-140				
Hexachlorobenzene	1.24	0.34	mg/Kg wet	1.67		74.4	40-140				
Hexachlorobutadiene	1.16	0.34	mg/Kg wet	1.67		69.3	40-140				
Hexachloroethane	1.15	0.34	mg/Kg wet	1.67		69.3	40-140				
Indeno(1,2,3-cd)pyrene	1.24	0.17	mg/Kg wet	1.67		74.1	40-140				
Isophorone	1.32	0.34	mg/Kg wet	1.67		79.4	40-140				
2-Methylnaphthalene	1.27	0.17	mg/Kg wet	1.67		76.1	40-140				
2-Methylphenol	1.26	0.34	mg/Kg wet	1.67		75.8	30-130				
3/4-Methylphenol	1.23	0.34	mg/Kg wet	1.67		73.8	30-130				
Naphthalene	1.20	0.17	mg/Kg wet	1.67		71.7	40-140				
Nitrobenzene	1.24	0.34	mg/Kg wet	1.67		74.4	40-140				
2-Nitrophenol	1.22	0.34	mg/Kg wet	1.67		73.1	30-130				
4-Nitrophenol	1.63	0.66	mg/Kg wet	1.67		97.6	15-140				†
Pentachlorophenol	1.09	0.34	mg/Kg wet	1.67		65.5	30-130				
Phenanthrene	1.28	0.17	mg/Kg wet	1.67		76.7	40-140				
Phenol	1.36	0.34	mg/Kg wet	1.67		81.6	15-140				†
Pyrene	1.26	0.17	mg/Kg wet	1.67		75.8	40-140				
Pyridine	0.887	0.34	mg/Kg wet	1.67		53.2	30-140				†
1,2,4-Trichlorobenzene	1.14	0.34	mg/Kg wet	1.67		68.1	40-140				
2,4,5-Trichlorophenol	1.29	0.34	mg/Kg wet	1.67		77.4	30-130				
2,4,6-Trichlorophenol	1.27	0.34	mg/Kg wet	1.67		76.0	30-130				
Surrogate: 2-Fluorophenol	*5.26*		mg/Kg wet	6.67		79.0	30-130				
Surrogate: Phenol-d6	*5.39*		mg/Kg wet	6.67		80.8	30-130				
Surrogate: Nitrobenzene-d5	*3.68*		mg/Kg wet	3.33		110	30-130				
Surrogate: 2-Fluorobiphenyl	*2.82*		mg/Kg wet	3.33		84.6	30-130				
Surrogate: 2,4,6-Tribromophenol	*5.34*		mg/Kg wet	6.67		80.2	30-130				
Surrogate: p-Terphenyl-d14	*2.73*		mg/Kg wet	3.33		81.8	30-130				
LCS Dup (B311736-BSD1)				Prepared: 06/27/22 Analyzed: 06/29/22							
Biphenyl	1.25	0.67	mg/Kg wet	1.67		75.1	40-140	1.87	20		
Acenaphthene	1.15	0.17	mg/Kg wet	1.67		68.8	40-140	4.26	30		
Acenaphthylene	1.20	0.17	mg/Kg wet	1.67		71.9	40-140	3.42	30		
Acetophenone	1.23	0.34	mg/Kg wet	1.67		73.8	40-140	0.0814	30		
Aniline	1.10	0.34	mg/Kg wet	1.67		66.1	40-140	1.50	30		
Anthracene	1.26	0.17	mg/Kg wet	1.67		75.9	40-140	0.447	30		
Benzo(a)anthracene	1.29	0.17	mg/Kg wet	1.67		77.4	40-140	0.155	30		
Benzo(a)pyrene	1.21	0.17	mg/Kg wet	1.67		72.6	40-140	0.357	30		
Benzo(b)fluoranthene	1.28	0.17	mg/Kg wet	1.67		76.8	40-140	0.418	30		
Benzo(g,h,i)perylene	1.27	0.17	mg/Kg wet	1.67		76.3	40-140	2.04	30		
Benzo(k)fluoranthene	1.33	0.17	mg/Kg wet	1.67		79.6	40-140	0.985	30		
Bis(2-chloroethoxy)methane	1.29	0.34	mg/Kg wet	1.67		77.1	40-140	0.312	30		
Bis(2-chloroethyl)ether	1.23	0.34	mg/Kg wet	1.67		73.5	40-140	0.136	30		
Bis(2-chloroisopropyl)ether	1.36	0.34	mg/Kg wet	1.67		81.6	40-140	0.787	30		
Bis(2-Ethylhexyl)phthalate	1.26	0.34	mg/Kg wet	1.67		75.5	40-140	5.46	30		
4-Bromophenylphenylether	1.31	0.34	mg/Kg wet	1.67		78.5	40-140	2.84	30		
Butylbenzylphthalate	1.35	0.34	mg/Kg wet	1.67		81.0	40-140	2.99	30		
4-Chloroaniline	0.891	0.66	mg/Kg wet	1.67		53.5	15-140	9.31	30	V-34	†
2-Chloronaphthalene	1.13	0.34	mg/Kg wet	1.67		68.0	40-140	1.98	30		
2-Chlorophenol	1.23	0.34	mg/Kg wet	1.67		73.6	30-130	3.17	30		
Chrysene	1.20	0.17	mg/Kg wet	1.67		71.8	40-140	3.29	30		
Dibenz(a,h)anthracene	1.30	0.17	mg/Kg wet	1.67		77.7	40-140	0.794	30		

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes	
Batch B311736 - SW-846 3546											
LCS Dup (B311736-BSD1)				Prepared: 06/27/22 Analyzed: 06/29/22							
Dibenzofuran	1.26	0.34	mg/Kg wet	1.67		75.5	40-140	1.34	30		
Di-n-butylphthalate	1.27	0.34	mg/Kg wet	1.67		76.3	40-140	3.12	30		
1,2-Dichlorobenzene	1.13	0.34	mg/Kg wet	1.67		67.9	40-140	2.69	30		
1,3-Dichlorobenzene	1.12	0.34	mg/Kg wet	1.67		67.2	40-140	2.53	30		
1,4-Dichlorobenzene	1.15	0.34	mg/Kg wet	1.67		68.7	40-140	6.24	30		
3,3-Dichlorobenzidine	1.10	0.17	mg/Kg wet	1.67		65.8	40-140	5.76	30		
2,4-Dichlorophenol	1.26	0.34	mg/Kg wet	1.67		75.6	30-130	1.73	30		
Diethylphthalate	1.27	0.34	mg/Kg wet	1.67		76.0	40-140	3.77	30		
2,4-Dimethylphenol	1.32	0.34	mg/Kg wet	1.67		79.0	30-130	1.46	30		
Dimethylphthalate	1.28	0.34	mg/Kg wet	1.67		76.6	40-140	3.49	30		
2,4-Dinitrophenol	1.05	0.66	mg/Kg wet	1.67		63.1	15-140	0.318	30	V-05	†
2,4-Dinitrotoluene	1.22	0.34	mg/Kg wet	1.67		73.2	40-140	6.63	30		
2,6-Dinitrotoluene	1.26	0.34	mg/Kg wet	1.67		75.9	40-140	6.41	30		
Di-n-octylphthalate	1.24	0.34	mg/Kg wet	1.67		74.3	40-140	3.28	30		
1,2-Diphenylhydrazine/Azobenzene	1.36	0.34	mg/Kg wet	1.67		81.8	40-140	1.07	30		
Fluoranthene	1.28	0.17	mg/Kg wet	1.67		76.7	40-140	0.235	30		
Fluorene	1.24	0.17	mg/Kg wet	1.67		74.2	40-140	3.86	30		
Hexachlorobenzene	1.23	0.34	mg/Kg wet	1.67		73.5	40-140	1.19	30		
Hexachlorobutadiene	1.21	0.34	mg/Kg wet	1.67		72.4	40-140	4.32	30		
Hexachloroethane	1.22	0.34	mg/Kg wet	1.67		73.2	40-140	5.59	30		
Indeno(1,2,3-cd)pyrene	1.22	0.17	mg/Kg wet	1.67		73.5	40-140	0.894	30		
Isophorone	1.34	0.34	mg/Kg wet	1.67		80.2	40-140	1.00	30		
2-Methylnaphthalene	1.27	0.17	mg/Kg wet	1.67		76.4	40-140	0.367	30		
2-Methylphenol	1.25	0.34	mg/Kg wet	1.67		74.9	30-130	1.19	30		
3/4-Methylphenol	1.28	0.34	mg/Kg wet	1.67		76.8	30-130	3.88	30		
Naphthalene	1.21	0.17	mg/Kg wet	1.67		72.8	40-140	1.41	30		
Nitrobenzene	1.27	0.34	mg/Kg wet	1.67		76.4	40-140	2.60	30		
2-Nitrophenol	1.22	0.34	mg/Kg wet	1.67		73.0	30-130	0.0548	30		
4-Nitrophenol	1.55	0.66	mg/Kg wet	1.67		93.1	15-140	4.72	30		†
Pentachlorophenol	1.07	0.34	mg/Kg wet	1.67		64.4	30-130	1.63	30		
Phenanthrene	1.27	0.17	mg/Kg wet	1.67		76.1	40-140	0.733	30		
Phenol	1.35	0.34	mg/Kg wet	1.67		80.7	15-140	1.03	30		†
Pyrene	1.24	0.17	mg/Kg wet	1.67		74.2	40-140	2.05	30		
Pyridine	0.917	0.34	mg/Kg wet	1.67		55.0	30-140	3.29	30		†
1,2,4-Trichlorobenzene	1.14	0.34	mg/Kg wet	1.67		68.4	40-140	0.410	30		
2,4,5-Trichlorophenol	1.24	0.34	mg/Kg wet	1.67		74.2	30-130	4.19	30		
2,4,6-Trichlorophenol	1.26	0.34	mg/Kg wet	1.67		75.7	30-130	0.396	30		
Surrogate: 2-Fluorophenol	*5.25*		mg/Kg wet	6.67		78.8	30-130				
Surrogate: Phenol-d6	*5.49*		mg/Kg wet	6.67		82.4	30-130				
Surrogate: Nitrobenzene-d5	*3.74*		mg/Kg wet	3.33		112	30-130				
Surrogate: 2-Fluorobiphenyl	*2.79*		mg/Kg wet	3.33		83.7	30-130				
Surrogate: 2,4,6-Tribromophenol	*5.31*		mg/Kg wet	6.67		79.7	30-130				
Surrogate: p-Terphenyl-d14	*2.79*		mg/Kg wet	3.33		83.8	30-130				

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QUALITY CONTROL

Semivolatile Organic Compounds by GC/MS - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311759 - SW-846 3510C										
Blank (B311759-BLK1)				Prepared: 06/19/22 Analyzed: 06/28/22						
Benzo(a)anthracene (SIM)	ND	1.0	µg/L							
Benzo(a)pyrene (SIM)	ND	0.20	µg/L							
Benzo(b)fluoranthene (SIM)	ND	1.0	µg/L							
Benzo(k)fluoranthene (SIM)	ND	1.0	µg/L							
Chrysene (SIM)	ND	2.0	µg/L							
Dibenz(a,h)anthracene (SIM)	ND	0.50	µg/L							
Indeno(1,2,3-cd)pyrene (SIM)	ND	0.50	µg/L							
Surrogate: o-Terphenyl (OTP)	*85.4*		µg/L	100		85.4	30-130			
LCS (B311759-BS1)				Prepared: 06/19/22 Analyzed: 06/29/22						
Benzo(a)anthracene (SIM)	82.0	20	µg/L	100		82.0	40-140			
Benzo(a)pyrene (SIM)	84.1	4.0	µg/L	100		84.1	40-140			
Benzo(b)fluoranthene (SIM)	82.8	20	µg/L	100		82.8	40-140			
Benzo(k)fluoranthene (SIM)	86.1	20	µg/L	100		86.1	40-140			
Chrysene (SIM)	84.8	40	µg/L	100		84.8	40-140			
Dibenz(a,h)anthracene (SIM)	80.8	10	µg/L	100		80.8	40-140			
Indeno(1,2,3-cd)pyrene (SIM)	85.3	10	µg/L	100		85.3	40-140			
Surrogate: o-Terphenyl (OTP)	*89.0*		µg/L	100		89.0	30-130			
LCS Dup (B311759-BSD1)				Prepared: 06/19/22 Analyzed: 06/29/22						
Benzo(a)anthracene (SIM)	83.2	20	µg/L	100		83.2	40-140	1.45	20	
Benzo(a)pyrene (SIM)	86.7	4.0	µg/L	100		86.7	40-140	3.00	20	
Benzo(b)fluoranthene (SIM)	85.8	20	µg/L	100		85.8	40-140	3.51	20	
Benzo(k)fluoranthene (SIM)	89.2	20	µg/L	100		89.2	40-140	3.56	20	
Chrysene (SIM)	87.2	40	µg/L	100		87.2	40-140	2.84	20	
Dibenz(a,h)anthracene (SIM)	83.4	10	µg/L	100		83.4	40-140	3.22	20	
Indeno(1,2,3-cd)pyrene (SIM)	87.5	10	µg/L	100		87.5	40-140	2.55	20	
Surrogate: o-Terphenyl (OTP)	*87.6*		µg/L	100		87.6	30-130			

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QUALITY CONTROL

Polychlorinated Biphenyls By GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311324 - SW-846 3546										
Blank (B311324-BLK1)				Prepared: 06/22/22 Analyzed: 06/23/22						
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	*0.187*		mg/Kg wet	0.198		94.7	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.198*		mg/Kg wet	0.198		99.9	30-150			
Surrogate: Tetrachloro-m-xylene	*0.173*		mg/Kg wet	0.198		87.2	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.171*		mg/Kg wet	0.198		86.5	30-150			
LCS (B311324-BS1)				Prepared: 06/22/22 Analyzed: 06/23/22						
Aroclor-1016	0.17	0.020	mg/Kg wet	0.198		83.8	40-140			
Aroclor-1016 [2C]	0.17	0.020	mg/Kg wet	0.198		84.6	40-140			
Aroclor-1260	0.17	0.020	mg/Kg wet	0.198		86.3	40-140			
Aroclor-1260 [2C]	0.17	0.020	mg/Kg wet	0.198		87.2	40-140			
Surrogate: Decachlorobiphenyl	*0.197*		mg/Kg wet	0.198		99.5	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.207*		mg/Kg wet	0.198		104	30-150			
Surrogate: Tetrachloro-m-xylene	*0.178*		mg/Kg wet	0.198		90.0	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.177*		mg/Kg wet	0.198		89.2	30-150			
LCS Dup (B311324-BSD1)				Prepared: 06/22/22 Analyzed: 06/23/22						
Aroclor-1016	0.17	0.020	mg/Kg wet	0.200		86.9	40-140	3.66	30	
Aroclor-1016 [2C]	0.17	0.020	mg/Kg wet	0.200		87.0	40-140	2.84	30	
Aroclor-1260	0.17	0.020	mg/Kg wet	0.200		86.3	40-140	0.00753	30	
Aroclor-1260 [2C]	0.17	0.020	mg/Kg wet	0.200		85.2	40-140	2.30	30	
Surrogate: Decachlorobiphenyl	*0.196*		mg/Kg wet	0.200		97.8	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.205*		mg/Kg wet	0.200		102	30-150			
Surrogate: Tetrachloro-m-xylene	*0.183*		mg/Kg wet	0.200		91.3	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.181*		mg/Kg wet	0.200		90.4	30-150			

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QUALITY CONTROL

Polychlorinated Biphenyls By GC/ECD - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311610 - SW-846 3546										
Blank (B311610-BLK1)				Prepared: 06/24/22 Analyzed: 06/28/22						
Aroclor-1016	ND	0.020	mg/Kg wet							
Aroclor-1016 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1221	ND	0.020	mg/Kg wet							
Aroclor-1221 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1232	ND	0.020	mg/Kg wet							
Aroclor-1232 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1242	ND	0.020	mg/Kg wet							
Aroclor-1242 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1248	ND	0.020	mg/Kg wet							
Aroclor-1248 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1254	ND	0.020	mg/Kg wet							
Aroclor-1254 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1260	ND	0.020	mg/Kg wet							
Aroclor-1260 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1262	ND	0.020	mg/Kg wet							
Aroclor-1262 [2C]	ND	0.020	mg/Kg wet							
Aroclor-1268	ND	0.020	mg/Kg wet							
Aroclor-1268 [2C]	ND	0.020	mg/Kg wet							
Surrogate: Decachlorobiphenyl	*0.199*		mg/Kg wet	0.200		99.3	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.205*		mg/Kg wet	0.200		102	30-150			
Surrogate: Tetrachloro-m-xylene	*0.188*		mg/Kg wet	0.200		94.2	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.184*		mg/Kg wet	0.200		92.1	30-150			
LCS (B311610-BS1)				Prepared: 06/24/22 Analyzed: 06/28/22						
Aroclor-1016	0.18	0.020	mg/Kg wet	0.200		90.7	40-140			
Aroclor-1016 [2C]	0.18	0.020	mg/Kg wet	0.200		89.8	40-140			
Aroclor-1260	0.18	0.020	mg/Kg wet	0.200		89.8	40-140			
Aroclor-1260 [2C]	0.18	0.020	mg/Kg wet	0.200		90.0	40-140			
Surrogate: Decachlorobiphenyl	*0.198*		mg/Kg wet	0.200		98.8	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.204*		mg/Kg wet	0.200		102	30-150			
Surrogate: Tetrachloro-m-xylene	*0.191*		mg/Kg wet	0.200		95.7	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.187*		mg/Kg wet	0.200		93.5	30-150			
LCS Dup (B311610-BSD1)				Prepared: 06/24/22 Analyzed: 06/28/22						
Aroclor-1016	0.18	0.020	mg/Kg wet	0.200		88.2	40-140	2.76	30	
Aroclor-1016 [2C]	0.18	0.020	mg/Kg wet	0.200		88.4	40-140	1.51	30	
Aroclor-1260	0.18	0.020	mg/Kg wet	0.200		88.6	40-140	1.36	30	
Aroclor-1260 [2C]	0.18	0.020	mg/Kg wet	0.200		88.5	40-140	1.63	30	
Surrogate: Decachlorobiphenyl	*0.196*		mg/Kg wet	0.200		97.9	30-150			
Surrogate: Decachlorobiphenyl [2C]	*0.202*		mg/Kg wet	0.200		101	30-150			
Surrogate: Tetrachloro-m-xylene	*0.183*		mg/Kg wet	0.200		91.4	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	*0.178*		mg/Kg wet	0.200		89.2	30-150			

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QUALITY CONTROL

Petroleum Hydrocarbons Analyses - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311333 - SW-846 3510C										
Blank (B311333-BLK1)				Prepared: 06/22/22 Analyzed: 06/23/22						
TPH (C9-C36)	ND	8.3	mg/Kg wet							
Surrogate: 2-Fluorobiphenyl	*2.45*		mg/Kg wet	3.31		73.9	40-140			
LCS (B311333-BS1)				Prepared: 06/22/22 Analyzed: 06/23/22						
TPH (C9-C36)	33.0	8.3	mg/Kg wet	33.2		99.4	40-140			
Surrogate: 2-Fluorobiphenyl	*2.50*		mg/Kg wet	3.32		75.4	40-140			
LCS Dup (B311333-BSD1)				Prepared: 06/22/22 Analyzed: 06/23/22						
TPH (C9-C36)	31.9	8.3	mg/Kg wet	33.2		96.1	40-140	3.33	30	
Surrogate: 2-Fluorobiphenyl	*2.56*		mg/Kg wet	3.32		77.1	40-140			
Batch B311696 - SW-846 3510C										
Blank (B311696-BLK1)				Prepared: 06/27/22 Analyzed: 06/29/22						
TPH (C9-C36)	ND	8.3	mg/Kg wet							
Surrogate: 2-Fluorobiphenyl	*2.60*		mg/Kg wet	3.33		77.9	40-140			
LCS (B311696-BS1)				Prepared: 06/27/22 Analyzed: 06/29/22						
TPH (C9-C36)	30.7	8.3	mg/Kg wet	33.3		92.2	40-140			
Surrogate: 2-Fluorobiphenyl	*2.90*		mg/Kg wet	3.33		87.1	40-140			
LCS Dup (B311696-BSD1)				Prepared: 06/27/22 Analyzed: 06/29/22						
TPH (C9-C36)	32.6	8.3	mg/Kg wet	33.3		97.9	40-140	6.00	30	
Surrogate: 2-Fluorobiphenyl	*2.62*		mg/Kg wet	3.33		78.7	40-140			

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QUALITY CONTROL

Petroleum Hydrocarbons Analyses - EPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311086 - SW-846 3510C										
Blank (B311086-BLK1)				Prepared: 06/19/22 Analyzed: 06/22/22						
C9-C18 Aliphatics	ND	100	µg/L							
C19-C36 Aliphatics	ND	100	µg/L							
Unadjusted C11-C22 Aromatics	ND	100	µg/L							
C11-C22 Aromatics	ND	100	µg/L							
Acenaphthene	ND	2.0	µg/L							
Acenaphthylene	ND	2.0	µg/L							
Anthracene	ND	2.0	µg/L							
Benzo(g,h,i)perylene	ND	2.0	µg/L							
Fluoranthene	ND	2.0	µg/L							
Fluorene	ND	2.0	µg/L							
2-Methylnaphthalene	ND	2.0	µg/L							
Naphthalene	ND	2.0	µg/L							
Phenanthrene	ND	2.0	µg/L							
Pyrene	ND	2.0	µg/L							
Naphthalene-aliphatic fraction	ND	2.0	µg/L							
2-Methylnaphthalene-aliphatic fraction	ND	2.0	µg/L							
Surrogate: Chlorooctadecane (COD)	*86.1*		µg/L	100		86.1	40-140			
Surrogate: o-Terphenyl (OTP)	*78.3*		µg/L	100		78.3	40-140			
Surrogate: 2-Bromonaphthalene	*87.6*		µg/L	100		87.6	40-140			
Surrogate: 2-Fluorobiphenyl	*80.2*		µg/L	100		80.2	40-140			
LCS (B311086-BS1)				Prepared: 06/19/22 Analyzed: 06/22/22						
C9-C18 Aliphatics	420	100	µg/L	600		70.0	0-200			
C19-C36 Aliphatics	706	100	µg/L	800		88.3	0-200			
Unadjusted C11-C22 Aromatics	1420	100	µg/L	1700		83.7	0-200			
Acenaphthene	70.1	2.0	µg/L	100		70.1	40-140			
Acenaphthylene	64.3	2.0	µg/L	100		64.3	40-140			
Anthracene	80.4	2.0	µg/L	100		80.4	40-140			
Benzo(g,h,i)perylene	78.1	2.0	µg/L	100		78.1	40-140			
Fluoranthene	83.6	2.0	µg/L	100		83.6	40-140			
Fluorene	78.8	2.0	µg/L	100		78.8	40-140			
2-Methylnaphthalene	60.8	2.0	µg/L	100		60.8	40-140			
Naphthalene	53.2	2.0	µg/L	100		53.2	40-140			
Phenanthrene	81.7	2.0	µg/L	100		81.7	40-140			
Pyrene	84.3	2.0	µg/L	100		84.3	40-140			
Naphthalene-aliphatic fraction	ND	2.0	µg/L	100			0-5			
2-Methylnaphthalene-aliphatic fraction	ND	2.0	µg/L	100			0-5			
Surrogate: Chlorooctadecane (COD)	*91.1*		µg/L	100		91.1	40-140			
Surrogate: o-Terphenyl (OTP)	*82.4*		µg/L	100		82.4	40-140			
Surrogate: 2-Bromonaphthalene	*99.2*		µg/L	100		99.2	40-140			
Surrogate: 2-Fluorobiphenyl	*92.9*		µg/L	100		92.9	40-140			
LCS Dup (B311086-BSD1)				Prepared: 06/19/22 Analyzed: 06/22/22						
C9-C18 Aliphatics	405	100	µg/L	600		67.4	0-200	3.77		
C19-C36 Aliphatics	694	100	µg/L	800		86.8	0-200	1.72		
Unadjusted C11-C22 Aromatics	1440	100	µg/L	1700		84.5	0-200	0.981		
Acenaphthene	70.3	2.0	µg/L	100		70.3	40-140	0.333	25	
Acenaphthylene	65.1	2.0	µg/L	100		65.1	40-140	1.22	25	
Anthracene	82.2	2.0	µg/L	100		82.2	40-140	2.20	25	
Benzo(g,h,i)perylene	79.3	2.0	µg/L	100		79.3	40-140	1.52	25	
Fluoranthene	85.2	2.0	µg/L	100		85.2	40-140	1.84	25	
Fluorene	78.6	2.0	µg/L	100		78.6	40-140	0.216	25	

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QUALITY CONTROL

Petroleum Hydrocarbons Analyses - EPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311086 - SW-846 3510C										
LCS Dup (B311086-BSD1)				Prepared: 06/19/22 Analyzed: 06/22/22						
2-Methylnaphthalene	60.9	2.0	µg/L	100		60.9	40-140	0.0296	25	
Naphthalene	53.6	2.0	µg/L	100		53.6	40-140	0.723	25	
Phenanthrene	82.3	2.0	µg/L	100		82.3	40-140	0.756	25	
Pyrene	86.0	2.0	µg/L	100		86.0	40-140	1.97	25	
Naphthalene-aliphatic fraction	ND	2.0	µg/L	100			0-5			
2-Methylnaphthalene-aliphatic fraction	ND	2.0	µg/L	100			0-5			
Surrogate: Chlorooctadecane (COD)	*87.5*		µg/L	100		87.5	40-140			
Surrogate: o-Terphenyl (OTP)	*80.3*		µg/L	100		80.3	40-140			
Surrogate: 2-Bromonaphthalene	*101*		µg/L	100		101	40-140			
Surrogate: 2-Fluorobiphenyl	*95.0*		µg/L	100		95.0	40-140			

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QUALITY CONTROL

Petroleum Hydrocarbons Analyses - VPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311102 - MA VPH										
Blank (B311102-BLK1)				Prepared & Analyzed: 06/20/22						
Unadjusted C5-C8 Aliphatics	ND	100	µg/L							
C5-C8 Aliphatics	ND	100	µg/L							
Unadjusted C9-C12 Aliphatics	ND	100	µg/L							
C9-C12 Aliphatics	ND	100	µg/L							
C9-C10 Aromatics	ND	100	µg/L							
Benzene	ND	1.0	µg/L							
Butylcyclohexane	ND	1.0	µg/L							
Decane	ND	1.0	µg/L							
Ethylbenzene	ND	1.0	µg/L							
Methyl tert-Butyl Ether (MTBE)	ND	1.0	µg/L							
2-Methylpentane	ND	1.0	µg/L							
Naphthalene	ND	5.0	µg/L							
Nonane	ND	1.0	µg/L							
Pentane	ND	1.0	µg/L							
Toluene	ND	1.0	µg/L							
1,2,4-Trimethylbenzene	ND	1.0	µg/L							
2,2,4-Trimethylpentane	ND	1.0	µg/L							
m+p Xylene	ND	2.0	µg/L							
o-Xylene	ND	1.0	µg/L							
Surrogate: 2,5-Dibromotoluene (FID)	*34.6*		µg/L	40.0		86.6	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	*35.1*		µg/L	40.0		87.8	70-130			
LCS (B311102-BS1)				Prepared & Analyzed: 06/20/22						
Benzene	40.5	1.0	µg/L	50.0		81.1	70-130			
Butylcyclohexane	61.5	1.0	µg/L	50.0		123	70-130			
Decane	49.5	1.0	µg/L	50.0		99.1	70-130			
Ethylbenzene	44.0	1.0	µg/L	50.0		87.9	70-130			
Methyl tert-Butyl Ether (MTBE)	41.2	1.0	µg/L	50.0		82.5	70-130			
2-Methylpentane	48.0	1.0	µg/L	50.0		96.1	70-130			
Naphthalene	48.9	5.0	µg/L	50.0		97.8	70-130			
Nonane	59.7	1.0	µg/L	50.0		119	30-130			
Pentane	48.1	1.0	µg/L	50.0		96.2	70-130			
Toluene	40.4	1.0	µg/L	50.0		80.7	70-130			
1,2,4-Trimethylbenzene	44.5	1.0	µg/L	50.0		89.0	70-130			
2,2,4-Trimethylpentane	40.7	1.0	µg/L	50.0		81.4	70-130			
m+p Xylene	88.1	2.0	µg/L	100		88.1	70-130			
o-Xylene	45.9	1.0	µg/L	50.0		91.9	70-130			
Surrogate: 2,5-Dibromotoluene (FID)	*34.3*		µg/L	40.0		85.7	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	*33.6*		µg/L	40.0		84.0	70-130			
LCS Dup (B311102-BSD1)				Prepared & Analyzed: 06/20/22						
Benzene	40.9	1.0	µg/L	50.0		81.9	70-130	0.989	25	
Butylcyclohexane	59.6	1.0	µg/L	50.0		119	70-130	3.14	25	
Decane	48.5	1.0	µg/L	50.0		97.0	70-130	2.13	25	
Ethylbenzene	43.9	1.0	µg/L	50.0		87.7	70-130	0.235	25	
Methyl tert-Butyl Ether (MTBE)	42.3	1.0	µg/L	50.0		84.7	70-130	2.61	25	
2-Methylpentane	40.8	1.0	µg/L	50.0		81.6	70-130	16.3	25	
Naphthalene	49.5	5.0	µg/L	50.0		98.9	70-130	1.10	25	
Nonane	57.7	1.0	µg/L	50.0		115	30-130	3.39	25	
Pentane	45.5	1.0	µg/L	50.0		91.0	70-130	5.54	25	
Toluene	40.5	1.0	µg/L	50.0		80.9	70-130	0.255	25	
1,2,4-Trimethylbenzene	44.5	1.0	µg/L	50.0		89.1	70-130	0.0966	25	

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QUALITY CONTROL

Petroleum Hydrocarbons Analyses - VPH - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311102 - MA VPH										
LCS Dup (B311102-BSD1)				Prepared & Analyzed: 06/20/22						
2,2,4-Trimethylpentane	38.5	1.0	µg/L	50.0		77.0	70-130	5.49	25	
m+p Xylene	88.3	2.0	µg/L	100		88.3	70-130	0.231	25	
o-Xylene	46.4	1.0	µg/L	50.0		92.8	70-130	0.975	25	
Surrogate: 2,5-Dibromotoluene (FID)	*35.1*		µg/L	40.0		87.8	70-130			
Surrogate: 2,5-Dibromotoluene (PID)	*34.0*		µg/L	40.0		85.0	70-130			

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B311368 - SW-846 3050B											
Blank (B311368-BLK1)				Prepared: 06/22/22 Analyzed: 06/27/22							
Arsenic	ND	3.3	mg/Kg wet								
Barium	ND	1.7	mg/Kg wet								
Cadmium	ND	0.33	mg/Kg wet								
Chromium	ND	0.67	mg/Kg wet								
Lead	ND	0.50	mg/Kg wet								
Selenium	ND	3.3	mg/Kg wet								
Silver	ND	0.33	mg/Kg wet								
LCS (B311368-BS1)				Prepared: 06/22/22 Analyzed: 07/06/22							
Arsenic	76.9	9.9	mg/Kg wet	84.5		91.0		82.8-117.2			
Barium	213	4.9	mg/Kg wet	249		85.7		82.7-117.3			
Cadmium	86.6	0.99	mg/Kg wet	99.0		87.5		83-117.2			
Chromium	105	2.0	mg/Kg wet	122		86.2		82.8-118			
Lead	111	1.5	mg/Kg wet	123		90.0		83.7-117.1			
Selenium	97.7	9.9	mg/Kg wet	121		80.8		80.1-120.7			
Silver	38.1	0.99	mg/Kg wet	44.1		86.5		80.5-119.7			
LCS Dup (B311368-BSD1)				Prepared: 06/22/22 Analyzed: 07/06/22							
Arsenic	74.9	9.9	mg/Kg wet	84.5		88.7		82.8-117.2	2.58	30	
Barium	238	4.9	mg/Kg wet	249		95.6		82.7-117.3	10.9	20	
Cadmium	90.4	0.99	mg/Kg wet	99.0		91.3		83-117.2	4.28	20	
Chromium	112	2.0	mg/Kg wet	122		91.8		82.8-118	6.37	30	
Lead	107	1.5	mg/Kg wet	123		87.1		83.7-117.1	3.20	30	
Selenium	104	9.9	mg/Kg wet	121		86.2		80.1-120.7	6.48	30	
Silver	42.5	0.99	mg/Kg wet	44.1		96.4		80.5-119.7	10.9	30	
Duplicate (B311368-DUP1)	**Source: 22F1194-03**			Prepared: 06/22/22 Analyzed: 06/28/22							
Arsenic	7.93	7.8	mg/Kg dry		8.52				7.16	35	
Barium	89.4	3.9	mg/Kg dry		78.9				12.5	35	
Cadmium	ND	0.78	mg/Kg dry		ND				NC	35	
Chromium	20.5	1.6	mg/Kg dry		21.7				5.88	35	
Lead	316	1.2	mg/Kg dry		225				33.8	35	
Selenium	ND	7.8	mg/Kg dry		ND				NC	35	
Silver	ND	0.78	mg/Kg dry		ND				NC	35	
Matrix Spike (B311368-MS1)	**Source: 22F1194-03**			Prepared: 06/22/22 Analyzed: 06/27/22							
Arsenic	41.2	7.7	mg/Kg dry	38.6	8.52	84.7		75-125			
Barium	152	3.9	mg/Kg dry	38.6	78.9	**188**	*	75-125			
Cadmium	35.7	0.77	mg/Kg dry	38.6	ND	92.3		75-125			
Chromium	63.2	1.5	mg/Kg dry	38.6	21.7	107		75-125			
Lead	335	1.2	mg/Kg dry	38.6	225	**286**	*	75-125			
Selenium	32.1	7.7	mg/Kg dry	38.6	ND	83.1		75-125			
Silver	36.2	0.77	mg/Kg dry	38.6	ND	93.6		75-125			

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC		%REC Limits	RPD	RPD Limit	Notes
Batch B311368 - SW-846 3050B											
Reference (B311368-SRM1) MRL CHECK				Prepared: 06/22/22 Analyzed: 07/06/22							**M-10**
Lead	0.731	0.48	mg/Kg wet	0.479		**153**	*	80-120			
Batch B311466 - SW-846 3050B											
Blank (B311466-BLK1)				Prepared: 06/23/22 Analyzed: 06/27/22							
Arsenic	ND	3.1	mg/Kg wet								
Barium	ND	1.6	mg/Kg wet								
Cadmium	ND	0.31	mg/Kg wet								
Chromium	ND	0.63	mg/Kg wet								
Lead	ND	0.47	mg/Kg wet								
Selenium	ND	3.1	mg/Kg wet								
Silver	ND	0.31	mg/Kg wet								
LCS (B311466-BS1)				Prepared: 06/23/22 Analyzed: 06/27/22							
Arsenic	77.7	10	mg/Kg wet	84.5		92.0		82.8-117.2			
Barium	232	5.0	mg/Kg wet	249		93.0		82.7-117.3			
Cadmium	88.7	1.0	mg/Kg wet	99.0		89.6		83-117.2			
Chromium	113	2.0	mg/Kg wet	122		92.3		82.8-118			
Lead	111	1.5	mg/Kg wet	123		90.3		83.7-117.1			
Selenium	105	10	mg/Kg wet	121		87.1		80.1-120.7			
Silver	40.6	1.0	mg/Kg wet	44.1		92.1		80.5-119.7			
LCS Dup (B311466-BSD1)				Prepared: 06/23/22 Analyzed: 06/27/22							
Arsenic	73.7	10	mg/Kg wet	84.5		87.2		82.8-117.2	5.35	30	
Barium	228	5.0	mg/Kg wet	249		91.7		82.7-117.3	1.47	20	
Cadmium	88.6	1.0	mg/Kg wet	99.0		89.5		83-117.2	0.117	20	
Chromium	111	2.0	mg/Kg wet	122		90.9		82.8-118	1.50	30	
Lead	105	1.5	mg/Kg wet	123		85.2		83.7-117.1	5.80	30	
Selenium	101	10	mg/Kg wet	121		83.1		80.1-120.7	4.74	30	
Silver	37.5	1.0	mg/Kg wet	44.1		85.0		80.5-119.7	8.02	30	
Reference (B311466-SRM1) MRL CHECK				Prepared: 06/23/22 Analyzed: 06/27/22							
Lead	0.394	0.49	mg/Kg wet	0.487		81.0		80-120			
Batch B311780 - SW-846 7471											
Blank (B311780-BLK1)				Prepared & Analyzed: 06/28/22							
Mercury	ND	0.025	mg/Kg wet								
LCS (B311780-BS1)				Prepared & Analyzed: 06/28/22							
Mercury	15.6	0.78	mg/Kg wet	19.1		81.5		68.8-131.2			

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QUALITY CONTROL

Metals Analyses (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311780 - SW-846 7471										
LCS Dup (B311780-BSD1)				Prepared & Analyzed: 06/28/22						
Mercury	18.8	0.78	mg/Kg wet	18.9		99.3	68.8-131.2	18.6	20	
Duplicate (B311780-DUP1)		**Source: 22F1194-06**		Prepared & Analyzed: 06/28/22						
Mercury	0.0551	0.032	mg/Kg dry		ND			NC	20	R-02
Matrix Spike (B311780-MS1)		**Source: 22F1194-06**		Prepared & Analyzed: 06/28/22						
Mercury	0.492	0.032	mg/Kg dry	0.422	0.0242	111	80-120			
Batch B311797 - SW-846 7471										
Blank (B311797-BLK1)				Prepared: 06/28/22 Analyzed: 06/29/22						
Mercury	ND	0.025	mg/Kg wet							
LCS (B311797-BS1)				Prepared: 06/28/22 Analyzed: 06/29/22						
Mercury	18.3	0.76	mg/Kg wet	18.9		96.9	68.8-131.2			
LCS Dup (B311797-BSD1)				Prepared: 06/28/22 Analyzed: 06/29/22						
Mercury	19.4	0.75	mg/Kg wet	18.9		103	68.8-131.2	6.03	20	

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QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311057 - SM21-23 2510B Modified										
Blank (B311057-BLK1)				Prepared & Analyzed: 06/18/22						
Specific conductance	ND	2.0	µmhos/cm							
LCS (B311057-BS1)				Prepared & Analyzed: 06/18/22						
Specific conductance	140		µmhos/cm	137		104	90-122			
Duplicate (B311057-DUP2)	**Source: 22F1194-07**			Prepared & Analyzed: 06/18/22						
Specific conductance	4.1	2.0	µmhos/cm		3.1			28.0	41.4	
Batch B311153 - SW-846 9045C										
LCS (B311153-BS1)				Prepared & Analyzed: 06/20/22						
pH	6.04		pH Units	6.00		101	90-110			
Duplicate (B311153-DUP1)	**Source: 22F1194-07**			Prepared & Analyzed: 06/20/22						
pH	6.1		pH Units		6.0			2.12	8.25	H-03
Batch B311279 - SW-846 1010A-B										
Blank (B311279-BLK1)				Prepared & Analyzed: 06/21/22						
Flashpoint	> 212 °F		°F							
LCS (B311279-BS1)				Prepared & Analyzed: 06/21/22						
Flashpoint	80		°F	81.0		99.3	98.8-101			
LCS Dup (B311279-BSD1)				Prepared & Analyzed: 06/21/22						
Flashpoint	80		°F	81.0		99.3	98.8-101	0.00	5	
Batch B311467 - SW-846 7.3										
Blank (B311467-BLK1)				Prepared: 06/23/22 Analyzed: 06/24/22						
Reactive Cyanide	ND	0.40	mg/Kg							
LCS (B311467-BS1)				Prepared: 06/23/22 Analyzed: 06/24/22						
Reactive Cyanide	9.5	0.40	mg/Kg	10.0		95.4	81.2-113			
Batch B311468 - SW-846 7.3										
Blank (B311468-BLK1)				Prepared: 06/23/22 Analyzed: 06/24/22						
Reactive Sulfide	ND	2.0	mg/Kg							

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QUALITY CONTROL

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B311468 - SW-846 7.3										
LCS (B311468-BS1)				Prepared: 06/23/22 Analyzed: 06/24/22						
Reactive Sulfide	9.6	2.0	mg/Kg	10.0		96.0	75.7-125			
Batch B311518 - SW-846 1010A-B										
Blank (B311518-BLK1)				Prepared & Analyzed: 06/23/22						
Flashpoint	> 212 °F		°F							
LCS (B311518-BS1)				Prepared & Analyzed: 06/23/22						
Flashpoint	81		°F	81.0		99.9	98.8-101			
LCS Dup (B311518-BSD1)				Prepared & Analyzed: 06/23/22						
Flashpoint	81		°F	81.0		100	98.8-101	0.616	5	

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS

Lab Sample ID: B311324-BS1

Date(s) Analyzed: 06/23/2022 06/23/2022

Instrument ID (1): ECD10

Instrument ID (2): ECD10

GC Column (1): ID: (mm)

GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.17	
	2	0.000	0.000	0.000	0.17	0.0
Aroclor-1260	1	0.000	0.000	0.000	0.17	
	2	0.000	0.000	0.000	0.17	0.0

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS Dup

Lab Sample ID: B311324-BSD1 Date(s) Analyzed: 06/23/2022 06/23/2022

Instrument ID (1): ECD10 Instrument ID (2): ECD10

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.17	
	2	0.000	0.000	0.000	0.17	0.0
Aroclor-1260	1	0.000	0.000	0.000	0.17	
	2	0.000	0.000	0.000	0.17	0.0

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS

Lab Sample ID: B311610-BS1 Date(s) Analyzed: 06/28/2022 06/28/2022

Instrument ID (1): ECD10 Instrument ID (2): ECD10

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.18	
	2	0.000	0.000	0.000	0.18	0.0
Aroclor-1260	1	0.000	0.000	0.000	0.18	
	2	0.000	0.000	0.000	0.18	0.0

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IDENTIFICATION SUMMARY FOR SINGLE COMPONENT ANALYTES

SW-846 8082A

LCS Dup

Lab Sample ID: B311610-BSD1 Date(s) Analyzed: 06/28/2022 06/28/2022

Instrument ID (1): ECD10 Instrument ID (2): ECD10

GC Column (1): ID: (mm) GC Column (2): ID: (mm)

ANALYTE	COL	RT	RT WINDOW		CONCENTRATION	%RPD
			FROM	TO		
Aroclor-1016	1	0.000	0.000	0.000	0.18	
	2	0.000	0.000	0.000	0.18	0.0
Aroclor-1260	1	0.000	0.000	0.000	0.18	
	2	0.000	0.000	0.000	0.18	0.0

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
H-03	Sample received after recommended holding time was exceeded.
H-06	Sample was extracted past the recommended holding time.
M-10	The reporting limit verification for the AIHA lead program is outside of control limits for this element. Any reported result at or near the detection limit may be biased on the high side.
MS-11	Matrix spike recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.
MS-19	Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.
O-32	A dilution was performed as part of the standard analytical procedure.
R-02	Duplicate RPD is outside of control limits. Outlier can be attributed to sample non-homogeneity encountered during sample prep.
RL-08	Elevated reporting limit due to sample matrix interference. MA CAM reporting limit not met.
V-04	Initial calibration did not meet method specifications. Compound was calibrated using a response factor where %RSD is outside of method specified criteria. Reported result is estimated.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-06	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side for this compound.
V-16	Response factor is less than method specified minimum acceptable value. Reduced precision and accuracy may be associated with reported result.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.
V-34	Initial calibration verification (ICV) did not meet method specifications and was biased on the low side for this compound. Reported result is estimated.
V-35	Initial calibration verification (ICV) did not meet method specifications and was biased on the high side for this compound. Reported result is estimated.

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
MADEP EPH rev 2.1 in Water	
C9-C18 Aliphatics	CT,NC,ME,NH-P
C19-C36 Aliphatics	CT,NC,ME,NH-P
Unadjusted C11-C22 Aromatics	CT,NC,ME,NH-P
C11-C22 Aromatics	CT,NC,ME,NH-P
Acenaphthene	CT,NC,ME,NH-P
Acenaphthylene	CT,NC,ME,NH-P
Anthracene	CT,NC,ME,NH-P
Benzo(a)anthracene	CT,NC,ME,NH-P
Benzo(a)pyrene	CT,NC,ME,NH-P
Benzo(b)fluoranthene	CT,NC,ME,NH-P
Benzo(g,h,i)perylene	CT,NC,ME,NH-P
Benzo(k)fluoranthene	CT,NC,ME,NH-P
Chrysene	CT,NC,ME,NH-P
Dibenz(a,h)anthracene	CT,NC,ME,NH-P
Fluoranthene	CT,NC,ME,NH-P
Fluorene	CT,NC,ME
Indeno(1,2,3-cd)pyrene	CT,NC,ME,NH-P
2-Methylnaphthalene	CT,NC
Naphthalene	CT,NC,ME,NH-P
Phenanthrene	CT,NC,ME,NH-P
Pyrene	CT,NC,ME,NH-P
MADEP-VPH-Feb 2018 Rev 2.1 in Water	
Unadjusted C5-C8 Aliphatics	CT,NC,ME,NH-P
C5-C8 Aliphatics	CT,NC,ME,NH-P
Unadjusted C9-C12 Aliphatics	CT,NC,ME,NH-P
C9-C12 Aliphatics	CT,NC,ME,NH-P
C9-C10 Aromatics	CT,NC,ME,NH-P
Benzene	CT,NC,ME,NH-P
Ethylbenzene	CT,NC,ME,NH-P
Methyl tert-Butyl Ether (MTBE)	CT,NC,ME,NH-P
Naphthalene	CT,NC,ME,NH-P
Toluene	CT,NC,ME,NH-P
m+p Xylene	CT,NC,ME,NH-P
o-Xylene	CT,NC,ME,NH-P
SW-846 1010A-B in Soil	
Flashpoint	NY,NC,ME,VA
SW-846 6010D in Soil	
Arsenic	CT,NH,NY,ME,VA,NC
Barium	CT,NH,NY,ME,VA,NC
Cadmium	CT,NH,NY,ME,VA,NC
Chromium	CT,NH,NY,ME,VA,NC
Lead	CT,NH,NY,AIHA,ME,VA,NC
Selenium	CT,NH,NY,ME,VA,NC
Silver	CT,NH,NY,ME,VA,NC
SW-846 7471B in Soil	

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 7471B in Soil	
Mercury	CT,NH,NY,NC,ME,VA
SW-846 8082A in Soil	
Aroclor-1016	CT,NH,NY,NC,ME,VA,PA
Aroclor-1016 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1221	CT,NH,NY,NC,ME,VA,PA
Aroclor-1221 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1232	CT,NH,NY,NC,ME,VA,PA
Aroclor-1232 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1242	CT,NH,NY,NC,ME,VA,PA
Aroclor-1242 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1248	CT,NH,NY,NC,ME,VA,PA
Aroclor-1248 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1254	CT,NH,NY,NC,ME,VA,PA
Aroclor-1254 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1260	CT,NH,NY,NC,ME,VA,PA
Aroclor-1260 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1262	NH,NY,NC,ME,VA,PA
Aroclor-1262 [2C]	NH,NY,NC,ME,VA,PA
Aroclor-1268	NH,NY,NC,ME,VA,PA
Aroclor-1268 [2C]	NH,NY,NC,ME,VA,PA
SW-846 8082A in Water	
Aroclor-1016	CT,NH,NY,NC,ME,VA,PA
Aroclor-1016 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1221	CT,NH,NY,NC,ME,VA,PA
Aroclor-1221 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1232	CT,NH,NY,NC,ME,VA,PA
Aroclor-1232 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1242	CT,NH,NY,NC,ME,VA,PA
Aroclor-1242 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1248	CT,NH,NY,NC,ME,VA,PA
Aroclor-1248 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1254	CT,NH,NY,NC,ME,VA,PA
Aroclor-1254 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1260	CT,NH,NY,NC,ME,VA,PA
Aroclor-1260 [2C]	CT,NH,NY,NC,ME,VA,PA
Aroclor-1262	NH,NY,NC,ME,VA,PA
Aroclor-1262 [2C]	NH,NY,NC,ME,VA,PA
Aroclor-1268	NH,NY,NC,ME,VA,PA
Aroclor-1268 [2C]	NH,NY,NC,ME,VA,PA
SW-846 8260D in Soil	
Benzene	CT,NH,NY,ME
Bromobenzene	NH,NY,ME
Bromochloromethane	NH,NY,ME
Bromodichloromethane	CT,NH,NY,ME
Bromoform	CT,NH,NY,ME
Bromomethane	CT,NH,NY,ME

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260D in Soil	
2-Butanone (MEK)	CT,NH,NY,ME
n-Butylbenzene	CT,NH,NY,ME
sec-Butylbenzene	CT,NH,NY,ME
tert-Butylbenzene	CT,NH,NY,ME
Carbon Disulfide	CT,NH,NY,ME
Carbon Tetrachloride	CT,NH,NY,ME
Chlorobenzene	CT,NH,NY,ME
Chlorodibromomethane	CT,NH,NY,ME
Chloroethane	CT,NH,NY,ME
Chloroform	CT,NH,NY,ME
Chloromethane	CT,NH,NY,ME
2-Chlorotoluene	CT,NH,NY,ME
4-Chlorotoluene	CT,NH,NY,ME
1,2-Dibromo-3-chloropropane (DBCP)	NY
1,2-Dibromoethane (EDB)	NY
Dibromomethane	NH,NY,ME
1,2-Dichlorobenzene	CT,NH,NY,ME
1,3-Dichlorobenzene	CT,NH,NY,ME
1,4-Dichlorobenzene	CT,NH,NY,ME
Dichlorodifluoromethane (Freon 12)	NY,ME
1,1-Dichloroethane	CT,NH,NY,ME
1,2-Dichloroethane	CT,NH,NY,ME
1,1-Dichloroethylene	CT,NH,NY,ME
cis-1,2-Dichloroethylene	CT,NH,NY,ME
trans-1,2-Dichloroethylene	CT,NH,NY,ME
1,2-Dichloropropane	CT,NH,NY,ME
1,3-Dichloropropane	NH,NY,ME
2,2-Dichloropropane	NH,NY,ME
1,1-Dichloropropene	NH,NY,ME
cis-1,3-Dichloropropene	CT,NH,NY,ME
trans-1,3-Dichloropropene	CT,NH,NY,ME
1,4-Dioxane	NY
Ethylbenzene	CT,NH,NY,ME
Hexachlorobutadiene	NH,NY,ME
2-Hexanone (MBK)	CT,NH,NY,ME
Isopropylbenzene (Cumene)	CT,NH,NY,ME
p-Isopropyltoluene (p-Cymene)	NH,NY
Methyl tert-Butyl Ether (MTBE)	NH,NY
Methylene Chloride	CT,NH,NY,ME
4-Methyl-2-pentanone (MIBK)	CT,NH,NY
Naphthalene	NH,NY,ME
n-Propylbenzene	NH,NY
Styrene	CT,NH,NY,ME
1,1,1,2-Tetrachloroethane	CT,NH,NY,ME
1,1,2,2-Tetrachloroethane	CT,NH,NY,ME
Tetrachloroethylene	CT,NH,NY,ME
Toluene	CT,NH,NY,ME

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8260D in Soil	
1,2,3-Trichlorobenzene	NY
1,2,4-Trichlorobenzene	NH,NY,ME
1,1,1-Trichloroethane	CT,NH,NY,ME
1,1,2-Trichloroethane	CT,NH,NY,ME
Trichloroethylene	CT,NH,NY,ME
Trichlorofluoromethane (Freon 11)	CT,NH,NY,ME
1,2,3-Trichloropropane	NH,NY,ME
1,2,4-Trimethylbenzene	CT,NH,NY,ME
1,3,5-Trimethylbenzene	CT,NH,NY,ME
Vinyl Chloride	CT,NH,NY,ME
m+p Xylene	CT,NH,NY,ME
o-Xylene	CT,NH,NY,ME
SW-846 8270E in Product/Solid	
Acenaphthene	CT,NY,NH
Acenaphthylene	CT,NY,NH
Acetophenone	NY,NH
Aniline	NY,NH
Anthracene	CT,NY,NH
Benzo(a)anthracene	CT,NY,NH
Benzo(a)pyrene	CT,NY,NH
Benzo(b)fluoranthene	CT,NY,NH
Benzo(g,h,i)perylene	CT,NY,NH
Benzo(k)fluoranthene	CT,NY,NH
Bis(2-chloroethoxy)methane	CT,NY,NH
Bis(2-chloroethyl)ether	CT,NY,NH
Bis(2-chloroisopropyl)ether	CT,NY,NH
Bis(2-Ethylhexyl)phthalate	CT,NY,NH
4-Bromophenylphenylether	CT,NY,NH
Butylbenzylphthalate	CT,NY,NH
4-Chloroaniline	CT,NY,NH
2-Chloronaphthalene	CT,NY,NH
2-Chlorophenol	CT,NY,NH
Chrysene	CT,NY,NH
Dibenz(a,h)anthracene	CT,NY,NH
Dibenzofuran	CT,NY,NH
Di-n-butylphthalate	CT,NY,NH
1,2-Dichlorobenzene	NY,NH
1,3-Dichlorobenzene	NY,NH
1,4-Dichlorobenzene	NY,NH
3,3-Dichlorobenzidine	CT,NY,NH
2,4-Dichlorophenol	CT,NY,NH
Diethylphthalate	CT,NY,NH
2,4-Dimethylphenol	CT,NY,NH
Dimethylphthalate	CT,NY,NH
2,4-Dinitrophenol	CT,NY,NH
2,4-Dinitrotoluene	CT,NY,NH

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8270E in Product/Solid	
2,6-Dinitrotoluene	CT,NY,NH
Di-n-octylphthalate	CT,NY,NH
1,2-Diphenylhydrazine/Azobenzene	NY,NH
Fluoranthene	CT,NY,NH
Fluorene	NY,NH
Hexachlorobenzene	CT,NY,NH
Hexachlorobutadiene	CT,NY,NH
Hexachloroethane	CT,NY,NH
Indeno(1,2,3-cd)pyrene	CT,NY,NH
Isophorone	CT,NY,NH
2-Methylnaphthalene	CT,NY,NH
2-Methylphenol	CT,NY,NH
3/4-Methylphenol	CT,NY,NH
Naphthalene	CT,NY,NH
Nitrobenzene	CT,NY,NH
2-Nitrophenol	CT,NY,NH
4-Nitrophenol	CT,NY,NH
Pentachlorophenol	CT,NY,NH
Phenanthrene	CT,NY,NH
Phenol	CT,NY,NH
Pyrene	CT,NY,NH
1,2,4-Trichlorobenzene	CT,NY,NH
2,4,5-Trichlorophenol	CT,NY,NH
2,4,6-Trichlorophenol	CT,NY,NH
SW-846 8270E in Soil	
Acenaphthene	CT,NY,NH
Acenaphthylene	CT,NY,NH
Acetophenone	NY,NH
Aniline	NY,NH
Anthracene	CT,NY,NH
Benzo(a)anthracene	CT,NY,NH
Benzo(a)pyrene	CT,NY,NH
Benzo(b)fluoranthene	CT,NY,NH
Benzo(g,h,i)perylene	CT,NY,NH
Benzo(k)fluoranthene	CT,NY,NH
Bis(2-chloroethoxy)methane	CT,NY,NH
Bis(2-chloroethyl)ether	CT,NY,NH
Bis(2-chloroisopropyl)ether	CT,NY,NH
Bis(2-Ethylhexyl)phthalate	CT,NY,NH
4-Bromophenylphenylether	CT,NY,NH
Butylbenzylphthalate	CT,NY,NH
4-Chloroaniline	CT,NY,NH
2-Chloronaphthalene	CT,NY,NH
2-Chlorophenol	CT,NY,NH
Chrysene	CT,NY,NH
Dibenz(a,h)anthracene	CT,NY,NH

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39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332

CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8270E in Soil	
Dibenzofuran	CT,NY,NH
Di-n-butylphthalate	CT,NY,NH
1,2-Dichlorobenzene	NY,NH
1,3-Dichlorobenzene	NY,NH
1,4-Dichlorobenzene	NY,NH
3,3-Dichlorobenzidine	CT,NY,NH
2,4-Dichlorophenol	CT,NY,NH
Diethylphthalate	CT,NY,NH
2,4-Dimethylphenol	CT,NY,NH
Dimethylphthalate	CT,NY,NH
2,4-Dinitrophenol	CT,NY,NH
2,4-Dinitrotoluene	CT,NY,NH
2,6-Dinitrotoluene	CT,NY,NH
Di-n-octylphthalate	CT,NY,NH
1,2-Diphenylhydrazine/Azobenzene	NY,NH
Fluoranthene	CT,NY,NH
Fluorene	NY,NH
Hexachlorobenzene	CT,NY,NH
Hexachlorobutadiene	CT,NY,NH
Hexachloroethane	CT,NY,NH
Indeno(1,2,3-cd)pyrene	CT,NY,NH
Isophorone	CT,NY,NH
2-Methylnaphthalene	CT,NY,NH
2-Methylphenol	CT,NY,NH
3/4-Methylphenol	CT,NY,NH
Naphthalene	CT,NY,NH
Nitrobenzene	CT,NY,NH
2-Nitrophenol	CT,NY,NH
4-Nitrophenol	CT,NY,NH
Pentachlorophenol	CT,NY,NH
Phenanthrene	CT,NY,NH
Phenol	CT,NY,NH
Pyrene	CT,NY,NH
1,2,4-Trichlorobenzene	CT,NY,NH
2,4,5-Trichlorophenol	CT,NY,NH
2,4,6-Trichlorophenol	CT,NY,NH
SW-846 8270E in Water	
Acenaphthene	CT,NY,NH
Acenaphthylene	CT,NY,NH
Acetophenone	NY
Aniline	CT,NY
Anthracene	CT,NY,NH
Benzo(a)anthracene	CT,NY,NH
Benzo(a)pyrene	CT,NY,NH
Benzo(b)fluoranthene	CT,NY,NH
Benzo(g,h,i)perylene	CT,NY,NH

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8270E in Water	
Benzo(k)fluoranthene	CT,NY,NH
Bis(2-chloroethoxy)methane	CT,NY,NH
Bis(2-chloroethyl)ether	CT,NY,NH
Bis(2-chloroisopropyl)ether	CT,NY,NH
Bis(2-Ethylhexyl)phthalate	CT,NY,NH
4-Bromophenylphenylether	CT,NY,NH
Butylbenzylphthalate	CT,NY,NH
4-Chloroaniline	CT,NY,NH
2-Chloronaphthalene	CT,NY,NH
2-Chlorophenol	CT,NY,NH
Chrysene	CT,NY,NH
Dibenz(a,h)anthracene	CT,NY,NH
Dibenzofuran	CT,NY,NH
Di-n-butylphthalate	CT,NY,NH
1,2-Dichlorobenzene	CT,NY,NH
1,3-Dichlorobenzene	CT,NY,NH
1,4-Dichlorobenzene	CT,NY,NH
3,3-Dichlorobenzidine	CT,NY,NH
2,4-Dichlorophenol	CT,NY,NH
Diethylphthalate	CT,NY,NH
2,4-Dimethylphenol	CT,NY,NH
Dimethylphthalate	CT,NY,NH
2,4-Dinitrophenol	CT,NY,NH
2,4-Dinitrotoluene	CT,NY,NH
2,6-Dinitrotoluene	CT,NY,NH
Di-n-octylphthalate	CT,NY,NH
1,2-Diphenylhydrazine/Azobenzene	NY
Fluoranthene	CT,NY,NH
Fluorene	NY,NH
Hexachlorobenzene	CT,NY,NH
Hexachlorobutadiene	CT,NY,NH
Hexachloroethane	CT,NY,NH
Indeno(1,2,3-cd)pyrene	CT,NY,NH
Isophorone	CT,NY,NH
2-Methylnaphthalene	CT,NY,NH
2-Methylphenol	CT,NY,NH
3/4-Methylphenol	CT,NY,NH
Naphthalene	CT,NY,NH
Nitrobenzene	CT,NY,NH
2-Nitrophenol	CT,NY,NH
4-Nitrophenol	CT,NY,NH
Pentachlorophenol	CT,NY,NH
Phenanthrene	CT,NY,NH
Phenol	CT,NY,NH
Pyrene	CT,NY,NH
1,2,4-Trichlorobenzene	CT,NY,NH
2,4,5-Trichlorophenol	CT,NY,NH

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CERTIFICATIONS

Certified Analyses included in this Report

Analyte	Certifications
SW-846 8270E in Water	
2,4,6-Trichlorophenol	CT,NY,NH

Con-Test, a Pace Environmental Laboratory, operates under the following certifications and accreditations:

Code	Description	Number	Expires
AIHA	AIHA-LAP, LLC - ISO17025:2017	100033	03/1/2024
MA	Massachusetts DEP	M-MA100	06/30/2023
CT	Connecticut Department of Publilc Health	PH-0165	12/31/2022
NY	New York State Department of Health	10899 NELAP	04/1/2023
NH-S	New Hampshire Environmental Lab	2516 NELAP	02/5/2023
RI	Rhode Island Department of Health	LAO00373	12/30/2022
NC	North Carolina Div. of Water Quality	652	12/31/2022
NJ	New Jersey DEP	MA007 NELAP	06/30/2023
FL	Florida Department of Health	E871027 NELAP	06/30/2023
VT	Vermont Department of Health Lead Laboratory	LL720741	07/30/2023
ME	State of Maine	MA00100	06/9/2023
VA	Commonwealth of Virginia	460217	12/14/2022
NH-P	New Hampshire Environmental Lab	2557 NELAP	09/6/2022
VT-DW	Vermont Department of Health Drinking Water	VT-255716	06/12/2023
NC-DW	North Carolina Department of Health	25703	07/31/2022
PA	Commonwealth of Pennsylvania DEP	68-05812	06/30/2023
MI	Dept. of Env, Great Lakes, and Energy	9100	09/6/2022

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Pace Analytical

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http://www.pacelabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Page 1 of 2

Company Name: Horsley Witten
Address: 90 Route 6A Sandwich, MA
Phone: 781.243.1527
Project Name: Lily Pond Park
Project Location: Lily Pond, Nantucket, MA
Project Number: 20008A
Project Manager: Brian Kuchar/Bryan Massa
Pace Quote Name/Number:
Invoice Recipient:
Sampled By: Caroline Armstrong

Requested Turnaround Time: 7-Day [X] 10-Day [ ] PFAS 10-Day (std) [ ] Due Date:
Rush - Approval Required: 1-Day [ ] 3-Day [ ] 2-Day [ ] 4-Day [ ]
Date Deliver?: Format: PDF [X] EXCEL [X] Other: CLP Like Data Pkg Required: [ ] Email To: bmassa@horsleywitten.com Fax To #:
Preservative/Metals Samples: [ ] Field Filtered [ ] Lab to Filter
Orthophosphate Samples: [ ] Field Filtered [ ] Lab to Filter
PCB ONLY: SOXHLET [ ] NON SOXHLET [ ]

ANALYSIS REQUESTED

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	RCRA 8 Metals	PCBs	SVOCs 8270	TPH	VOCs 8260	EPH w/ targets	VPH w/ targets	Conductivity
1	TP-1-2	6/15	9:00	comp	S			1				X	X	X	X				X
2	TP-3-4		10:00					1				X	X	X	X				X
3	SS-1		13:15					1				X	X	X	X				X
4	SS-2		14:00					1				X	X	X	X				X
5	SS-3		15:15					1				X	X	X	X				X
6	SS-4		11:30					1				X	X	X	X				X
7	SS-5		12 30					1				X	X	X	X				X
8	TP-1(2-3')		9:00	grab			3									X			
9	TP-4(1-2')		10:00	grab			3									X			
10	SW-1	6/15		grab	W		2	2									X	X	

Relinquished by: (signature) Caroline Armstrong Date/Time: 6/17 9:30
Received by: (signature) Date/Time: 6/17 930
Relinquished by: (signature) Date/Time: 6/17/22 1830
Received by: (signature) 2.5 6/15/22 1830 Date/Time:
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:
Relinquished by: (signature) Date/Time:
Received by: (signature) Date/Time:

Client Comments: COMM-97 Waste Characterization

Regulatory Agency Requirements: MA COMM-97; GW-1/S-1; Sed screening; State:
Special Requirements: [X] MA MCP Required; [ ] MCP Certification Form Required; [ ] CT RCP Required; [ ] RCP Certification Form Required; [ ] MA State DW Required; PWSID #
Please use the following codes to indicate possible sample concentration within the Conc Code column above: H - High; M - Medium; L - Low; C - Clean; U - Unknown
NELAC and AIHA-LAP, LLC Accredited

Project Entity: Government [ ] Municipality [ ] MWRA [ ] WRTA [ ] Federal [ ] 21 J [ ] School [ ] City [ ] Brownfield [ ] MBTA [ ]
Other: [ ] Chromatogram [ ] AIHA-LAP,LLC

Lab Comments:

Disclaimer: Pace Analytical is not responsible for any omitted information on the Chain of Custody. Th Chain of Custody is a legal document that must be complete and accurate and is used to determine wh analyses the laboratory will perform. Any missing information is not the laboratory's responsibility. Pa Analytical values your partnership on each project and will try to assist with missing information, but w not be held accountable.

[2] Preservation Code
Courier Use Only
Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y (N)
Glassware in freezer? Y (N)
Prepackaged Cooler? Y (N)
*Pace Analytical is not responsible for missing samples from prepacked coolers

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] Preservation Codes:
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Last Modified: 06/24/2026 at 9:48AM EDT

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CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 5_07/13/2021

Page 2 of 2

Sampler's Name: Horsley Witten
Address: 90 Route 6A Sandwich, MA
Phone: 781-243-1527
Project Name: Lily Pond Park
Project Location: Lily Pond, Nantucket, MA
Project Number: 20008A
Project Manager: Brian Kuchar / Bryan Massa
Pace Quote Name/Number:
Invoice Recipient:
Sampled By: Caroline Armstrong

Requested Turnaround Time: 7-Day [X] 10-Day [ ] PFAS 10-Day (std) [ ] Due Date:
Rush - Approval Required: 1-Day [ ] 3-Day [ ] 2-Day [ ] 4-Day [ ]
Data Delivery: Format: PDF [X] EXCEL [X] Other: CLP Like Data Pkg Required: [ ] Email To: bmassa@horsleywitten.com Fax To #:
Dissolved Metals Samples: [O] Field Filtered [O] Lab to Filter
Oil/Hydrocarbons Samples: [O] Field Filtered [O] Lab to Filter

ANALYSIS REQUESTED

PCB ONLY
SOXHLET [ ]
NON SOXHLET [ ]
VOCs 8260

Pace Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	[1] Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	VOCs 8260
01	SS-1 (4-5')	6/15	13:15	grab	S		3					X
02	SS-2 (1.5-2.5')		1400				3					X
03	SS-3 (2.5-3.5')		15:15				3					X
04	SS-4 (2-3')		11:30				3					X
05	SS-5 (3-4')		12:30				3					X

[2] Preservation Code

Courier Use Only
Total Number Of:
VIALS
GLASS
PLASTIC
BACTERIA
ENCORE

Glassware in the fridge? Y (N)
Glassware in freezer? Y (N)
Prepackaged Cooler? (Y)/N

*Pace Analytical is not responsible for missing samples from prepacked coolers

[1] Matrix Codes:
GW = Ground Water
WW = Waste Water
DW = Drinking Water
A = Air
S = Soil
SL = Sludge
SOL = Solid
O = Other (please define)

[2] Preservation Codes:
I = Iced
H = HCL
M = Methanol
N = Nitric Acid
S = Sulfuric Acid
B = Sodium Bisulfate
X = Sodium Hydroxide
T = Sodium Thiosulfate
O = Other (please define)

Relinquished by: (signature)	Date/Time:
Caroline Armstrong	6/17 9:30
Received by: (signature)	Date/Time:
[illegible]	6/17 930
Relinquished by: (signature)	Date/Time:
[illegible]	6/22/830
Received by: (signature)	Date/Time:
[illegible] 25	6/22 1830
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:
Relinquished by: (signature)	Date/Time:
Received by: (signature)	Date/Time:

Client Comments: for Comm-97 waste characterization

Detection Limit Requirements:
MA: Comm-97 GW-1/S1 Sed screening
RCP:
Other:

Special Requirements:
[X] MA MCP Required
[ ] MCP Certification Form Required
[ ] CT RCP Required
[ ] RCP Certification Form Required
[ ] MA State DW Required
PWSID #

Please use the following codes to indicate possible sample concentration within the Conc Code column above:
H - High; M - Medium; L - Low; C - Clean; U - Unknown

NELAC and AIHA-LAP, LLC Accredited

Project Entity:
Government [ ] Municipality [ ] MWRA [ ] WRTA [ ]
Federal [ ] 21 J [ ] School [ ]
City [X] Brownfield [ ] MBTA [ ]

Other:
[ ] Chromatogram
[ ] AIHA-LAP,LLC

Lab Comments:

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I Have Not Confirmed Sample Container Numbers With Lab Staff Before Relinquishing Over Samples_____

Pace

Pace

Doc# 277 Rev 5 2017

Login Sample Receipt Checklist - (Rejection Criteria Listing - Using Acceptance Policy) Any False Statement will be brought to the attention of the Client - State True or False

Client Horsley Witten

Received By [signature] Date 6/17/22 Time 1630

How were the samples received? In Cooler T No Cooler _____ On Ice T No Ice _____ Direct from Sampling _____ Ambient _____ Melted Ice _____

By Gun # 3 Actual Temp -2.5

Were samples within Temperature? 2-6°C T By Blank # _____ Actual Temp - _____

Was Custody Seal Intact? n/a Were Samples Tampered with? n/a

Was COC Relinquished ? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F

Is COC in ink/ Legible? T Were samples received within holding time? T

Did COC include all pertinent Information? Client T Project T Analysis T ID's T Sampler Name T Collection Dates/Times T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified? _____

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

Is there enough Volume? T

Is there Headspace where applicable? T MS/MSD? F

Proper Media/Containers Used? T Is splitting samples required? F

Were trip blanks received? F On COC? F

Do all samples have the proper pH? Acid T Base n/a

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.	2	1 Liter Plastic		16 oz Amb.	2
HCL-	2	500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-	2	250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-	14	Flashpoint		Col./Bacteria		2oz Amb/Clear	
DI-		Other Glass		Other Plastic		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Unused Media

Vials	#	Containers:	#		#		#
Unp-		1 Liter Amb.		1 Liter Plastic		16 oz Amb.	
HCL-		500 mL Amb.		500 mL Plastic		8oz Amb/Clear	
Meoh-		250 mL Amb.		250 mL Plastic		4oz Amb/Clear	
Bisulfate-		Col./Bacteria		Flashpoint		2oz Amb/Clear	
DI-		Other Plastic		Other Glass		Encore	
Thiosulfate-		SOC Kit		Plastic Bag		Frozen:	
Sulfuric-		Perchlorate		Ziplock			

Comments:

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ANALYTICAL REPORT

PREPARED FOR

Attn: Gary Hedman
Horsley Witten Group Inc
90 Route 6A
Unit #1
Sandwich, Massachusetts 02563

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JOB DESCRIPTION

Lily Pond

JOB NUMBER

620-38400-1

Last Modified: 06/24/2026 at 9:48AM EDT

Eurofins Rhode Island
646 Camp Ave
North Kingstown RI 02852

See page two for job notes and contact information.

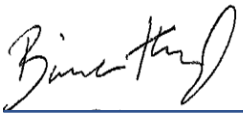
my EOL

Job Notes

This report may not be reproduced except in full, and with written approval from the laboratory. The results relate only to the samples tested. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

Authorization



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Authorized for release by
Bianca Heng, Project Manager
Bianca.Heng@et.eurofinsus.com
(413)789-9018

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Definitions/Glossary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38400-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

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MassDEP Analytical Protocol Certification Form

Laboratory Name: Eurofins Rhode Island | Project #: 620-38400-1

Project Location: Lily Pond | RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s):
620-38400-4, 620-38400-5, 620-38400-9

Matrices: ☐ Groundwater/Surface Water/Wastewater/Landfill Leachate ☑ Soil/Sediment ☐ Biosolids ☐ Tissue ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below:)

8260 VOC CAM II A ☐	7470/7471 Hg CAM III B ☐	MassDEP VPH CAM IV A ☐ PID/FID CAM IV C ☐ GC/MS ☐	8081 Pesticides CAM V B ☐	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
8270 SVOC CAM II B ☐	7010 Metals CAM III C ☐	MassDEP EPH CAM IV B ☐	8151 Herbicides CAM V C ☐	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐
6010 Metals CAM III A ☐	6020 Metals CAM III D ☑	8082 PCB CAM V A ☐	9014 Total Cyanide/PAC CAM VI A ☐	6860 Perchlorate CAM VIII B ☐	1633 PFAS CAM X A ☐

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☑ Yes ☐ No[1]
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☑ Yes ☐ No[1]
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☑ Yes ☐ No[1]
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☑ Yes ☐ No[1]
E1	VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications).	☐ Yes ☐ No[1]
E2	PFAS only: Were aqueous samples extracted without filtering?	☐ Yes ☐ No[1]
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☑ Yes ☐ No[1]

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

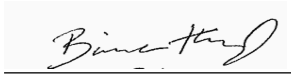
G	Were the reporting limits/lower limits of quantitation at or below all CAM reporting limits/lower limits of quantitation specified in the selected CAM protocol(s)?	☑ Yes ☐ No[1]

Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	☑ Yes ☐ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☐ Yes ☑ No[1]

[1] *All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, is accurate and complete.

Signature:  **Position:** Project Manager

Printed Name: Bianca Heng **Date:** 06/09/2026

Last Modified: 06/24/2026 at 9:48AM EDT

Job ID: 620-38400-1 — Eurofins Rhode Island

Job Narrative
620-38400-1

The analytical test results presented in this report meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page, unless otherwise noted. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable. Regulated compliance samples (e.g. SDWA, NPDES) must comply with associated agency requirements/permits.

- Matrix-specific batch QC (e.g., MS, MSD, SD) may not be reported when insufficient sample volume is available or when site-specific QC samples are not submitted. In such cases, a Laboratory Control Sample Duplicate (LCSD) may be analyzed to provide precision data for the batch.
- For samples analyzed using surrogate and/or isotope dilution analytes, any recoveries falling outside of established acceptance criteria are re-prepared and/or re-analyzed to confirm results, unless the deviation is due to sample dilution or otherwise explained in the case narrative.

Receipt
The samples were received on 5/27/2026 3:32 PM. Unless otherwise noted below, the samples arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 5.6°C.

Metals
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Biology
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Question I
All samples for Metals were run for a subset of the required MCP list per the client's request.

Last Modified: 06/24/2026 at 9:48AM EDT

Detection Summary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38400-1

Client Sample ID: 2025-SS-11 — Lab Sample ID: 620-38400-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Coliform, Fecal	4.8		2.7		MPN/g	1	☼	9221E	Total/NA

Client Sample ID: 2025-SS-10 — Lab Sample ID: 620-38400-2

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Coliform, Fecal	24		2.1		MPN/g	1	☼	9221E	Total/NA

Client Sample ID: 2025-SS-9 — Lab Sample ID: 620-38400-3

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Coliform, Fecal	100		1.7		MPN/g	1	☼	9221E	Total/NA

Client Sample ID: 2025-SS-8 — Lab Sample ID: 620-38400-4

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Lead	154		0.500		mg/Kg	5	☼	6020B	Total/NA
Coliform, Fecal	<3		2.0		MPN/g	1	☼	9221E	Total/NA

Client Sample ID: 2025-SS-7 — Lab Sample ID: 620-38400-5

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Lead	33.2		0.226		mg/Kg	5	☼	6020B	Total/NA
Coliform, Fecal	12		1.0		MPN/g	1	☼	9221E	Total/NA

Client Sample ID: 2025-SS-6 — Lab Sample ID: 620-38400-6

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Coliform, Fecal	230		1.8		MPN/g	1	☼	9221E	Total/NA

Client Sample ID: 2025-SS-5 — Lab Sample ID: 620-38400-7

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Coliform, Fecal	1700		2.0		MPN/g	1	☼	9221E	Total/NA

Client Sample ID: 2025-SS-3 — Lab Sample ID: 620-38400-8

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Coliform, Fecal	>31000		2.1		MPN/g	1	☼	9221E	Total/NA

Client Sample ID: 2025-SS-2 — Lab Sample ID: 620-38400-9

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Lead	3830		12.3		mg/Kg	50	☼	6020B	Total/NA
Coliform, Fecal	4000		4.8		MPN/g	1	☼	9221E	Total/NA

Client Sample ID: 2025-SS-1 — Lab Sample ID: 620-38400-10

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Coliform, Fecal	20		1.7		MPN/g	1	☼	9221E	Total/NA

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This Detection Summary does not include radiochemical test results.

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38400-1

Client Sample ID: 2025-SS-11
Lab Sample ID: 620-38400-1
Date Collected: 05/27/26 08:50
Matrix: Solid
Date Received: 05/27/26 15:32
Percent Solids: 41.6

Method: SM 9221E - Coliforms, Fecal (Multiple-Tube Fermentation)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Coliform, Fecal	4.8		2.7		MPN/g	☼		05/27/26 17:00	1

Client Sample ID: 2025-SS-10
Lab Sample ID: 620-38400-2
Date Collected: 05/27/26 09:00
Matrix: Solid
Date Received: 05/27/26 15:32
Percent Solids: 53.3

Method: SM 9221E - Coliforms, Fecal (Multiple-Tube Fermentation)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Coliform, Fecal	24		2.1		MPN/g	☼		05/27/26 17:00	1

Client Sample ID: 2025-SS-9
Lab Sample ID: 620-38400-3
Date Collected: 05/27/26 09:30
Matrix: Solid
Date Received: 05/27/26 15:32
Percent Solids: 67.2

Method: SM 9221E - Coliforms, Fecal (Multiple-Tube Fermentation)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Coliform, Fecal	100		1.7		MPN/g	☼		05/27/26 17:00	1

Client Sample ID: 2025-SS-8
Lab Sample ID: 620-38400-4
Date Collected: 05/27/26 09:15
Matrix: Solid
Date Received: 05/27/26 15:32
Percent Solids: 55.7

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Lead	154		0.500		mg/Kg	☼	06/03/26 10:11	06/03/26 14:55	5

Method: SM 9221E - Coliforms, Fecal (Multiple-Tube Fermentation)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Coliform, Fecal	<3		2.0		MPN/g	☼		05/27/26 17:00	1

Client Sample ID: 2025-SS-7
Lab Sample ID: 620-38400-5
Date Collected: 05/27/26 10:05
Matrix: Solid
Date Received: 05/27/26 15:32
Percent Solids: 108.0

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Lead	33.2		0.226		mg/Kg	☼	06/03/26 10:11	06/03/26 14:58	5

Method: SM 9221E - Coliforms, Fecal (Multiple-Tube Fermentation)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Coliform, Fecal	12		1.0		MPN/g	☼		05/27/26 17:00	1

Client Sample ID: 2025-SS-6
Lab Sample ID: 620-38400-6
Date Collected: 05/27/26 11:05
Matrix: Solid
Date Received: 05/27/26 15:32
Percent Solids: 61.5

Method: SM 9221E - Coliforms, Fecal (Multiple-Tube Fermentation)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Coliform, Fecal	230		1.8		MPN/g	☼		05/27/26 17:00	1

Last Modified: 06/24/2026 at 9:48AM EDT

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38400-1

Client Sample ID: 2025-SS-5
Lab Sample ID: 620-38400-7
Date Collected: 05/27/26 11:00
Matrix: Solid
Date Received: 05/27/26 15:32
Percent Solids: 54.3

Method: SM 9221E - Coliforms, Fecal (Multiple-Tube Fermentation)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Coliform, Fecal	1700		2.0		MPN/g	☼		05/27/26 17:00	1

Client Sample ID: 2025-SS-3
Lab Sample ID: 620-38400-8
Date Collected: 05/27/26 10:20
Matrix: Solid
Date Received: 05/27/26 15:32
Percent Solids: 52.2

Method: SM 9221E - Coliforms, Fecal (Multiple-Tube Fermentation)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Coliform, Fecal	>31000		2.1		MPN/g	☼		05/27/26 17:00	1

Client Sample ID: 2025-SS-2
Lab Sample ID: 620-38400-9
Date Collected: 05/27/26 10:35
Matrix: Solid
Date Received: 05/27/26 15:32
Percent Solids: 23.0

Method: SW846 6020B - Metals (ICP/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Lead	3830		12.3		mg/Kg	☼	06/03/26 10:11	06/03/26 15:11	50

Method: SM 9221E - Coliforms, Fecal (Multiple-Tube Fermentation)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Coliform, Fecal	4000		4.8		MPN/g	☼		05/27/26 17:00	1

Client Sample ID: 2025-SS-1
Lab Sample ID: 620-38400-10
Date Collected: 05/27/26 11:30
Matrix: Solid
Date Received: 05/27/26 15:32
Percent Solids: 64.2

Method: SM 9221E - Coliforms, Fecal (Multiple-Tube Fermentation)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Coliform, Fecal	20		1.7		MPN/g	☼		05/27/26 17:00	1

Last Modified: 06/24/2026 at 9:48AM EDT

QC Sample Results

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38400-1

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 620-68434/1-A
Matrix: Solid
Analysis Batch: 68500

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 68434

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Lead	ND		0.259		mg/Kg		06/03/26 10:11	06/03/26 14:46	5

Lab Sample ID: LCDSRM 620-68434/3-A
Matrix: Solid
Analysis Batch: 68500

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 68434

Analyte			Spike Added	LCDSRM Result	LCDSRM Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Arsenic			297	250.5		mg/Kg		84.3	68.4 - 100.0	1	20
Cadmium			171	157.4		mg/Kg		92.0	70.2 - 101.8	4	20
Chromium			98.7	86.65		mg/Kg		87.8	73.2 - 107.4	1	20
Lead			143	118.7		mg/Kg		83.0	74.8 - 108.4	1	20

Lab Sample ID: LCSSRM 620-68434/2-A
Matrix: Solid
Analysis Batch: 68500

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 68434

Analyte			Spike Added	LCSSRM Result	LCSSRM Qualifier	Unit	D	%Rec	%Rec Limits		
Arsenic			297	247.9		mg/Kg		83.5	68.4 - 100.0		
Cadmium			171	151.0		mg/Kg		88.3	70.2 - 101.8		
Chromium			98.7	87.60		mg/Kg		88.8	73.2 - 107.4		
Lead			143	119.8		mg/Kg		83.8	74.8 - 108.4		

Method: 9221E - Coliforms, Fecal (Multiple-Tube Fermentation)

Lab Sample ID: POS 296-818/1
Matrix: Solid
Analysis Batch: 818

Client Sample ID: Positive Control
Prep Type: Total/NA

Analyte	POS Result	POS Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Coliform, Fecal	100		0.11		MPN/g			05/27/26 17:00	1

Last Modified: 06/24/2026 at 9:48AM EDT

QC Association Summary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38400-1

Metals

Prep Batch: 68434

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38400-4	2025-SS-8	Total/NA	Solid	3050B	
620-38400-5	2025-SS-7	Total/NA	Solid	3050B	
620-38400-9	2025-SS-2	Total/NA	Solid	3050B	
MB 620-68434/1-A	Method Blank	Total/NA	Solid	3050B	
LCDSRM 620-68434/3-A	Lab Control Sample Dup	Total/NA	Solid	3050B	
LCSSRM 620-68434/2-A	Lab Control Sample	Total/NA	Solid	3050B	

Analysis Batch: 68500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38400-4	2025-SS-8	Total/NA	Solid	6020B	68434
620-38400-5	2025-SS-7	Total/NA	Solid	6020B	68434
620-38400-9	2025-SS-2	Total/NA	Solid	6020B	68434
MB 620-68434/1-A	Method Blank	Total/NA	Solid	6020B	68434
LCDSRM 620-68434/3-A	Lab Control Sample Dup	Total/NA	Solid	6020B	68434
LCSSRM 620-68434/2-A	Lab Control Sample	Total/NA	Solid	6020B	68434

General Chemistry

Analysis Batch: 909

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38400-1	2025-SS-11	Total/NA	Solid	Moisture - 2540	
620-38400-2	2025-SS-10	Total/NA	Solid	Moisture - 2540	
620-38400-3	2025-SS-9	Total/NA	Solid	Moisture - 2540	
620-38400-4	2025-SS-8	Total/NA	Solid	Moisture - 2540	
620-38400-5	2025-SS-7	Total/NA	Solid	Moisture - 2540	
620-38400-6	2025-SS-6	Total/NA	Solid	Moisture - 2540	
620-38400-7	2025-SS-5	Total/NA	Solid	Moisture - 2540	
620-38400-8	2025-SS-3	Total/NA	Solid	Moisture - 2540	
620-38400-9	2025-SS-2	Total/NA	Solid	Moisture - 2540	
620-38400-10	2025-SS-1	Total/NA	Solid	Moisture - 2540	

Biology

Analysis Batch: 818

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38400-1	2025-SS-11	Total/NA	Solid	9221E	
620-38400-2	2025-SS-10	Total/NA	Solid	9221E	
620-38400-3	2025-SS-9	Total/NA	Solid	9221E	
620-38400-4	2025-SS-8	Total/NA	Solid	9221E	
620-38400-5	2025-SS-7	Total/NA	Solid	9221E	
620-38400-6	2025-SS-6	Total/NA	Solid	9221E	
620-38400-7	2025-SS-5	Total/NA	Solid	9221E	
620-38400-8	2025-SS-3	Total/NA	Solid	9221E	
620-38400-9	2025-SS-2	Total/NA	Solid	9221E	
620-38400-10	2025-SS-1	Total/NA	Solid	9221E	
POS 296-818/1	Positive Control	Total/NA	Solid	9221E	

Last Modified: 06/24/2026 at 9:48AM EDT

Lab Chronicle

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38400-1

Client Sample ID: 2025-SS-11
Date Collected: 05/27/26 08:50
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-1
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture - 2540		1	909	BC	EET MDB	06/01/26 09:57

Client Sample ID: 2025-SS-11
Date Collected: 05/27/26 08:50
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-1
Matrix: Solid
Percent Solids: 41.6

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9221E		1	818	GG	EET MDB	05/27/26 17:00 - 05/28/26 17:18 [1]

Client Sample ID: 2025-SS-10
Date Collected: 05/27/26 09:00
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-2
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture - 2540		1	909	BC	EET MDB	06/01/26 09:57

Client Sample ID: 2025-SS-10
Date Collected: 05/27/26 09:00
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-2
Matrix: Solid
Percent Solids: 53.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9221E		1	818	GG	EET MDB	05/27/26 17:00 - 05/28/26 17:18 [1]

Client Sample ID: 2025-SS-9
Date Collected: 05/27/26 09:30
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-3
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture - 2540		1	909	BC	EET MDB	06/01/26 09:57

Client Sample ID: 2025-SS-9
Date Collected: 05/27/26 09:30
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-3
Matrix: Solid
Percent Solids: 67.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9221E		1	818	GG	EET MDB	05/27/26 17:00 - 05/28/26 17:18 [1]

Client Sample ID: 2025-SS-8
Date Collected: 05/27/26 09:15
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-4
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture - 2540		1	909	BC	EET MDB	06/01/26 09:57

Last Modified: 06/24/2026 at 9:48AM EDT

Lab Chronicle

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38400-1

Client Sample ID: 2025-SS-8
Date Collected: 05/27/26 09:15
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-4
Matrix: Solid
Percent Solids: 55.7

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3050B			68434	CES	EET RI	06/03/26 10:11
Total/NA	Analysis	6020B		5	68500	CES	EET RI	06/03/26 14:55
Total/NA	Analysis	9221E		1	818	GG	EET MDB	05/27/26 17:00 - 05/28/26 17:18 [1]

Client Sample ID: 2025-SS-7
Date Collected: 05/27/26 10:05
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-5
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture - 2540		1	909	BC	EET MDB	06/01/26 09:57

Client Sample ID: 2025-SS-7
Date Collected: 05/27/26 10:05
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-5
Matrix: Solid
Percent Solids: 108.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3050B			68434	CES	EET RI	06/03/26 10:11
Total/NA	Analysis	6020B		5	68500	CES	EET RI	06/03/26 14:58
Total/NA	Analysis	9221E		1	818	GG	EET MDB	05/27/26 17:00 - 05/28/26 17:18 [1]

Client Sample ID: 2025-SS-6
Date Collected: 05/27/26 11:05
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-6
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture - 2540		1	909	BC	EET MDB	06/01/26 09:57

Client Sample ID: 2025-SS-6
Date Collected: 05/27/26 11:05
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-6
Matrix: Solid
Percent Solids: 61.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9221E		1	818	GG	EET MDB	05/27/26 17:00 - 05/28/26 17:18 [1]

Client Sample ID: 2025-SS-5
Date Collected: 05/27/26 11:00
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-7
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture - 2540		1	909	BC	EET MDB	06/01/26 09:57

Last Modified: 06/24/2026 at 9:48AM EDT

Client Sample ID: 2025-SS-5
Date Collected: 05/27/26 11:00
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-7
Matrix: Solid
Percent Solids: 54.3

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9221E		1	818	GG	EET MDB	05/27/26 17:00 - 05/28/26 17:18 [1]

Client Sample ID: 2025-SS-3
Date Collected: 05/27/26 10:20
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-8
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture - 2540		1	909	BC	EET MDB	06/01/26 09:57

Client Sample ID: 2025-SS-3
Date Collected: 05/27/26 10:20
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-8
Matrix: Solid
Percent Solids: 52.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9221E		1	818	GG	EET MDB	05/27/26 17:00 - 05/28/26 17:18 [1]

Client Sample ID: 2025-SS-2
Date Collected: 05/27/26 10:35
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-9
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture - 2540		1	909	BC	EET MDB	06/01/26 09:57

Client Sample ID: 2025-SS-2
Date Collected: 05/27/26 10:35
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-9
Matrix: Solid
Percent Solids: 23.0

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Prep	3050B			68434	CES	EET RI	06/03/26 10:11
Total/NA	Analysis	6020B		50	68500	CES	EET RI	06/03/26 15:11
Total/NA	Analysis	9221E		1	818	GG	EET MDB	05/27/26 17:00 - 05/28/26 17:18 [1]

Client Sample ID: 2025-SS-1
Date Collected: 05/27/26 11:30
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-10
Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	Moisture - 2540		1	909	BC	EET MDB	06/01/26 09:57

Client Sample ID: 2025-SS-1
Date Collected: 05/27/26 11:30
Date Received: 05/27/26 15:32

Lab Sample ID: 620-38400-10
Matrix: Solid
Percent Solids: 64.2

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	9221E		1	818	GG	EET MDB	05/27/26 17:00 - 05/28/26 17:18 [1]

[1] This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Lab Chronicle

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38400-1

Laboratory References:

EET MDB = Eurofins Middleborough, 422 W Grove St, Middleborough, MA 02346, TEL (508)946-2225

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

Last Modified: 06/24/2026 at 9:48AM EDT

Accreditation/Certification Summary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38400-1

Laboratory: Eurofins Rhode Island

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Massachusetts	State	M-RI907	06-30-26

The following analytes are included in this report, but the laboratory is not certified by Massachusetts State M-RI907. This list may include analytes for which the agency does not offer certification:

Analysis Method	Prep Method	Matrix	Analyte
6020B	3050B	Solid	Lead

Laboratory: Eurofins Middleborough

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Massachusetts	State	M-MA022	06-30-27
Rhode Island	State	MA022	06-30-27

Last Modified: 06/24/2026 at 9:48AM EDT

Method Summary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38400-1

Method	Method Description	Protocol	Laboratory
6020B	Metals (ICP/MS)	SW846	EET RI
Moisture - 2540	Percent Moisture	SM	EET MDB
9221E	Coliforms, Fecal (Multiple-Tube Fermentation)	SM	EET MDB
3050B	Preparation, Metals	SW846	EET RI

Protocol References:

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET MDB = Eurofins Middleborough, 422 W Grove St, Middleborough, MA 02346, TEL (508)946-2225

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

Last Modified: 06/24/2026 at 9:48AM EDT

Sample Summary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38400-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
620-38400-1	2025-SS-11	Solid	05/27/26 08:50	05/27/26 15:32	Massachusetts
620-38400-2	2025-SS-10	Solid	05/27/26 09:00	05/27/26 15:32	Massachusetts
620-38400-3	2025-SS-9	Solid	05/27/26 09:30	05/27/26 15:32	Massachusetts
620-38400-4	2025-SS-8	Solid	05/27/26 09:15	05/27/26 15:32	Massachusetts
620-38400-5	2025-SS-7	Solid	05/27/26 10:05	05/27/26 15:32	Massachusetts
620-38400-6	2025-SS-6	Solid	05/27/26 11:05	05/27/26 15:32	Massachusetts
620-38400-7	2025-SS-5	Solid	05/27/26 11:00	05/27/26 15:32	Massachusetts
620-38400-8	2025-SS-3	Solid	05/27/26 10:20	05/27/26 15:32	Massachusetts
620-38400-9	2025-SS-2	Solid	05/27/26 10:35	05/27/26 15:32	Massachusetts
620-38400-10	2025-SS-1	Solid	05/27/26 11:30	05/27/26 15:32	Massachusetts

Last Modified: 06/24/2026 at 9:48AM EDT

ESS Laboratory
Analytical Balance BAL Laboratory
185 Frances Avenue, Cranston, RI 02910
Phone: 401-461-7181
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Work Order # 620 - 38400 Page 1 of 1

Turn Time (Days): ☒ Standard ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ SameDay
Regulatory State: MA Criteria:
PROJECT TYPE: ☐ CT RCP ☐ MA MCP ☐ RGP ☐ Permit ☐ 401 WQ ☐ Drinking Water

PAYMENT: Amount $ ____ Check # ____ V MC D AmEx Cash

ELECTRONIC DELIVERABLES (Final Reports are PDF): ☐ EQuIS ☐ State Upload ☐ Enviro Data ☐ CLP-Like Package ☐ Other (Specify) →

CLIENT INFORMATION
Client: Horsley Witten Group
Address: 90 Route 6A Sandwich, MA
Phone: 508-833-6600
Persons Authorized to Receive Data: cgran@horsleywitten.com gfriedman@horsleywitten.com

PROJECT INFORMATION
Project Name: Lily Pond
Project Location: Nantucket, MA
Project Number: 22008
Project Manager: Gary Friedman
Bill to:
PO#:
Quote#:

Client acknowledges that sampling is compliant with all EPA / State regulatory programs.

REQUESTED ANALYSES

Laboratory ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	Fecal Coliform	Lead	Total Number of Bottles
1	5/27/26	850	comp	Sed.	2025-SS-11	X		
2		900			2025-SS-10	X		
3		930			2025-SS-9	X		
4		915			2025-SS-8	X	X	
5		1005			2025-SS-7	X	X	
6		1105			2025-SS-6	X		
7		1100			2025-SS-5	X		
8		1020			2025-SS-3	X		
9		1035			2025-SS-2	X	X	
10		1130			2025-SS-1	X		

620-38400 COC

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer J-Jar O-Other P-Poly S-Sterile V-Vial
Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other
Number of Bottles per Sample:

Shipping Conditions (circle one)
Ice (Iced) Ambient
Cooler Temperature (°C): 5.6
Client approval required for temperature >6°C
☐ Approved by Client (initials/date →)

Sampled by : Caroline Gran
Comments: * Please specify "Other" preservative and containers types in this space
*please run TCLP for lead that exceeds 20x rule. *short hold time(6hr) for fecal coliform*

Chain needs to be filled out neatly and completely for on time delivery.

All samples submitted are subject to ESS Laboratory's payment terms and conditions.

Dissolved Filtration: ☐ Laboratory Filter ☐ Field Filter

Relinquished by (Signature)	Date	Time	Received By (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)
Caroline Gran	5/27/27	1500			5/27/2026	15:52	
Relinquished by (Signature)	Date	Time	Received By (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)
	6/1/26	18:31	ESS Cooler		6/2/2026	15:56	DSR
Relinquished by (Signature)	6/2/26	1430					

5.8/5.7 IR# ENC

Eurofins Rhode Island Laboratory Sample and Cooler Receipt Checklist

Client: Horsley Witten Group — TALS Job ID: 384OC

Shipped/Delivered Via: Courier — Date Received: 6/2/26

TAT Requested: STD

1 Air bill manifest present? YES / (NO)
Air No.: _____

2 Were custody seals present? YES / (NO)

3. Is a Cooler Present? (YES) / NO
~~Air~~ Temp: 5.6°C Iced with: _____
Temp: _____ Iced with: _____
Temp: 5.7°C Iced with: ice #10 ARIER
Temp: _____ Iced with: _____
Temp. _____ Iced with: _____

4. Was COC signed and dated by client? (YES) / NO

5 Does COC match bottles? ☆(YES) / NO

6 Is COC complete and correct? ☆(YES) / NO

7 Were samples received intact? (YES) / NO

8. Were labs informed about short holds & rushes? YES / NO / (NA)

9 Were any analyses received outside of hold time? YES / (NO)

---

11 Any Subcontracting needed? YES / (NO)
TALS Sample IDs:
Analysis. _____
TAT _____

12 Were VOAs received? YES / (NO)
a. Air bubbles in aqueous VOAs? YES / NO / (NA)
b Does methanol cover soil completely? YES / NO / (NA)

13 Are the samples properly preserved? (Yes) / No
a. If metals, unpreserved delivered to the lab Date. _____ Time: _____ By/Acid Lot#: _____
b. Low Level VOA vials frozen Date _____ Time. _____ By: _____

Sample Receiving Notes.

☆This was second time receiving this job/chain. Samples got incorrectly subbed, then sent back. Received samp. 4,5,9.

14 Was there a need to contact Project Manager? Yes / (No)
a. Was there a need to contact the client? Yes / No
Who was contacted? _____ Date _____ Time. _____ By: _____

Resolution: _____

2nd Review

Were all containers scanned into storage/lab? Initials: _____

Are barcode labels on correct containers? (YES) / NO

Are all Flashpoint stickers attached/container ID # circled? YES / NO / NA

Are all Hex Chrome stickers attached? YES / NO / NA

Are all QC stickers attached? YES / NO / NA

Are VOA stickers attached if bubbles noted? YES / NO / NA

Are Composite stickers added if needed? YES / NO / NA

Completed By: _____ Date & Time 6/2/26 1715

Reviewed By _____ Date & Time 6/2/26 18:46

Last Modified: 06/24/2026 at 9:48AM EDT

ESS Laboratory

Analytical Balance — BAL Laboratory

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Work Order # 620 - 38400 Page 1 of 1

Turn Time (Days): [X] Standard [ ] 4 [ ] 3 [ ] 2 [ ] 1 [ ] SameDay
Regulatory State: MA Criteria:

PROJECT TYPE: [ ] CT RCP [ ] MA MCP [ ] RGP [ ] Permit [ ] 401 WQ [ ] Drinking Water

PAYMENT: Amount $ ____ Check # ____ V MC D AmEx Cash

ELECTRONIC DELIVERABLES (Final Reports are PDF): [ ] EQuIS [ ] State Upload [ ] Enviro Data [ ] CLP-Like Package [ ] Other (Specify) →

CLIENT INFORMATION

Client: Horsley Witten Group
Address: 90 Route 6A Sandwich, MA
Phone: 508-833-6600
Persons Authorized to Receive Data: cgran@horsleywitten.com greadman@horsleywitten.com

PROJECT INFORMATION

Project Name: Lily Pond
Project Location: Nantucket, MA
Project Number: 22008
Project Manager: Gary Hedman
Bill to:
PO#:
Quote#:

Client acknowledges that sampling is compliant with all EPA / State regulatory programs.

REQUESTED ANALYSES

Laboratory ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	fecal coliform	Lead	Total Number of Bottles
1	5/27/26	850	comp	Sed.	2025-SS-11	X		
2		900			2025-SS-10	X		
3		930			2025-SS-9	X		
4		915			2025-SS-8	X	X	
5		1005			2025-SS-7	X	X	
6		1105			2025-SS-6	X		
7		1100			2025-SS-5	X		
8		1020			2025-SS-3	X		
9		1035			2025-SS-2	X	X	
10		1130			2025-SS-1	X		

620-38400 COC

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer J-Jar O-Other P-Poly S-Sterile V-Vial
Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other
Number of Bottles per Sample:

Shipping Conditions (circle one)

Ice (Iced) Ambient
Cooler Temperature (°C): 5.6
Client approval required for temperature >6°C
[ ] Approved by Client (initials/date →)

Sampled by : Caroline Gran

Comments: * Please specify "Other" preservative and containers types in this space

*please run TCLP for lead that exceeds 20x rule. *short hold time(6hr) for fecal coliform*

Chain needs to be filled out neatly and completely for on time delivery.

All samples submitted are subject to ESS Laboratory's payment terms and conditions.

Dissolved Filtration: [ ] Laboratory Filter [ ] Field Filter

Relinquished by (Signature)	Date	Time	Received By (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)
Caroline Gran	5/27/27	1500			5/27/2026	15:52	
Relinquished by (Signature)	Date	Time	Received By (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)

Last Modified: 06/24/2026 at 9:48AM EDT

ESS Laboratory

Analytical Balance — BAL Laboratory

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Phone: 401-461-7181
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Work Order # 620 - 38400 Page 1 of 1

Turn Time (Days): ☒ Standard ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ SameDay
Regulatory State: MA Criteria:
PROJECT TYPE: ☐ CT RCP ☐ MA MCP ☐ RGP ☐ Permit ☐ 401 WQ ☐ Drinking Water

PAYMENT: Amount $ ____ Check # ____ V MC D AmEx Cash

ELECTRONIC DELIVERABLES (Final Reports are PDF): ☐ EQuIS ☐ State Upload ☐ Enviro Data ☐ CLP-Like Package ☐ Other (Specify) →

CLIENT INFORMATION

Client: Horsley Witten Group
Address: 90 Route 6A Sandwich, MA
Phone: 508-833-6600
Persons Authorized to Receive Data: cgran@horsleywitten.com ghedman@horsleywitten.com

PROJECT INFORMATION

Project Name: Lily Pond
Project Location: Nantucket, MA
Project Number: 22008
Project Manager: Gary Hedman
Bill to:
PO#:
Quote#:

Client acknowledges that sampling is compliant with all EPA / State regulatory programs.

REQUESTED ANALYSES

Laboratory ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	Fecal Coliform	Lead	Total Number of Bottles
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2		900			2025-SS-10	X		
3		930			2025-SS-9	X		
4		915			2025-SS-8	X	X	
5		1005			2025-SS-7	X	X	
6		1105			2025-SS-6	X		
7		1100			2025-SS-5	X		
8		1020			2025-SS-3	X		
9		1035			2025-SS-2	X	X	
10		1130			2025-SS-1	X		

620-38400 COC

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer J-Jar O-Other P-Poly S-Sterile V-Vial
Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other
Number of Bottles per Sample:

Shipping Conditions (circle one)

Ice (Iced) Ambient
Cooler Temperature (°C): 5.6
Client approval required for temperature >6°C
☐ Approved by Client (initials/date →)

Sampled by : Caroline Gran

Comments: * Please specify "Other" preservative and containers types in this space

*please run TCLP for lead that exceeds 20x rule. *Short hold time(6hr) for fecal coliform*

Chain needs to be filled out neatly and completely for on time delivery.

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Relinquished by (Signature)	Date	Time	Received By (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)
Caroline Gran	5/27/27	1500			5/27/2026	15:52	
Relinquished by (Signature)	Date	Time	Received By (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)

Last Modified: 06/24/2026 at 9:48AM EDT

Login Sample Receipt Checklist

Client: Horsley Witten Group Inc

Job Number: 620-38400-1

Login Number: 38400
List Number: 1
Creator: Madison, Ashley L

List Source: Eurofins Rhode Island

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.		
The cooler's custody seal, if present, is intact.		
Sample custody seals, if present, are intact.		
The cooler or samples do not appear to have been compromised or tampered with.		
Samples were received on ice.		
Cooler Temperature is acceptable.		
Cooler Temperature is recorded.		
COC is present.		
COC is filled out in ink and legible.		
COC is filled out with all pertinent information.		
Is the Field Sampler's name present on COC?		
There are no discrepancies between the containers received and the COC.		
Samples are received within Holding Time (excluding tests with immediate HTs)		
Sample containers have legible labels.		
Containers are not broken or leaking.		
Sample collection date/times are provided.		
Appropriate sample containers are used.		
Sample bottles are completely filled.		
Sample Preservation Verified.		
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs		
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").		
Multiphasic samples are not present.		
Samples do not require splitting or compositing.		
Residual Chlorine Checked.		

Last Modified: 06/24/2026 at 9:48AM EDT

Login Sample Receipt Checklist

Client: Horsley Witten Group Inc

Job Number: 620-38400-1

Login Number: 38400
List Number: 2
Creator: Travers, Janene

List Source: Eurofins Middleborough
List Creation: 05/28/26 07:29 AM

Question	Answer	Comment
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample Preservation Verified.	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	

Last Modified: 06/24/2026 at 9:48AM EDT

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ANALYTICAL REPORT

PREPARED FOR

Attn: Gary Hedman
Horsley Witten Group Inc
90 Route 6A
Unit #1
Sandwich, Massachusetts 02563

Generated 6/9/2026 12:24:05 PM

JOB DESCRIPTION

Lily Pond
20008

JOB NUMBER

620-38401-1

Last Modified: 06/24/2026 at 9:48AM EDT

Eurofins Rhode Island
646 Camp Ave
North Kingstown RI 02852

See page two for job notes and contact information.

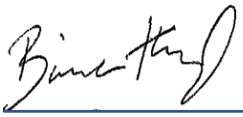
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Job Notes

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The test results in this report relate only to the samples as received by the laboratory and will meet all requirements of the methodology, with any exceptions noted. This report shall not be reproduced except in full, without the express written approval of the laboratory. All questions should be directed to the Eurofins Environment Testing Northeast, LLC Project Manager.

Authorization



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Authorized for release by
Bianca Heng, Project Manager
Bianca.Heng@et.eurofinsus.com
(413)789-9018

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Last Modified: 06/24/2026 at 9:48AM EDT

Definitions/Glossary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38401-1
SDG: 20008

Qualifiers

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD recovery exceeds control limits.
H	Sample was prepped or analyzed beyond the specified holding time. This does not meet regulatory requirements.
H3	Sample was received and analyzed past holding time. This does not meet regulatory requirements.
HF	Parameter with a holding time of 15 minutes. Test performed by laboratory at client's request. Sample was analyzed outside of hold time.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
☼	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Last Modified: 06/24/2026 at 9:48AM EDT

Job Narrative
620-38401-1

The analytical test results presented in this report meet all requirements of the associated regulatory program listed on the Accreditation/Certification Summary Page, unless otherwise noted. Data qualifiers and/or narrative comments are included to explain any exceptions, if applicable. Regulated compliance samples (e.g. SDWA, NPDES) must comply with associated agency requirements/permits.

- Matrix-specific batch QC (e.g., MS, MSD, SD) may not be reported when insufficient sample volume is available or when site-specific QC samples are not submitted. In such cases, a Laboratory Control Sample Duplicate (LCSD) may be analyzed to provide precision data for the batch.
- For samples analyzed using surrogate and/or isotope dilution analytes, any recoveries falling outside of established acceptance criteria are re-prepared and/or re-analyzed to confirm results, unless the deviation is due to sample dilution or otherwise explained in the case narrative.

Receipt
The sample was received on 5/27/2026 5:46 PM. Unless otherwise noted below, the sample arrived in good condition, and, where required, properly preserved and on ice. The temperature of the cooler at receipt time was 2.1°C.

GC/MS VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC/MS Semi VOA
Method 625.1: The continuing calibration verification (CCV) associated with batch 410-828686 recovered above the upper control limit for 4-Nitrophenol. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

GC Semi VOA
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

PCBs
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

HPLC/IC
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Metals
No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

General Chemistry
Method SM 4500 Cl G: This analysis is normally performed in the field and has a method-defined holding time of 15 minutes. The following sample has been qualified with the "HF" flag to indicate analysis was performed in the laboratory outside the 15 minute timeframe: LP-GW-1 (620-38401-1).

Method SM 4500 Cl G: The following sample was diluted due to the nature of the sample matrix: LP-GW-1 (620-38401-1). Elevated reporting limits (RLs) are provided.

Method SM 4500 Cl G: The matrix spike (MS) recoveries for analytical batch 620-67880 were outside control limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

Method 7196A: Sample LP-GW-1 (620-38401-1) was/were received outside of holding time.

Method 7196A: The following sample was diluted due to the nature of the sample matrix: LP-GW-1 (620-38401-1). Elevated reporting limits (RLs) are provided.

Method 7196A: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 620-67879 were outside control

Job ID: 620-38401-1 (Continued)

limits for one or more analytes. See QC Sample Results for detail. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery is within acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/ Glossary page.

Detection Summary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38401-1
SDG: 20008

Client Sample ID: LP-GW-1 — Lab Sample ID: 620-38401-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Chloride	59.3		15.0		mg/L	10		EPA 300.0 R2.1	Total/NA
Calcium	16.9		0.500		mg/L	1		200.7 Rev 4.4	Total/NA
Magnesium	3.42		0.200		mg/L	1		200.7 Rev 4.4	Total/NA
Lead	4.11		2.00		ug/L	1		200.8	Total/NA
Fe	18700		100		ug/L	1		200.8	Total/NA
Fe	18900		100		ug/L	1		200.8	Dissolved
Total Suspended Solids	33.0		30.0		mg/L	1		2540D-2015	Total/NA

Last Modified: 06/24/2026 at 9:48AM EDT

This Detection Summary does not include radiochemical test results.

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38401-1
SDG: 20008

Client Sample ID: LP-GW-1

Date Collected: 05/26/26 15:00
Date Received: 05/27/26 17:46

Lab Sample ID: 620-38401-1

Matrix: Water

Method: EPA 624.1 - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.00		ug/L			05/29/26 14:15	1
1,1,2-Trichloroethane	ND		1.00		ug/L			05/29/26 14:15	1
1,1-Dichloroethane	ND		1.00		ug/L			05/29/26 14:15	1
1,1-Dichloroethene	ND		1.00		ug/L			05/29/26 14:15	1
1,2-Dichlorobenzene	ND		1.00		ug/L			05/29/26 14:15	1
1,2-Dichloroethane	ND		1.00		ug/L			05/29/26 14:15	1
1,2-Dichloroethene, Total	ND		2.00		ug/L			05/29/26 14:15	1
1,2-Dichloropropane	ND		1.00		ug/L			05/29/26 14:15	1
1,3-Dichlorobenzene	ND		1.00		ug/L			05/29/26 14:15	1
1,3-Dichloropropene, Total	ND		2.00		ug/L			05/29/26 14:15	1
1,4-Dichlorobenzene	ND		1.00		ug/L			05/29/26 14:15	1
Acetone	ND		10.0		ug/L			05/29/26 14:15	1
Benzene	ND		1.00		ug/L			05/29/26 14:15	1
Carbon tetrachloride	ND		1.00		ug/L			05/29/26 14:15	1
Chloromethane	ND		2.00		ug/L			05/29/26 14:15	1
cis-1,2-Dichloroethene	ND		1.00		ug/L			05/29/26 14:15	1
Ethanol	ND		200		ug/L			05/29/26 14:15	1
Ethylbenzene	ND		1.00		ug/L			05/29/26 14:15	1
Methyl tert-butyl ether	ND		1.00		ug/L			05/29/26 14:15	1
Methylene Chloride	ND		10.0		ug/L			05/29/26 14:15	1
m-Xylene & p-Xylene	ND		2.00		ug/L			05/29/26 14:15	1
Naphthalene	ND		2.00		ug/L			05/29/26 14:15	1
o-Xylene	ND		1.00		ug/L			05/29/26 14:15	1
t-Butyl alcohol	ND		10.0		ug/L			05/29/26 14:15	1
Tert-amyl methyl ether	ND		1.00		ug/L			05/29/26 14:15	1
Tetrachloroethene	ND		1.00		ug/L			05/29/26 14:15	1
Toluene	ND		1.00		ug/L			05/29/26 14:15	1
trans-1,2-Dichloroethene	ND		1.00		ug/L			05/29/26 14:15	1
trans-1,3-Dichloropropene	ND		1.00		ug/L			05/29/26 14:15	1
Trichloroethene	ND		1.00		ug/L			05/29/26 14:15	1
Vinyl chloride	ND		1.00		ug/L			05/29/26 14:15	1
Xylenes, Total	ND		3.00		ug/L			05/29/26 14:15	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*105*		*70 - 130*		*05/29/26 14:15*	*1*
Toluene-d8 (Surr)	*105*		*70 - 130*		*05/29/26 14:15*	*1*
1,2-Dichloroethane-d4 (Surr)	*108*		*70 - 130*		*05/29/26 14:15*	*1*
Dibromofluoromethane (Surr)	*108*		*70 - 130*		*05/29/26 14:15*	*1*

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Acenaphthylene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Anthracene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Benzo[a]anthracene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Benzo[a]pyrene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Benzo[b]fluoranthene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Benzo[g,h,i]perylene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Benzo[k]fluoranthene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Bis(2-ethylhexyl) phthalate	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1

Last Modified: 06/24/2026 at 9:48AM EDT

Client Sample ID: LP-GW-1

Date Collected: 05/26/26 15:00
Date Received: 05/27/26 17:46

Lab Sample ID: 620-38401-1

Matrix: Water

Method: EPA 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Butylbenzylphthalate	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Chrysene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Dibenz(a,h)anthracene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Diethylphthalate	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Dimethylphthalate	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Di-n-butyl phthalate	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Di-n-octyl phthalate	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Fluoranthene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Fluorene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Indeno[1,2,3-cd]pyrene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Naphthalene	ND		2.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
2,2'-oxybis[1-chloropropane]	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Pentachlorophenol	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Phenanthrene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1
Pyrene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 19:21	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*57*		*36 - 130*	*06/02/26 16:04*	*06/03/26 19:21*	*1*
2-Fluorophenol (Surr)	*32*		*10 - 130*	*06/02/26 16:04*	*06/03/26 19:21*	*1*
Nitrobenzene-d5 (Surr)	*50*		*18 - 130*	*06/02/26 16:04*	*06/03/26 19:21*	*1*
Phenol-d5 (Surr)	*23*		*10 - 130*	*06/02/26 16:04*	*06/03/26 19:21*	*1*
p-Terphenyl-d14 (Surr)	*58*		*11 - 138*	*06/02/26 16:04*	*06/03/26 19:21*	*1*
2,4,6-Tribromophenol (Surr)	*50*		*10 - 139*	*06/02/26 16:04*	*06/03/26 19:21*	*1*

Method: SW846 8270E SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.195		ug/L		06/01/26 10:31	06/01/26 16:59	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*28*		*15 - 110*	*06/01/26 10:31*	*06/01/26 16:59*	*1*

Method: EPA 608.3 - Polychlorinated Biphenyls (PCBs) (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.400		ug/L		06/02/26 10:10	06/02/26 15:48	1
PCB-1221	ND		0.400		ug/L		06/02/26 10:10	06/02/26 15:48	1
PCB-1232	ND		0.400		ug/L		06/02/26 10:10	06/02/26 15:48	1
PCB-1242	ND		0.400		ug/L		06/02/26 10:10	06/02/26 15:48	1
PCB-1248	ND		0.400		ug/L		06/02/26 10:10	06/02/26 15:48	1
PCB-1254	ND		0.400		ug/L		06/02/26 10:10	06/02/26 15:48	1
PCB-1260	ND		0.400		ug/L		06/02/26 10:10	06/02/26 15:48	1
PCB-1262	ND		0.400		ug/L		06/02/26 10:10	06/02/26 15:48	1
PCB-1268	ND		0.400		ug/L		06/02/26 10:10	06/02/26 15:48	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*58*		*30 - 150*	*06/02/26 10:10*	*06/02/26 15:48*	*1*
Tetrachloro-m-xylene (Surr)	*48*		*30 - 150*	*06/02/26 10:10*	*06/02/26 15:48*	*1*

Method: SW846 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Ethylene Dibromide	ND		0.0194		ug/L		06/07/26 23:05	06/08/26 21:43	1

Last Modified: 06/24/2026 at 9:48AM EDT

Client Sample ID: LP-GW-1

Date Collected: 05/26/26 15:00
Date Received: 05/27/26 17:46

Lab Sample ID: 620-38401-1

Matrix: Water

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,2,2-Tetrachloroethane (Surr)	*98*		*46 - 136*	*06/07/26 23:05*	*06/08/26 21:43*	*1*
1,1,2,2-Tetrachloroethane (Surr)	*92*		*46 - 136*	*06/07/26 23:05*	*06/08/26 21:43*	*1*

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	**59.3**		15.0		mg/L			06/02/26 15:36	10

Method: EPA 200.7 Rev 4.4 - Metals (ICP)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Calcium	**16.9**		0.500		mg/L		06/02/26 21:00	06/03/26 08:30	1
Magnesium	**3.42**		0.200		mg/L		06/02/26 21:00	06/03/26 08:30	1

Method: EPA 200.8 - Metals (ICP/MS)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.00		ug/L		05/29/26 13:38	06/01/26 13:47	1
Arsenic	ND		2.00		ug/L		05/29/26 13:38	06/01/26 13:47	1
Cadmium	ND		1.00		ug/L		05/29/26 13:38	06/01/26 13:47	1
Chromium	ND		4.00		ug/L		05/29/26 13:38	06/01/26 13:47	1
Copper	ND		4.00		ug/L		05/29/26 13:38	06/01/26 13:47	1
Lead	**4.11**		2.00		ug/L		05/29/26 13:38	06/01/26 13:47	1
Nickel	ND		2.00		ug/L		05/29/26 13:38	06/01/26 13:47	1
Selenium	ND		4.00		ug/L		05/29/26 13:38	06/01/26 13:47	1
Silver	ND		2.00		ug/L		05/29/26 13:38	06/01/26 13:47	1
Zinc	ND		25.0		ug/L		05/29/26 13:38	06/01/26 13:47	1
Fe	**18700**		100		ug/L		05/29/26 13:38	06/01/26 13:47	1

Method: EPA 200.8 - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.00		ug/L		05/29/26 13:38	06/01/26 13:50	1
Arsenic	ND		2.00		ug/L		05/29/26 13:38	06/01/26 13:50	1
Cadmium	ND		1.00		ug/L		05/29/26 13:38	06/01/26 13:50	1
Chromium	ND		4.00		ug/L		05/29/26 13:38	06/01/26 13:50	1
Copper	ND		4.00		ug/L		05/29/26 13:38	06/01/26 13:50	1
Lead	ND		2.00		ug/L		05/29/26 13:38	06/01/26 13:50	1
Nickel	ND		2.00		ug/L		05/29/26 13:38	06/01/26 13:50	1
Selenium	ND		4.00		ug/L		05/29/26 13:38	06/01/26 13:50	1
Silver	ND		2.00		ug/L		05/29/26 13:38	06/01/26 13:50	1
Zinc	ND		25.0		ug/L		05/29/26 13:38	06/01/26 13:50	1
Fe	**18900**		100		ug/L		05/29/26 13:38	06/01/26 13:50	1

Method: EPA 245.1 - Mercury (CVAA)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.000200		mg/L		05/28/26 18:08	05/29/26 00:43	1

Method: EPA 245.1 - Mercury (CVAA) - Dissolved

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.000200		mg/L		05/28/26 18:08	05/29/26 00:53	1

General Chemistry

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
SGT-HEM (1664B)	ND		4.9		mg/L		06/01/26 16:02	06/02/26 14:41	1

Last Modified: 06/24/2026 at 9:48AM EDT

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38401-1
SDG: 20008

Client Sample ID: LP-GW-1

Date Collected: 05/26/26 15:00
Date Received: 05/27/26 17:46

Lab Sample ID: 620-38401-1

Matrix: Water

General Chemistry (Continued)

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids (SM 2540D-2015)	**33.0**		30.0		mg/L			06/01/26 15:38	1
Cyanide, Total (EPA 335.4)	ND		0.00500		mg/L		06/03/26 18:05	06/03/26 21:03	1
Total Kjeldahl Nitrogen (EPA 351.2)	ND		7.50		mg/L		06/01/26 19:50	06/03/26 11:30	1
Nitrate Nitrite as N (EPA 353.2)	ND		0.0400		mg/L			05/29/26 20:57	1
Phenols, Total (EPA 420.4)	ND		0.0200		mg/L			06/02/26 14:39	1
Ammonia-N (SM 4500 NH3 C-2011)	ND		0.750		mg/L		06/03/26 08:30	06/03/26 10:03	1
Cr (III) (SW846 7196A)	ND		0.0100		mg/L			06/03/26 08:54	1
Cr (VI) (SW846 7196A)	ND	H H3 F1	0.0600		mg/L			05/27/26 18:57	10
Cr (SW846 7196A)	ND		4.00		mg/L			06/03/26 08:54	1
Cr (VI) (SW846 7196A)	ND		0.0600		mg/L			06/03/26 08:54	1
Chlorine, Total Residual (SM 4500 Cl G)	ND	HF F1	0.600		mg/L			05/27/26 18:59	10
Nitrogen, Total (EPA Total Nitrogen)	ND		7.50		mg/L			06/04/26 09:38	1

Last Modified: 06/24/2026 at 9:48AM EDT

Surrogate Summary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38401-1
SDG: 20008

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)			
		BFB	TOL	DCA	DBFM
Lab Sample ID	Client Sample ID	(70-130)	(70-130)	(70-130)	(70-130)
620-38401-1	LP-GW-1	105	105	108	108
LCS 620-68021/4	Lab Control Sample	101	98	102	99
LCSD 620-68021/5	Lab Control Sample Dup	99	99	102	100
MB 620-68021/8	Method Blank	104	106	104	107

Surrogate Legend

BFB = 4-Bromofluorobenzene (Surr)
TOL = Toluene-d8 (Surr)
DCA = 1,2-Dichloroethane-d4 (Surr)
DBFM = Dibromofluoromethane (Surr)

Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)					
		FBP	2FP	NBZ	PHL	TPHd14	TBP
Lab Sample ID	Client Sample ID	(36-130)	(10-130)	(18-130)	(10-130)	(11-138)	(10-139)
620-38401-1	LP-GW-1	57	32	50	23	58	50
LCS 410-828099/2-A	Lab Control Sample	63	48	65	33	82	84
MB 410-828099/1-A	Method Blank	75	46	74	28	91	81

Surrogate Legend

FBP = 2-Fluorobiphenyl (Surr)
2FP = 2-Fluorophenol (Surr)
NBZ = Nitrobenzene-d5 (Surr)
PHL = Phenol-d5 (Surr)
TPHd14 = p-Terphenyl-d14 (Surr)
TBP = 2,4,6-Tribromophenol (Surr)

Method: 608.3 - Polychlorinated Biphenyls (PCBs) (GC)

Matrix: Water — **Prep Type: Total/NA**

		Percent Surrogate Recovery (Acceptance Limits)	
		DCB1	TCX1
Lab Sample ID	Client Sample ID	(30-150)	(30-150)
620-38401-1	LP-GW-1	58	48
620-38401-1 MS	LP-GW-1	47	39
LCS 620-68325/2-A	Lab Control Sample	60	55
LCSD 620-68325/3-A	Lab Control Sample Dup	62	49
MB 620-67952/1-D	Method Blank	48	52
MB 620-68325/1-A	Method Blank	63	53

Surrogate Legend

DCB = DCB Decachlorobiphenyl (Surr)
TCX = Tetrachloro-m-xylene (Surr)

Last Modified: 06/24/2026 at 9:48AM EDT

Surrogate Summary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38401-1
SDG: 20008

Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Matrix: Water

Prep Type: Total/NA

		Percent Surrogate Recovery (Acceptance Limits)									
Lab Sample ID	Client Sample ID	1122TCA1 (46-136)	1122TCA2 (46-136)								
620-38401-1	LP-GW-1	98	92								
LCS 410-830956/2-A	Lab Control Sample	89	87								
LCSD 410-830956/3-A	Lab Control Sample Dup	90	88								
MB 410-830956/1-A	Method Blank	99	95								

Surrogate Legend

1122TCA = 1,1,2,2-Tetrachloroethane (Surr)

Last Modified: 06/24/2026 at 9:48AM EDT

Isotope Dilution Summary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38401-1
SDG: 20008

Method: 8270E SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Matrix: Water **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)						
Lab Sample ID	Client Sample ID	DXE (15-110)						
620-38401-1	LP-GW-1	28						
LCS 620-68196/2-A	Lab Control Sample	25						
LCSD 620-68196/3-A	Lab Control Sample Dup	26						
MB 620-68196/1-A	Method Blank	23						

Surrogate Legend

DXE = 1,4-Dioxane-d8

Last Modified: 06/24/2026 at 9:48AM EDT

Method: 624.1 - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 620-68021/8
Matrix: Water
Analysis Batch: 68021

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,1,1-Trichloroethane	ND		1.00		ug/L			05/29/26 11:19	1
1,1,2-Trichloroethane	ND		1.00		ug/L			05/29/26 11:19	1
1,1-Dichloroethane	ND		1.00		ug/L			05/29/26 11:19	1
1,1-Dichloroethene	ND		1.00		ug/L			05/29/26 11:19	1
1,2-Dichlorobenzene	ND		1.00		ug/L			05/29/26 11:19	1
1,2-Dichloroethane	ND		1.00		ug/L			05/29/26 11:19	1
1,2-Dichloroethene, Total	ND		2.00		ug/L			05/29/26 11:19	1
1,2-Dichloropropane	ND		1.00		ug/L			05/29/26 11:19	1
1,3-Dichlorobenzene	ND		1.00		ug/L			05/29/26 11:19	1
1,3-Dichloropropene, Total	ND		2.00		ug/L			05/29/26 11:19	1
1,4-Dichlorobenzene	ND		1.00		ug/L			05/29/26 11:19	1
Acetone	ND		10.0		ug/L			05/29/26 11:19	1
Benzene	ND		1.00		ug/L			05/29/26 11:19	1
Carbon tetrachloride	ND		1.00		ug/L			05/29/26 11:19	1
Chloromethane	ND		2.00		ug/L			05/29/26 11:19	1
cis-1,2-Dichloroethene	ND		1.00		ug/L			05/29/26 11:19	1
Ethanol	ND		200		ug/L			05/29/26 11:19	1
Ethylbenzene	ND		1.00		ug/L			05/29/26 11:19	1
Methyl tert-butyl ether	ND		1.00		ug/L			05/29/26 11:19	1
Methylene Chloride	ND		10.0		ug/L			05/29/26 11:19	1
m-Xylene & p-Xylene	ND		2.00		ug/L			05/29/26 11:19	1
Naphthalene	ND		2.00		ug/L			05/29/26 11:19	1
o-Xylene	ND		1.00		ug/L			05/29/26 11:19	1
t-Butyl alcohol	ND		10.0		ug/L			05/29/26 11:19	1
Tert-amyl methyl ether	ND		1.00		ug/L			05/29/26 11:19	1
Tetrachloroethene	ND		1.00		ug/L			05/29/26 11:19	1
Toluene	ND		1.00		ug/L			05/29/26 11:19	1
trans-1,2-Dichloroethene	ND		1.00		ug/L			05/29/26 11:19	1
trans-1,3-Dichloropropene	ND		1.00		ug/L			05/29/26 11:19	1
Trichloroethene	ND		1.00		ug/L			05/29/26 11:19	1
Vinyl chloride	ND		1.00		ug/L			05/29/26 11:19	1
Xylenes, Total	ND		3.00		ug/L			05/29/26 11:19	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*104*		*70 - 130*		*05/29/26 11:19*	*1*
Toluene-d8 (Surr)	*106*		*70 - 130*		*05/29/26 11:19*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*70 - 130*		*05/29/26 11:19*	*1*
Dibromofluoromethane (Surr)	*107*		*70 - 130*		*05/29/26 11:19*	*1*

Lab Sample ID: LCS 620-68021/4
Matrix: Water
Analysis Batch: 68021

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,1,1-Trichloroethane			20.0	21.44		ug/L		107	70 - 130		
1,1,2-Trichloroethane			20.0	22.16		ug/L		111	70 - 130		
1,1-Dichloroethane			20.0	19.17		ug/L		96	70 - 130		
1,1-Dichloroethene			20.0	18.78		ug/L		94	50 - 150		

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Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 620-68021/4
Matrix: Water
Analysis Batch: 68021

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,2-Dichlorobenzene			20.0	19.68		ug/L		98	65 - 135		
1,2-Dichloroethane			20.0	19.65		ug/L		98	70 - 130		
1,2-Dichloropropane			20.0	20.81		ug/L		104	35 - 165		
1,3-Dichlorobenzene			20.0	19.25		ug/L		96	70 - 130		
1,4-Dichlorobenzene			20.0	19.45		ug/L		97	65 - 135		
Acetone			20.0	14.49		ug/L		72	50 - 150		
Benzene			20.0	19.71		ug/L		99	65 - 135		
Carbon tetrachloride			20.0	21.53		ug/L		108	70 - 130		
Chloromethane			20.0	15.62		ug/L		78	2 - 205		
cis-1,2-Dichloroethene			20.0	19.69		ug/L		98	60 - 140		
Ethylbenzene			20.0	19.58		ug/L		98	60 - 140		
Methyl tert-butyl ether			20.0	22.28		ug/L		111	60 - 140		
Methylene Chloride			20.0	18.70		ug/L		94	60 - 140		
m-Xylene & p-Xylene			40.0	37.38		ug/L		93	60 - 140		
o-Xylene			20.0	19.29		ug/L		96	60 - 140		
Tert-amyl methyl ether			20.0	21.88		ug/L		109	60 - 140		
Tetrachloroethene			20.0	19.76		ug/L		99	70 - 130		
Toluene			20.0	19.92		ug/L		100	70 - 130		
trans-1,2-Dichloroethene			20.0	21.02		ug/L		105	70 - 130		
trans-1,3-Dichloropropene			20.0	23.23		ug/L		116	50 - 150		
Trichloroethene			20.0	20.53		ug/L		103	65 - 135		
Vinyl chloride			20.0	16.40		ug/L		82	5 - 195		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*101*		*70 - 130*
Toluene-d8 (Surr)	*98*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 130*
Dibromofluoromethane (Surr)	*99*		*70 - 130*

Lab Sample ID: LCSD 620-68021/5
Matrix: Water
Analysis Batch: 68021

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,1,1-Trichloroethane			20.0	21.32		ug/L		107	70 - 130	1	
1,1,2-Trichloroethane			20.0	21.85		ug/L		109	70 - 130	1	
1,1-Dichloroethane			20.0	18.76		ug/L		94	70 - 130	2	
1,1-Dichloroethene			20.0	18.90		ug/L		95	50 - 150	1	
1,2-Dichlorobenzene			20.0	19.79		ug/L		99	65 - 135	1	
1,2-Dichloroethane			20.0	19.48		ug/L		97	70 - 130	1	
1,2-Dichloropropane			20.0	20.92		ug/L		105	35 - 165	1	
1,3-Dichlorobenzene			20.0	19.14		ug/L		96	70 - 130	1	
1,4-Dichlorobenzene			20.0	19.07		ug/L		95	65 - 135	2	
Acetone			20.0	13.70		ug/L		68	50 - 150	6	
Benzene			20.0	19.92		ug/L		100	65 - 135	1	
Carbon tetrachloride			20.0	21.16		ug/L		106	70 - 130	2	
Chloromethane			20.0	15.04		ug/L		75	2 - 205	4	
cis-1,2-Dichloroethene			20.0	19.94		ug/L		100	60 - 140	1	

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Method: 624.1 - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCSD 620-68021/5
Matrix: Water
Analysis Batch: 68021

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ethylbenzene			20.0	19.53		ug/L		98	60 - 140	0	
Methyl tert-butyl ether			20.0	22.28		ug/L		111	60 - 140	0	
Methylene Chloride			20.0	18.47		ug/L		92	60 - 140	1	
m-Xylene & p-Xylene			40.0	38.40		ug/L		96	60 - 140	3	
o-Xylene			20.0	19.23		ug/L		96	60 - 140	0	
Tert-amyl methyl ether			20.0	22.40		ug/L		112	60 - 140	2	
Tetrachloroethene			20.0	20.07		ug/L		100	70 - 130	2	
Toluene			20.0	19.75		ug/L		99	70 - 130	1	
trans-1,2-Dichloroethene			20.0	20.71		ug/L		104	70 - 130	1	
trans-1,3-Dichloropropene			20.0	23.47		ug/L		117	50 - 150	1	
Trichloroethene			20.0	20.20		ug/L		101	65 - 135	2	
Vinyl chloride			20.0	16.53		ug/L		83	5 - 195	1	

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*70 - 130*
Toluene-d8 (Surr)	*99*		*70 - 130*
1,2-Dichloroethane-d4 (Surr)	*102*		*70 - 130*
Dibromofluoromethane (Surr)	*100*		*70 - 130*

Method: 625.1 - Semivolatile Organic Compounds (GC/MS)

Lab Sample ID: MB 410-828099/1-A
Matrix: Water
Analysis Batch: 828686

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 828099

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Acenaphthene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Acenaphthylene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Anthracene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Benzo[a]anthracene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Benzo[a]pyrene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Benzo[b]fluoranthene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Benzo[g,h,i]perylene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Benzo[k]fluoranthene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Bis(2-ethylhexyl) phthalate	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Butylbenzylphthalate	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Chrysene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Dibenz(a,h)anthracene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Diethylphthalate	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Dimethylphthalate	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Di-n-butyl phthalate	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Di-n-octyl phthalate	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Fluoranthene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Fluorene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Indeno[1,2,3-cd]pyrene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Naphthalene	ND		2.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
2,2'-oxybis[1-chloropropane]	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Pentachlorophenol	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1
Phenanthrene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1

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Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 410-828099/1-A
Matrix: Water
Analysis Batch: 828686

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 828099

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Pyrene	ND		5.00		ug/L		06/02/26 16:04	06/03/26 13:27	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
2-Fluorobiphenyl (Surr)	*75*		*36 - 130*	*06/02/26 16:04*	*06/03/26 13:27*	*1*
2-Fluorophenol (Surr)	*46*		*10 - 130*	*06/02/26 16:04*	*06/03/26 13:27*	*1*
Nitrobenzene-d5 (Surr)	*74*		*18 - 130*	*06/02/26 16:04*	*06/03/26 13:27*	*1*
Phenol-d5 (Surr)	*28*		*10 - 130*	*06/02/26 16:04*	*06/03/26 13:27*	*1*
p-Terphenyl-d14 (Surr)	*91*		*11 - 138*	*06/02/26 16:04*	*06/03/26 13:27*	*1*
2,4,6-Tribromophenol (Surr)	*81*		*10 - 139*	*06/02/26 16:04*	*06/03/26 13:27*	*1*

Lab Sample ID: LCS 410-828099/2-A
Matrix: Water
Analysis Batch: 828686

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 828099

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Acenaphthene	50.0	41.97		ug/L		84	47 - 145
Acenaphthylene	50.0	43.61		ug/L		87	33 - 145
Anthracene	50.0	44.54		ug/L		89	27 - 133
Benzo[a]anthracene	50.0	42.03		ug/L		84	33 - 143
Benzo[a]pyrene	50.0	44.47		ug/L		89	17 - 163
Benzo[b]fluoranthene	50.0	42.13		ug/L		84	24 - 159
Benzo[g,h,i]perylene	50.0	45.79		ug/L		92	10 - 219
Benzo[k]fluoranthene	50.0	46.54		ug/L		93	11 - 162
Bis(2-chloroethoxy)methane	50.0	40.33		ug/L		81	33 - 184
Bis(2-chloroethyl)ether	50.0	37.89		ug/L		76	12 - 158
Bis(2-ethylhexyl) phthalate	50.0	47.23		ug/L		94	10 - 158
Butylbenzylphthalate	50.0	39.04		ug/L		78	10 - 152
Chrysene	50.0	45.64		ug/L		91	17 - 168
Dibenz(a,h)anthracene	50.0	42.89		ug/L		86	10 - 227
1,2-Dichlorobenzene	50.0	36.95		ug/L		74	36 - 140
1,3-Dichlorobenzene	50.0	35.66		ug/L		71	35 - 140
1,4-Dichlorobenzene	50.0	35.78		ug/L		72	35 - 140
2,4-Dichlorophenol	50.0	48.26		ug/L		97	39 - 135
Diethylphthalate	50.0	45.10		ug/L		90	10 - 120
Dimethylphthalate	50.0	39.61		ug/L		79	10 - 120
Di-n-butyl phthalate	50.0	49.98		ug/L		100	10 - 120
Di-n-octyl phthalate	50.0	44.29		ug/L		89	10 - 146
Fluoranthene	50.0	51.07		ug/L		102	26 - 137
Fluorene	50.0	43.59		ug/L		87	59 - 121
Hexachlorobenzene	50.0	41.61		ug/L		83	10 - 152
Hexachlorobutadiene	50.0	34.49		ug/L		69	24 - 120
Hexachlorocyclopentadiene	50.0	29.19		ug/L		58	10 - 140
Hexachloroethane	50.0	33.88		ug/L		68	40 - 120
Indeno[1,2,3-cd]pyrene	50.0	30.38		ug/L		61	10 - 171
Naphthalene	50.0	39.58		ug/L		79	21 - 133
2-Nitrophenol	50.0	42.06		ug/L		84	29 - 182
4-Nitrophenol	100	58.00		ug/L		58	10 - 132
2,2'-oxybis[1-chloropropane]	50.0	39.55		ug/L		79	36 - 166

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Method: 625.1 - Semivolatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 410-828099/2-A
Matrix: Water
Analysis Batch: 828686

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 828099

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Pentachlorophenol			100	87.81		ug/L		88	14 - 176		
Phenanthrene			50.0	43.71		ug/L		87	54 - 120		
Phenol			50.0	21.12		ug/L		42	17 - 120		
Pyrene			50.0	40.18		ug/L		80	52 - 120		
1,2,4-Trichlorobenzene			50.0	37.53		ug/L		75	44 - 142		
2,4,6-Trichlorophenol			50.0	44.09		ug/L		88	37 - 144		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
2-Fluorobiphenyl (Surr)	*63*		*36 - 130*
2-Fluorophenol (Surr)	*48*		*10 - 130*
Nitrobenzene-d5 (Surr)	*65*		*18 - 130*
Phenol-d5 (Surr)	*33*		*10 - 130*
p-Terphenyl-d14 (Surr)	*82*		*11 - 138*
2,4,6-Tribromophenol (Surr)	*84*		*10 - 139*

Method: 8270E SIM ID - Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)

Lab Sample ID: MB 620-68196/1-A
Matrix: Water
Analysis Batch: 68208

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 68196

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
1,4-Dioxane	ND		0.200		ug/L		06/01/26 10:31	06/01/26 16:12	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,4-Dioxane-d8	*23*		*15 - 110*	*06/01/26 10:31*	*06/01/26 16:12*	*1*

Lab Sample ID: LCS 620-68196/2-A
Matrix: Water
Analysis Batch: 68208

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 68196

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
1,4-Dioxane			5.71	6.002		ug/L		105	40 - 140		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,4-Dioxane-d8	*25*		*15 - 110*

Lab Sample ID: LCSD 620-68196/3-A
Matrix: Water
Analysis Batch: 68208

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 68196

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
1,4-Dioxane			5.71	6.025		ug/L		105	40 - 140	0	30

Isotope Dilution	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,4-Dioxane-d8	*26*		*15 - 110*

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Method: 608.3 - Polychlorinated Biphenyls (PCBs) (GC)

Lab Sample ID: MB 620-67952/1-D
Matrix: Water
Analysis Batch: 68328

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 68325

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.400		ug/L		06/02/26 10:10	06/02/26 14:58	1
PCB-1221	ND		0.400		ug/L		06/02/26 10:10	06/02/26 14:58	1
PCB-1232	ND		0.400		ug/L		06/02/26 10:10	06/02/26 14:58	1
PCB-1242	ND		0.400		ug/L		06/02/26 10:10	06/02/26 14:58	1
PCB-1248	ND		0.400		ug/L		06/02/26 10:10	06/02/26 14:58	1
PCB-1254	ND		0.400		ug/L		06/02/26 10:10	06/02/26 14:58	1
PCB-1260	ND		0.400		ug/L		06/02/26 10:10	06/02/26 14:58	1
PCB-1262	ND		0.400		ug/L		06/02/26 10:10	06/02/26 14:58	1
PCB-1268	ND		0.400		ug/L		06/02/26 10:10	06/02/26 14:58	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*48*		*30 - 150*	*06/02/26 10:10*	*06/02/26 14:58*	*1*
Tetrachloro-m-xylene (Surr)	*52*		*30 - 150*	*06/02/26 10:10*	*06/02/26 14:58*	*1*

Lab Sample ID: MB 620-68325/1-A
Matrix: Water
Analysis Batch: 68328

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 68325

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
PCB-1016	ND		0.400		ug/L		06/02/26 10:10	06/02/26 12:12	1
PCB-1221	ND		0.400		ug/L		06/02/26 10:10	06/02/26 12:12	1
PCB-1232	ND		0.400		ug/L		06/02/26 10:10	06/02/26 12:12	1
PCB-1242	ND		0.400		ug/L		06/02/26 10:10	06/02/26 12:12	1
PCB-1248	ND		0.400		ug/L		06/02/26 10:10	06/02/26 12:12	1
PCB-1254	ND		0.400		ug/L		06/02/26 10:10	06/02/26 12:12	1
PCB-1260	ND		0.400		ug/L		06/02/26 10:10	06/02/26 12:12	1
PCB-1262	ND		0.400		ug/L		06/02/26 10:10	06/02/26 12:12	1
PCB-1268	ND		0.400		ug/L		06/02/26 10:10	06/02/26 12:12	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
DCB Decachlorobiphenyl (Surr)	*63*		*30 - 150*	*06/02/26 10:10*	*06/02/26 12:12*	*1*
Tetrachloro-m-xylene (Surr)	*53*		*30 - 150*	*06/02/26 10:10*	*06/02/26 12:12*	*1*

Lab Sample ID: LCS 620-68325/2-A
Matrix: Water
Analysis Batch: 68328

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 68325

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
PCB-1016			4.00	2.703		ug/L		68	50 - 140		
PCB-1260			4.00	2.364		ug/L		59	8 - 140		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*60*		*30 - 150*
Tetrachloro-m-xylene (Surr)	*55*		*30 - 150*

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Method: 608.3 - Polychlorinated Biphenyls (PCBs) (GC) (Continued)

Lab Sample ID: LCSD 620-68325/3-A
Matrix: Water
Analysis Batch: 68328

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 68325

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
PCB-1016			4.00	2.406		ug/L		60	50 - 140	12	36
PCB-1260			4.00	2.357		ug/L		59	8 - 140	0	38

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*62*		*30 - 150*
Tetrachloro-m-xylene (Surr)	*49*		*30 - 150*

Lab Sample ID: 620-38401-1 MS
Matrix: Water
Analysis Batch: 68328

Client Sample ID: LP-GW-1
Prep Type: Total/NA
Prep Batch: 68325

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits
PCB-1016	ND		4.00	2.211		ug/L		55	50 - 140
PCB-1260	ND		4.00	1.911		ug/L		48	8 - 140

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
DCB Decachlorobiphenyl (Surr)	*47*		*30 - 150*
Tetrachloro-m-xylene (Surr)	*39*		*30 - 150*

Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC)

Lab Sample ID: MB 410-830956/1-A
Matrix: Water
Analysis Batch: 831115

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 830956

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Ethylene Dibromide	ND		0.0200		ug/L		06/07/26 23:05	06/08/26 16:40	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,1,2,2-Tetrachloroethane (Surr)	*99*		*46 - 136*	*06/07/26 23:05*	*06/08/26 16:40*	*1*
1,1,2,2-Tetrachloroethane (Surr)	*95*		*46 - 136*	*06/07/26 23:05*	*06/08/26 16:40*	*1*

Lab Sample ID: LCS 410-830956/2-A
Matrix: Water
Analysis Batch: 831115

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 830956

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ethylene Dibromide			0.129	0.09975		ug/L		77	60 - 140

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
1,1,2,2-Tetrachloroethane (Surr)	*89*		*46 - 136*
1,1,2,2-Tetrachloroethane (Surr)	*87*		*46 - 136*

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Method: 8011 - EDB, DBCP, and 1,2,3-TCP (GC) (Continued)

Lab Sample ID: LCSD 410-830956/3-A
Matrix: Water
Analysis Batch: 831115

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 830956

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ethylene Dibromide			0.129	0.1044		ug/L		81	60 - 140	5	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
1,1,2,2-Tetrachloroethane (Surr)	*90*		*46 - 136*
1,1,2,2-Tetrachloroethane (Surr)	*88*		*46 - 136*

Method: EPA 300.0 R2.1 - Anions, Ion Chromatography

Lab Sample ID: MB 410-827880/5
Matrix: Water
Analysis Batch: 827880

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		1.50		mg/L			06/02/26 10:48	1

Lab Sample ID: LCS 410-827880/3
Matrix: Water
Analysis Batch: 827880

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chloride			3.00	2.890		mg/L		96	90 - 110		

Lab Sample ID: LCSD 410-827880/4
Matrix: Water
Analysis Batch: 827880

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Chloride			3.00	2.892		mg/L		96	90 - 110	0	20

Method: 200.7 Rev 4.4 - Metals (ICP)

Lab Sample ID: MB 410-828229/1-A
Matrix: Water
Analysis Batch: 828783

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 828229

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Calcium	ND		0.500		mg/L		06/02/26 21:00	06/03/26 07:44	1
Magnesium	ND		0.200		mg/L		06/02/26 21:00	06/03/26 07:44	1

Lab Sample ID: LCS 410-828229/2-A
Matrix: Water
Analysis Batch: 828783

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 828229

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Calcium			5.00	4.915		mg/L		98	85 - 115		
Magnesium			5.00	4.871		mg/L		97	85 - 115		

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Method: 200.8 - Metals (ICP/MS)

Lab Sample ID: MB 620-68081/1-A
Matrix: Water
Analysis Batch: 68239

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 68081

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Antimony	ND		2.00		ug/L		05/29/26 13:38	06/01/26 12:47	1
Arsenic	ND		2.00		ug/L		05/29/26 13:38	06/01/26 12:47	1
Cadmium	ND		1.00		ug/L		05/29/26 13:38	06/01/26 12:47	1
Chromium	ND		4.00		ug/L		05/29/26 13:38	06/01/26 12:47	1
Copper	ND		4.00		ug/L		05/29/26 13:38	06/01/26 12:47	1
Lead	ND		2.00		ug/L		05/29/26 13:38	06/01/26 12:47	1
Nickel	ND		2.00		ug/L		05/29/26 13:38	06/01/26 12:47	1
Selenium	ND		4.00		ug/L		05/29/26 13:38	06/01/26 12:47	1
Silver	ND		2.00		ug/L		05/29/26 13:38	06/01/26 12:47	1
Zinc	ND		25.0		ug/L		05/29/26 13:38	06/01/26 12:47	1
Fe	ND		100		ug/L		05/29/26 13:38	06/01/26 12:47	1

Lab Sample ID: LCS 620-68081/2-A
Matrix: Water
Analysis Batch: 68239

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 68081

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Antimony			25.0	26.59		ug/L		106	85 - 115		
Arsenic			25.0	24.72		ug/L		99	85 - 115		
Cadmium			25.0	26.10		ug/L		104	85 - 115		
Chromium			25.0	25.37		ug/L		101	85 - 115		
Copper			25.0	25.97		ug/L		104	85 - 115		
Lead			25.0	26.24		ug/L		105	85 - 115		
Nickel			25.0	25.58		ug/L		102	85 - 115		
Selenium			25.0	26.39		ug/L		106	85 - 115		
Silver			25.0	22.51		ug/L		90	85 - 115		
Zinc			25.0	26.08		ug/L		104	85 - 115		
Fe			1250	1273		ug/L		102	-		

Lab Sample ID: LCSD 620-68081/3-A
Matrix: Water
Analysis Batch: 68239

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 68081

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Antimony			25.0	26.81		ug/L		107	85 - 115	1	20
Arsenic			25.0	24.63		ug/L		99	85 - 115	0	20
Cadmium			25.0	25.30		ug/L		101	85 - 115	3	20
Chromium			25.0	24.76		ug/L		99	85 - 115	2	20
Copper			25.0	25.43		ug/L		102	85 - 115	2	20
Lead			25.0	25.71		ug/L		103	85 - 115	2	20
Nickel			25.0	25.18		ug/L		101	85 - 115	2	20
Selenium			25.0	26.70		ug/L		107	85 - 115	1	20
Silver			25.0	22.19		ug/L		89	85 - 115	1	20
Zinc			25.0	26.03		ug/L		104	85 - 115	0	20
Fe			1250	1256		ug/L		101	-	1	

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Method: 245.1 - Mercury (CVAA)

Lab Sample ID: MB 620-68002/5-A
Matrix: Water
Analysis Batch: 68016

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 68002

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Mercury	ND		0.000200		mg/L		05/28/26 18:08	05/29/26 00:32	1

Lab Sample ID: LCS 620-68002/6-A
Matrix: Water
Analysis Batch: 68016

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 68002

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury			0.00500	0.004788		mg/L		96	85 - 115		

Lab Sample ID: LCSD 620-68002/7-A
Matrix: Water
Analysis Batch: 68016

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 68002

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Mercury			0.00500	0.004770		mg/L		95	85 - 115	0	20

Lab Sample ID: 620-38401-1 MS
Matrix: Water
Analysis Batch: 68016

Client Sample ID: LP-GW-1
Prep Type: Total/NA
Prep Batch: 68002

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Mercury	ND		0.00500	0.004720		mg/L		94	80 - 120		

Lab Sample ID: 620-38401-1 DU
Matrix: Water
Analysis Batch: 68016

Client Sample ID: LP-GW-1
Prep Type: Total/NA
Prep Batch: 68002

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Mercury	ND			ND		mg/L				NC	20

Method: 1664B - HEM and SGT-HEM

Lab Sample ID: MB 620-68261/1-A
Matrix: Water
Analysis Batch: 68380

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 68261

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
SGT-HEM	ND		5.0		mg/L		06/01/26 16:02	06/02/26 14:41	1

Lab Sample ID: LCS 620-68261/2-A
Matrix: Water
Analysis Batch: 68380

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 68261

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
SGT-HEM			20.0	14.80		mg/L		74	64 - 132		

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Method: 1664B - HEM and SGT-HEM (Continued)

Lab Sample ID: LCSD 620-68261/3-A
Matrix: Water
Analysis Batch: 68380

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 68261

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
SGT-HEM			20.0	14.50		mg/L		73	64 - 132	2	28

Method: 2540D-2015 - Total Suspended Solids (Dried at 103-105°C)

Lab Sample ID: MB 410-827349/1
Matrix: Water
Analysis Batch: 827349

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Suspended Solids	ND		3.00		mg/L			06/01/26 15:38	1

Lab Sample ID: LCS 410-827349/2
Matrix: Water
Analysis Batch: 827349

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Total Suspended Solids			151	147.3		mg/L		98	89 - 105		

Method: 335.4 - Cyanide, Total

Lab Sample ID: MB 460-1111500/17-A
Matrix: Water
Analysis Batch: 1111506

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 1111500

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Cyanide, Total	ND		0.00500		mg/L		06/03/26 18:05	06/03/26 20:30	1

Lab Sample ID: LCS 460-1111500/18-A
Matrix: Water
Analysis Batch: 1111506

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1111500

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Cyanide, Total			0.100	0.1040		mg/L		104	90 - 110		

Lab Sample ID: MRL 460-1111500/12-A
Matrix: Water
Analysis Batch: 1111506

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 1111500

Analyte			Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec Limits		
Cyanide, Total			0.00500	0.005110		mg/L		102	50 - 150		

Method: 351.2 - Nitrogen, Total Kjeldahl

Lab Sample ID: MB 410-827483/2-A
Matrix: Water
Analysis Batch: 828871

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 827483

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Total Kjeldahl Nitrogen	ND		1.50		mg/L		06/01/26 19:50	06/03/26 11:17	1

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Method: 351.2 - Nitrogen, Total Kjeldahl (Continued)

Lab Sample ID: LCS 410-827483/1-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 829059 — **Prep Batch: 827483**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Total Kjeldahl Nitrogen	4.20	4.063		mg/L		97	90 - 110

Method: 353.2 - Nitrogen, Nitrate-Nitrite

Lab Sample ID: MB 620-68246/5 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 68246

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrate Nitrite as N	ND		0.0400	mg/L			05/29/26 20:39	1

Lab Sample ID: LCS 620-68246/6 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 68246

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Nitrate Nitrite as N	1.00	1.058		mg/L		106	90 - 110

Method: 420.4 - Phenolics, Total Recoverable

Lab Sample ID: MB 410-828657/15 — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 828657

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Phenols, Total	ND		0.0200	mg/L			06/02/26 14:19	1

Lab Sample ID: LCS 410-828657/14 — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 828657

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Phenols, Total	0.250	0.2524		mg/L		101	90 - 110

Method: 4500 NH3 C-2011 - Ammonia

Lab Sample ID: MB 410-828598/1-A — **Client Sample ID: Method Blank**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 828665 — **Prep Batch: 828598**

Analyte	MB Result	MB Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Ammonia-N	ND		0.750	mg/L		06/03/26 08:30	06/03/26 10:03	1

Lab Sample ID: LCS 410-828598/2-A — **Client Sample ID: Lab Control Sample**
Matrix: Water — **Prep Type: Total/NA**
Analysis Batch: 828665 — **Prep Batch: 828598**

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits
Ammonia-N	10.0	9.321		mg/L		93	90 - 110

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Method: 4500 NH3 C-2011 - Ammonia (Continued)

Lab Sample ID: LCSD 410-828598/3-A
Matrix: Water
Analysis Batch: 828665

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 828598

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Ammonia-N			10.0	9.321		mg/L		93	90 - 110	0	10

Method: 7196A - Chromium, Hexavalent

Lab Sample ID: MB 620-67879/11
Matrix: Water
Analysis Batch: 67879

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Cr (VI)	ND		0.00600		mg/L			05/27/26 18:56	1

Lab Sample ID: LCS 620-67879/12
Matrix: Water
Analysis Batch: 67879

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Cr (VI)			0.0500	0.04500		mg/L		90	90 - 110		

Lab Sample ID: 620-38401-1 MS
Matrix: Water
Analysis Batch: 67879

Client Sample ID: LP-GW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Cr (VI)	ND	H H3 F1	0.500	0.3300	F1	mg/L		66	80 - 120		

Lab Sample ID: 620-38401-1 MSD
Matrix: Water
Analysis Batch: 67879

Client Sample ID: LP-GW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec Limits	RPD	RPD Limit
Cr (VI)	ND	H H3 F1	0.500	0.3300	F1	mg/L		66	80 - 120	0	20

Lab Sample ID: 620-38401-1 DU
Matrix: Water
Analysis Batch: 67879

Client Sample ID: LP-GW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Cr (VI)	ND	H H3 F1		ND		mg/L				NC	20

Method: SM 4500 Cl G - Chlorine, Residual

Lab Sample ID: MB 620-67880/3
Matrix: Water
Analysis Batch: 67880

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Chlorine, Total Residual	ND		0.0600		mg/L			05/27/26 18:59	1

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Method: SM 4500 Cl G - Chlorine, Residual (Continued)

Lab Sample ID: LCS 620-67880/4
Matrix: Water
Analysis Batch: 67880

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec Limits		
Chlorine, Total Residual			0.400	0.4150		mg/L		104	90 - 110		

Lab Sample ID: 620-38401-1 MS
Matrix: Water
Analysis Batch: 67880

Client Sample ID: LP-GW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec Limits		
Chlorine, Total Residual	ND	HF F1	4.00	ND	F1	mg/L		0	80 - 120		

Lab Sample ID: 620-38401-1 DU
Matrix: Water
Analysis Batch: 67880

Client Sample ID: LP-GW-1
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Chlorine, Total Residual	ND	HF F1		ND		mg/L				NC	20

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GC/MS VOA

Analysis Batch: 68021

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	624.1	
MB 620-68021/8	Method Blank	Total/NA	Water	624.1	
LCS 620-68021/4	Lab Control Sample	Total/NA	Water	624.1	
LCSD 620-68021/5	Lab Control Sample Dup	Total/NA	Water	624.1	

GC/MS Semi VOA

Prep Batch: 68196

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	3511	
MB 620-68196/1-A	Method Blank	Total/NA	Water	3511	
LCS 620-68196/2-A	Lab Control Sample	Total/NA	Water	3511	
LCSD 620-68196/3-A	Lab Control Sample Dup	Total/NA	Water	3511	

Analysis Batch: 68208

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	8270E SIM ID	68196
MB 620-68196/1-A	Method Blank	Total/NA	Water	8270E SIM ID	68196
LCS 620-68196/2-A	Lab Control Sample	Total/NA	Water	8270E SIM ID	68196
LCSD 620-68196/3-A	Lab Control Sample Dup	Total/NA	Water	8270E SIM ID	68196

Prep Batch: 828099

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	625.1	
MB 410-828099/1-A	Method Blank	Total/NA	Water	625.1	
LCS 410-828099/2-A	Lab Control Sample	Total/NA	Water	625.1	

Analysis Batch: 828686

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	625.1	828099
MB 410-828099/1-A	Method Blank	Total/NA	Water	625.1	828099
LCS 410-828099/2-A	Lab Control Sample	Total/NA	Water	625.1	828099

GC Semi VOA

Leach Batch: 67952

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 620-67952/1-D	Method Blank	Total/NA	Water	1311	

Prep Batch: 68325

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	3510C	
MB 620-67952/1-D	Method Blank	Total/NA	Water	3510C	67952
MB 620-68325/1-A	Method Blank	Total/NA	Water	3510C	
LCS 620-68325/2-A	Lab Control Sample	Total/NA	Water	3510C	
LCSD 620-68325/3-A	Lab Control Sample Dup	Total/NA	Water	3510C	
620-38401-1 MS	LP-GW-1	Total/NA	Water	3510C	

Analysis Batch: 68328

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	608.3	68325
MB 620-67952/1-D	Method Blank	Total/NA	Water	608.3	68325

GC Semi VOA (Continued)

Analysis Batch: 68328 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 620-68325/1-A	Method Blank	Total/NA	Water	608.3	68325
LCS 620-68325/2-A	Lab Control Sample	Total/NA	Water	608.3	68325
LCSD 620-68325/3-A	Lab Control Sample Dup	Total/NA	Water	608.3	68325
620-38401-1 MS	LP-GW-1	Total/NA	Water	608.3	68325

Prep Batch: 830956

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	8011	
MB 410-830956/1-A	Method Blank	Total/NA	Water	8011	
LCS 410-830956/2-A	Lab Control Sample	Total/NA	Water	8011	
LCSD 410-830956/3-A	Lab Control Sample Dup	Total/NA	Water	8011	

Analysis Batch: 831115

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	8011	830956
MB 410-830956/1-A	Method Blank	Total/NA	Water	8011	830956
LCS 410-830956/2-A	Lab Control Sample	Total/NA	Water	8011	830956
LCSD 410-830956/3-A	Lab Control Sample Dup	Total/NA	Water	8011	830956

HPLC/IC

Analysis Batch: 827880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	EPA 300.0 R2.1	
MB 410-827880/5	Method Blank	Total/NA	Water	EPA 300.0 R2.1	
LCS 410-827880/3	Lab Control Sample	Total/NA	Water	EPA 300.0 R2.1	
LCSD 410-827880/4	Lab Control Sample Dup	Total/NA	Water	EPA 300.0 R2.1	

Metals

Prep Batch: 68002

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Dissolved	Water	245.1	
620-38401-1	LP-GW-1	Total/NA	Water	245.1	
MB 620-68002/5-A	Method Blank	Total/NA	Water	245.1	
LCS 620-68002/6-A	Lab Control Sample	Total/NA	Water	245.1	
LCSD 620-68002/7-A	Lab Control Sample Dup	Total/NA	Water	245.1	
620-38401-1 MS	LP-GW-1	Total/NA	Water	245.1	
620-38401-1 DU	LP-GW-1	Total/NA	Water	245.1	

Analysis Batch: 68016

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Dissolved	Water	245.1	68002
620-38401-1	LP-GW-1	Total/NA	Water	245.1	68002
MB 620-68002/5-A	Method Blank	Total/NA	Water	245.1	68002
LCS 620-68002/6-A	Lab Control Sample	Total/NA	Water	245.1	68002
LCSD 620-68002/7-A	Lab Control Sample Dup	Total/NA	Water	245.1	68002
620-38401-1 MS	LP-GW-1	Total/NA	Water	245.1	68002
620-38401-1 DU	LP-GW-1	Total/NA	Water	245.1	68002

Last Modified: 06/24/2026 at 9:48AM EDT

QC Association Summary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38401-1
SDG: 20008

Metals

Prep Batch: 68081

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Dissolved	Water	200.8	
620-38401-1	LP-GW-1	Total/NA	Water	200.8	
MB 620-68081/1-A	Method Blank	Total/NA	Water	200.8	
LCS 620-68081/2-A	Lab Control Sample	Total/NA	Water	200.8	
LCSD 620-68081/3-A	Lab Control Sample Dup	Total/NA	Water	200.8	

Analysis Batch: 68239

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 620-68081/1-A	Method Blank	Total/NA	Water	200.8	68081
LCS 620-68081/2-A	Lab Control Sample	Total/NA	Water	200.8	68081
LCSD 620-68081/3-A	Lab Control Sample Dup	Total/NA	Water	200.8	68081

Analysis Batch: 68281

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Dissolved	Water	200.8	68081
620-38401-1	LP-GW-1	Total/NA	Water	200.8	68081

Prep Batch: 828229

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	200.7 Rev 4.4	
MB 410-828229/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	
LCS 410-828229/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	

Analysis Batch: 828783

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	200.7 Rev 4.4	828229
MB 410-828229/1-A	Method Blank	Total/NA	Water	200.7 Rev 4.4	828229
LCS 410-828229/2-A	Lab Control Sample	Total/NA	Water	200.7 Rev 4.4	828229

General Chemistry

Analysis Batch: 67879

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	7196A	
MB 620-67879/11	Method Blank	Total/NA	Water	7196A	
LCS 620-67879/12	Lab Control Sample	Total/NA	Water	7196A	
620-38401-1 MS	LP-GW-1	Total/NA	Water	7196A	
620-38401-1 MSD	LP-GW-1	Total/NA	Water	7196A	
620-38401-1 DU	LP-GW-1	Total/NA	Water	7196A	

Analysis Batch: 67880

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	SM 4500 Cl G	
MB 620-67880/3	Method Blank	Total/NA	Water	SM 4500 Cl G	
LCS 620-67880/4	Lab Control Sample	Total/NA	Water	SM 4500 Cl G	
620-38401-1 MS	LP-GW-1	Total/NA	Water	SM 4500 Cl G	
620-38401-1 DU	LP-GW-1	Total/NA	Water	SM 4500 Cl G	

Analysis Batch: 68246

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	353.2	

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General Chemistry (Continued)

Analysis Batch: 68246 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 620-68246/5	Method Blank	Total/NA	Water	353.2	
LCS 620-68246/6	Lab Control Sample	Total/NA	Water	353.2	

Prep Batch: 68261

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	1664B	
MB 620-68261/1-A	Method Blank	Total/NA	Water	1664B	
LCS 620-68261/2-A	Lab Control Sample	Total/NA	Water	1664B	
LCSD 620-68261/3-A	Lab Control Sample Dup	Total/NA	Water	1664B	

Analysis Batch: 68380

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	1664B	68261
MB 620-68261/1-A	Method Blank	Total/NA	Water	1664B	68261
LCS 620-68261/2-A	Lab Control Sample	Total/NA	Water	1664B	68261
LCSD 620-68261/3-A	Lab Control Sample Dup	Total/NA	Water	1664B	68261

Analysis Batch: 68416

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	7196A	

Analysis Batch: 68552

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	Total Nitrogen	

Analysis Batch: 827349

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	2540D-2015	
MB 410-827349/1	Method Blank	Total/NA	Water	2540D-2015	
LCS 410-827349/2	Lab Control Sample	Total/NA	Water	2540D-2015	

Prep Batch: 827483

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	351.2	
MB 410-827483/2-A	Method Blank	Total/NA	Water	351.2	
LCS 410-827483/1-A	Lab Control Sample	Total/NA	Water	351.2	

Prep Batch: 828598

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	4500 NH3 B-2011	
MB 410-828598/1-A	Method Blank	Total/NA	Water	4500 NH3 B-2011	
LCS 410-828598/2-A	Lab Control Sample	Total/NA	Water	4500 NH3 B-2011	
LCSD 410-828598/3-A	Lab Control Sample Dup	Total/NA	Water	4500 NH3 B-2011	

Analysis Batch: 828657

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	420.4	
MB 410-828657/15	Method Blank	Total/NA	Water	420.4	

Last Modified: 06/24/2026 at 9:48AM EDT

General Chemistry (Continued)

Analysis Batch: 828657 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 410-828657/14	Lab Control Sample	Total/NA	Water	420.4	

Analysis Batch: 828665

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	4500 NH3 C-2011	828598
MB 410-828598/1-A	Method Blank	Total/NA	Water	4500 NH3 C-2011	828598
LCS 410-828598/2-A	Lab Control Sample	Total/NA	Water	4500 NH3 C-2011	828598
LCSD 410-828598/3-A	Lab Control Sample Dup	Total/NA	Water	4500 NH3 C-2011	828598

Analysis Batch: 828871

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	351.2	827483
MB 410-827483/2-A	Method Blank	Total/NA	Water	351.2	827483

Analysis Batch: 829059

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 410-827483/1-A	Lab Control Sample	Total/NA	Water	351.2	827483

Prep Batch: 1111500

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	Distill/CN	
MB 460-1111500/17-A	Method Blank	Total/NA	Water	Distill/CN	
LCS 460-1111500/18-A	Lab Control Sample	Total/NA	Water	Distill/CN	
MRL 460-1111500/12-A	Lab Control Sample	Total/NA	Water	Distill/CN	

Analysis Batch: 1111506

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
620-38401-1	LP-GW-1	Total/NA	Water	335.4	1111500
MB 460-1111500/17-A	Method Blank	Total/NA	Water	335.4	1111500
LCS 460-1111500/18-A	Lab Control Sample	Total/NA	Water	335.4	1111500
MRL 460-1111500/12-A	Lab Control Sample	Total/NA	Water	335.4	1111500

Last Modified: 06/24/2026 at 9:48AM EDT

Lab Chronicle

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38401-1
SDG: 20008

Client Sample ID: LP-GW-1
Date Collected: 05/26/26 15:00
Date Received: 05/27/26 17:46

Lab Sample ID: 620-38401-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Total/NA	Analysis	624.1		1	68021	MED	EET RI	05/29/26 14:15
Total/NA	Prep	625.1			828099	9X9W	ELLE	06/02/26 16:04
Total/NA	Analysis	625.1		1	828686	TV9N	ELLE	06/03/26 19:21
Total/NA	Prep	3511			68196	MFH	EET RI	06/01/26 10:31
Total/NA	Analysis	8270E SIM ID		1	68208	JS	EET RI	06/01/26 16:59
Total/NA	Prep	3510C			68325	NHJ	EET RI	06/02/26 10:10
Total/NA	Analysis	608.3		1	68328	BMH	EET RI	06/02/26 15:48
Total/NA	Prep	8011			830956	USL7	ELLE	06/07/26 23:05
Total/NA	Analysis	8011		1	831115	URS0	ELLE	06/08/26 21:43
Total/NA	Analysis	EPA 300.0 R2.1		10	827880	KJQ8	ELLE	06/02/26 15:36
Total/NA	Prep	200.7 Rev 4.4			828229	UAMX	ELLE	06/02/26 21:00
Total/NA	Analysis	200.7 Rev 4.4		1	828783	WQOE	ELLE	06/03/26 08:30
Dissolved	Prep	200.8			68081	EBQ	EET RI	05/29/26 13:38
Dissolved	Analysis	200.8		1	68281	DJW	EET RI	06/01/26 13:50
Total/NA	Prep	200.8			68081	EBQ	EET RI	05/29/26 13:38
Total/NA	Analysis	200.8		1	68281	DJW	EET RI	06/01/26 13:47
Dissolved	Prep	245.1			68002	DJW	EET RI	05/28/26 18:08
Dissolved	Analysis	245.1		1	68016	BJV	EET RI	05/29/26 00:53
Total/NA	Prep	245.1			68002	DJW	EET RI	05/28/26 18:08
Total/NA	Analysis	245.1		1	68016	BJV	EET RI	05/29/26 00:43
Total/NA	Prep	1664B			68261	AZD	EET RI	06/01/26 16:02
Total/NA	Analysis	1664B		1	68380	AZD	EET RI	06/02/26 14:41
Total/NA	Analysis	2540D-2015		1	827349	UOCA	ELLE	06/01/26 15:38 - 06/02/26 06:10 [1]
Total/NA	Prep	Distill/CN			1111500	VBG	EET EDI	06/03/26 18:05
Total/NA	Analysis	335.4		1	1111506	VBG	EET EDI	06/03/26 21:03
Total/NA	Prep	351.2			827483	WCF5	ELLE	06/01/26 19:50 - 06/01/26 22:50 [1]
Total/NA	Analysis	351.2		1	828871	JCG7	ELLE	06/03/26 11:30
Total/NA	Analysis	353.2		1	68246	JLK	EET RI	05/29/26 20:57
Total/NA	Analysis	420.4		1	828657	NLE3	ELLE	06/02/26 14:39
Total/NA	Prep	4500 NH3 B-2011			828598	UMLG	ELLE	06/03/26 08:30
Total/NA	Analysis	4500 NH3 C-2011		1	828665	UMLG	ELLE	06/03/26 10:03
Total/NA	Analysis	7196A		1	68416	CES	EET RI	06/03/26 08:54
Total/NA	Analysis	7196A		10	67879	JLK	EET RI	05/27/26 18:57
Total/NA	Analysis	SM 4500 Cl G		10	67880	JLK	EET RI	05/27/26 18:59
Total/NA	Analysis	Total Nitrogen		1	68552	EEM	EET RI	06/04/26 09:38

[1] This procedure uses a method stipulated length of time for the process. Both start and end times are displayed.

Laboratory References:

EET EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Last Modified: 06/24/2026 at 9:48AM EDT

Accreditation/Certification Summary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38401-1
SDG: 20008

Laboratory: Eurofins Rhode Island

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Massachusetts	State	M-RI907	06-30-26

The following analytes are included in this report, but the laboratory is not certified by Massachusetts State M-RI907. This list may include analytes for which the agency does not offer certification:

Analysis Method	Prep Method	Matrix	Analyte
1664B	1664B	Water	SGT-HEM
353.2		Water	Nitrate Nitrite as N
608.3	3510C	Water	PCB-1262
608.3	3510C	Water	PCB-1268
624.1		Water	1,2-Dichloroethene, Total
624.1		Water	1,3-Dichloropropene, Total
624.1		Water	Ethanol
624.1		Water	t-Butyl alcohol
624.1		Water	Tert-amyl methyl ether
7196A		Water	Cr
7196A		Water	Cr (III)
7196A		Water	Cr (VI)
8270E SIM ID	3511	Water	1,4-Dioxane
SM 4500 Cl G		Water	Chlorine, Total Residual
Total Nitrogen		Water	Nitrogen, Total

Laboratory: Eurofins Edison

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Massachusetts	State	M-NJ312	06-30-27

Laboratory: Eurofins Lancaster Laboratories Environment Testing, LLC

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	Identification Number	Expiration Date
Massachusetts	State	M-PA009	06-30-26

The following analytes are included in this report, but the laboratory is not certified by Massachusetts State M-PA009. This list may include analytes for which the agency does not offer certification:

Analysis Method	Prep Method	Matrix	Analyte
8011	8011	Water	Ethylene Dibromide

Last Modified: 06/24/2026 at 9:48AM EDT

Method Summary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38401-1
SDG: 20008

Method	Method Description	Protocol	Laboratory
624.1	Volatile Organic Compounds (GC/MS)	EPA	EET RI
625.1	Semivolatile Organic Compounds (GC/MS)	EPA	ELLE
8270E SIM ID	Semivolatile Organic Compounds (GC/MS SIM / Isotope Dilution)	SW846	EET RI
608.3	Polychlorinated Biphenyls (PCBs) (GC)	EPA	EET RI
8011	EDB, DBCP, and 1,2,3-TCP (GC)	SW846	ELLE
EPA 300.0 R2.1	Anions, Ion Chromatography	EPA	ELLE
200.7 Rev 4.4	Metals (ICP)	EPA	ELLE
200.8	Metals (ICP/MS)	EPA	EET RI
245.1	Mercury (CVAA)	EPA	EET RI
1664B	HEM and SGT-HEM	1664B	EET RI
2540D-2015	Total Suspended Solids (Dried at 103-105°C)	SM	ELLE
335.4	Cyanide, Total	EPA	EET EDI
351.2	Nitrogen, Total Kjeldahl	EPA	ELLE
353.2	Nitrogen, Nitrate-Nitrite	EPA	EET RI
420.4	Phenolics, Total Recoverable	EPA	ELLE
4500 NH3 C-2011	Ammonia	SM	ELLE
7196A	Chromium, Hexavalent	SW846	EET RI
7196A	Chromium, Trivalent (Colorimetric)	SW846	EET RI
SM 4500 Cl G	Chlorine, Residual	SM	EET RI
Total Nitrogen	Nitrogen, Total	EPA	EET RI
1664B	HEM and SGT-HEM (Aqueous)	1664B	EET RI
200.7 Rev 4.4	Preparation, Total Metals	EPA	ELLE
200.8	Preparation, Total Metals	EPA	EET RI
245.1	Preparation, Mercury	EPA	EET RI
351.2	Nitrogen, Total Kjeldahl	EPA	ELLE
3510C	Liquid-Liquid Extraction (Separatory Funnel)	SW846	EET RI
3511	Microextraction of Organic Compounds	SW846	EET RI
4500 NH3 B-2011	Ammonia, Distillation	SM	ELLE
625.1	Liquid-Liquid Extraction	40CFR136A	ELLE
8011	Microextraction	SW846	ELLE
Distill/CN	Distillation, Cyanide	None	EET EDI

Protocol References:

1664B = EPA-821-98-002

40CFR136A = "Methods for Organic Chemical Analysis of Municipal Industrial Wastewater", 40CFR, Part 136, Appendix A, October 26, 1984 and subsequent revisions.

EPA = US Environmental Protection Agency

None = None

SM = "Standard Methods For The Examination Of Water And Wastewater"

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

EET EDI = Eurofins Edison, 777 New Durham Road, Edison, NJ 08817, TEL (732)549-3900

EET RI = Eurofins Rhode Island, 646 Camp Ave, North Kingstown, RI 02852, TEL (413)789-9018

ELLE = Eurofins Lancaster Laboratories Environment Testing, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

Last Modified: 06/24/2026 at 9:48AM EDT

Sample Summary

Client: Horsley Witten Group Inc
Project/Site: Lily Pond

Job ID: 620-38401-1
SDG: 20008

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Sample Origin
620-38401-1	LP-GW-1	Water	05/26/26 15:00	05/27/26 17:46	Massachusetts

Last Modified: 06/24/2026 at 9:48AM EDT

ESS Laboratory
Analytical Balance BAL Laboratory
185 Frances Avenue, Cranston, RI 02910
Phone. 401-461-7181
www.esslaboratory.com

Work Order # 38401 Page 1 of 1

Turn Time (Days): ☒ Standard ☐ 4 ☐ 3 ☐ 2 ☐ 1 ☐ SameDay
Regulatory State: MA Criteria: DRGP
PROJECT TYPE: ☐ CT RCP ☐ MA MCP ☑ RGP ☐ Permit ☐ 401 WQ ☐ Drinking Water

PAYMENT: Amount $ ____ Check # ____ V MC D AmEx Cash

ELECTRONIC DELIVERABLES (Final Reports are PDF): ☐ EQuIS ☐ State Upload ☐ Enviro Data ☐ CLP-Like Package ☐ Other (Specify) →

CLIENT INFORMATION

Client: Horsley Witten Group
Address: 90 Route 6A Sandwich, MA 02563
Phone: 508-833-6600
Persons Authorized to Receive Data: cgran@horsleywitten.com ghedman@horsleywitten.com

PROJECT INFORMATION

Project Name: Lily Pond
Project Location: Nantucket, MA
Project Number: 20008
Project Manager: Gary Hedman
Bill to:
PO#:
Quote#:

Client acknowledges that sampling is compliant with all EPA / State regulatory programs.

REQUESTED ANALYSES

Laboratory ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	1-4 Dioxane	Ammonia, Chloride	TRC, Cyanide	Hex. Chrom, Tri Chrom	EDB	Ethanol	Hardness	PCB	RGP Total Metals	RGP Dissolved Metals	RGP SVOCs	RGP VOCs	TPH	TSS	Total Nitrogen	Phenol	Total Number of Bottles
-1	5/26/26	1500	G	GW	LP-GW-1	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

620-38401 COC

Container Type: AC-Air Cassette AG-Amber Glass B-BOD Bottle C-Cubitainer J-Jar O-Other P-Poly S-Sterile V-Vial
Container Volume: 1-100 mL 2-2.5 gal 3-250 mL 4-300 mL 5-500 mL 6-1L 7-VOA 8-2 oz 9-4 oz 10-8 oz 11-Other*
Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAce, NaOH 9-NH4Cl 10-DI H2O 11-Other
Number of Bottles per Sample:

Shipping Conditions (circle one)

Ice Iced Ambient

Cooler Temperature (°C): ____
Client approval required for temperature >6°C
☐ Approved by Client (initials/date →)

Sampled by : Caroline Gran

Comments: * Please specify "Other" preservative and containers types in this space

please meet DRGP parameters
Dissolved metals were field filtered

Chain needs to be filled out neatly and completely for on time delivery.

All samples submitted are subject to ESS Laboratory's payment terms and conditions.

Dissolved Filtration: ☐ Laboratory Filter ☐ Field Filter

Relinquished by (Signature)	Date	Time	Received By (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)
Caroline Gran	5/27/26	1500			5/27/2026	1746	
Relinquished by (Signature)	Date	Time	Received By (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)

3.2 -0.1 2.1°C IR6 Ice

Loc: 620
38401

Eurofins Rhode Island Laboratory Sample and Cooler Receipt Checklist

Client: Horsley Witten Grp.
Shipped/Delivered Via: Courier

TALS Job ID: 38401
Date Received: 5/27/26
TAT Requested: STS

1 Air bill manifest present? YES / NO
Air No _____

2 Were custody seals present? YES/NO

3 Is a Cooler Present? YES / NO
Temp 2.1°C Iced with Ice Pack
Temp: _____ Iced with _____
Temp: _____ Iced with _____
Temp. _____ Iced with _____
Temp _____ Iced with _____

4 Was COC signed and dated by client? YES / NO

5 Does COC match bottles? YES / NO

6. Is COC complete and correct? YES / NO

7 Were samples received intact? YES / NO

8. Were labs informed about short holds & rushes? YES / NO / NA

9 Were any analyses received outside of hold time? YES / NO

---

11 Any Subcontracting needed? YES / NO
TALS Sample IDs -1
Analysis Ammonia, Cl, TRC, Cyanide, EDB, Ethanol, Hardness, TSS, Phenol
TAT _____

12. Were VOAs received? YES / NO
a. Air bubbles in aqueous VOAs? YES / NO / NA
b Does methanol cover soil completely? YES / NO / NA

13 Are the samples properly preserved? Yes / No
a If metals, unpreserved delivered to the lab Date _____ Time _____ By/Acid Lot#: _____
b Low Level VOA vials frozen. Date _____ Time. _____ By: _____

Sample Receiving Notes:

_____

_____

14 Was there a need to contact Project Manager? Yes / No
a Was there a need to contact the client? Yes / No
Who was contacted? _____ Date. _____ Time. _____ By: _____

Resolution: _____

_____

_____

2nd Review

Were all containers scanned into storage/lab? Initials _____

Are barcode labels on correct containers? YES / NO

Are all Flashpoint stickers attached/container ID # circled? YES / NO / NA

Are all Hex Chrome stickers attached? YES / NO / NA

Are all QC stickers attached? YES / NO / NA

Are VOA stickers attached if bubbles noted? YES / NO / NA

Are Composite stickers added if needed? YES / NO / NA

Completed By _____ Date & Time 5/27/26 1849

Reviewed By _____ Date & Time 5/28/26 13:40

Last Modified: 06/24/2026 at 9:48AM EDT

Eurofins Rhode Island
646 Camp Ave
North Kingstown, RI 02852
Phone: 413-789-9018 Fax: 413-506-3830

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler: N/A	Lab PM: Heng, Bianca V	Carrier Tracking No(s): N/A	COC No: 620-32380.1
Client Contact: Shipping/Receiving	Phone: N/A	E-Mail: Bianca.Heng@et.eurofinsus.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Environm		Accreditations Required (See note): State - Massachusetts		Job #: 620-38401-1
Address: 2425 New Holland Pike, ,	Due Date Requested: 6/4/2026			Preservation Codes: -
City: Lancaster	TAT Requested (days): N/A			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #: N/A			
Email: N/A	WO #: N/A			
Project Name: Lily Pond	Project #: 62006963			
Site: N/A	SSOW#: N/A			Other: N/A

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	351.2/351.2_PrepTKN	2540DTSS	300_ORGFM_28D(MOD) Custom Analyte List	420.4Phenol	SM4500NH3_C_Mod/SM4500NH3_B(MOD) Local Method	200.7/200.7_P_TOT(MOD) Custom Analyte List	625.1_PREC/625_Prep_LVIPriority Pollutants List	Total Number of containers	Special Instructions/Note:
			Preservation Code:												
LP-GW-1 (620-38401-1)	5/26/26	15:00 Eastern	G	Water			X	X	X	X	X	X	X	5	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northeast, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northeast, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northeast, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northeast, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		5/29/26 1349	ETL		5/29/26 2200	
2	Relinquished by:	Date/Time: 5/30/26 0230	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time: 5-30-26 0230	Company ETL

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.2/1.3

Ver: 03/20/2026

Last Modified: 06/24/2026 at 9:48AM EDT

Eurofins Rhode Island
646 Camp Ave
North Kingstown, RI 02852
Phone: 413-789-9018 Fax: 413-506-3830

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler: N/A	Lab PM: Heng, Bianca V	Carrier Tracking No(s): N/A	COC No: 620-32380.1
Client Contact: Shipping/Receiving	Phone: N/A	E-Mail: Bianca.Heng@et.eurofinsus.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Environm		Accreditations Required (See note): State - Massachusetts		Job #: 620-38401-1
Address: 2425 New Holland Pike, ,	Due Date Requested: 6/4/2026			Preservation Codes: -
City: Lancaster	TAT Requested (days): N/A			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #: N/A			
Email: N/A	WO #: N/A			
Project Name: Lily Pond	Project #: 62006963			
Site: N/A	SSOW#: N/A			Other: N/A

Analysis Requested

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	351.2/351.2_PrepTKN	2540DTSS	300_ORGFM_28D(MOD) Custom Analyte List	420.4Phenol	SM4500NH3_C_Mod/SM4500NH3_B(MOD) Local Method	200.7/200.7_P_TOT(MOD) Custom Analyte List	625.1_PREC/625_Prep_LVIPriority Pollutants List	Total Number of containers	Special Instructions/Note:
			Preservation Code:												
LP-GW-1 (620-38401-1)	5/26/26	15:00 Eastern	G	Water			X	X	X	X	X	X	X	5	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northeast, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northeast, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northeast, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northeast, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		5/29/26 1349	ETL		5/30/26 0220	
2		5/30/26 0220				
3					5.30.26 0230	ETL

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 1.2/1.3

Ver: 03/20/2026

Last Modified: 06/24/2026 at 9:48AM EDT

Eurofins Rhode Island
646 Camp Ave
North Kingstown, RI 02852
Phone: 413-789-9018 Fax: 413-506-3830

Chain of Custody Record

eurofins | Environment Testing

Client Information (Sub Contract Lab)	Sampler: N/A	Lab PM: Heng, Bianca V	Carrier Tracking No(s): N/A	COC No: 620-32618.1
Client Contact: Shipping/Receiving	Phone: N/A	E-Mail: Bianca.Heng@et.eurofinsus.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Eurofins Lancaster Laboratories Environm		Accreditations Required (See note): State - Massachusetts		Job #: 620-38401-1
Address: 2425 New Holland Pike, ,	Due Date Requested: 6/9/2026			
City: Lancaster	TAT Requested (days): N/A			
State, Zip: PA, 17601				
Phone: 717-656-2300(Tel)	PO #: N/A			
Email: N/A	WO #: N/A			
Project Name: Lily Pond	Project #: 62006963			
Site: N/A	SSOW#: N/A			

Analysis Requested

Preservation Codes: -

Other: N/A

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=wasteoil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	8011/8011_Prep Ethylene Dibromide	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
LP-GW-1 (620-38401-1)	5/26/26	15:00 Eastern	G	Water			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins Environment Testing Northeast, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Environment Testing Northeast, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Environment Testing Northeast, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Environment Testing Northeast, LLC.

Possible Hazard Identification	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
Unconfirmed	☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months
Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1		6/2/26 17:00	ERI		6/2/26 2200	
2		6/3/26 0200				
3					6-3-26 0200	ERE

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: 0.3/0.4

Ver: 03/20/2026

Last Modified: 06/24/2026 at 9:48AM EDT

Chain of Custody Record

eurofins Environment Test

Client Information (Sub Contract Lab)	Sampler: N/A	Lab PM: Heng, Bianca V	Carrier Tracking No(s): N/A	COC No: 410-4796144.1
Client Contact: Shipping/Receiving	Phone: N/A	E-Mail: Bianca.Heng@et.eurofinsus.com	State of Origin: Massachusetts	Page: Page 1 of 1
Company: Eurofins Environment Testing Northeast L		Accreditations Required (See note): State Massachusetts		Job #: 620-38401-1
Address: 777 New Durham Road	Due Date Requested: 6/4/2026			Preservation Codes: B NaOH
City: Edison	TAT Requested (days): N/A			
State, Zip: NJ 08817				
Phone: 732-549-3900(Tel) 732-549-3679(Fax)	PO #: N/A			
Email: N/A	WO #: N/A			
Project Name: Lily Pond	Project #: 62006963			
Site: N/A	SSOW#: N/A			Other: N/A

Analysis Requested

Sample Identification Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (Wwater, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	335.4/Distill_CNCyanide, Total	Total Number of containers	Special Instructions/Note:
			Preservation Code:				B		
LP-GW-1 (620-38401-1)	5/26/26	15:00 Eastern	G	Water			X	1	

Note: Since laboratory accreditations are subject to change, Eurofins Lancaster Laboratories Environment Testing, LLC places the ownership of method, analyte & accreditation compliance upon our subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/tests/matrix being analyzed, the samples must be shipped back to the Eurofins Lancaster Laboratories Environment Testing, LLC laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins Lancaster Laboratories Environment Testing, LLC attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins Lancaster Laboratories Environment Testing, LLC.

Possible Hazard Identification: Unconfirmed	Sample Disposal (A fee may be assessed if samples are retained longer than 1 month): ☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months
Deliverable Requested: I II III IV Other (specify) — Primary Deliverable Rank: 2	Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Amada Dominguez	6/1/26 1233	ELLET		6/2/26 835	
2		6/2/26 1550	ELLET		6/2/26 1550	
3						

Custody Seals Intact: ∆ Yes ∆ No	Custody Seal No.	Cooler Temperature(s) °C and Other Remarks: 1.7/1.7, 1.3/1.3, 0.9/0.9 IR9

Ver 03/20/2026

Login Sample Receipt Checklist

Client: Horsley Witten Group Inc

Job Number: 620-38401-1
SDG Number: 20008

Login Number: 38401
List Number: 1
Creator: Madison, Ashley L

List Source: Eurofins Rhode Island

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Last Modified: 06/24/2026 at 9:48AM EDT

Login Sample Receipt Checklist

Client: Horsley Witten Group Inc

Job Number: 620-38401-1
SDG Number: 20008

Login Number: 38401
List Number: 3
Creator: Armbruster, Chris

List Source: Eurofins Edison
List Creation: 06/02/26 05:07 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.7/1.7, 0.9/0.9, 1.3/1.3°C IR9
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Last Modified: 06/24/2026 at 9:48AM EDT

Login Sample Receipt Checklist

Client: Horsley Witten Group Inc

Job Number: 620-38401-1
SDG Number: 20008

Login Number: 38401
List Number: 2
Creator: Onate, Maggie

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC
List Creation: 05/30/26 07:04 AM

Question	Answer	Comment
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	True	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	N/A	

Last Modified: 06/24/2026 at 9:48AM EDT

Login Sample Receipt Checklist

Client: Horsley Witten Group Inc

Job Number: 620-38401-1
SDG Number: 20008

Login Number: 38401
List Number: 4
Creator: Mercado, Max

List Source: Eurofins Lancaster Laboratories Environment Testing, LLC
List Creation: 06/02/26 08:48 PM

Question	Answer	Comment
The cooler's custody seal is intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature acceptable,where thermal pres is required(</=6C, not frozen).	True	
Cooler Temperature is recorded.	True	
WV:Container Temp acceptable,where thermal pres is required (</=6C, not frozen).	N/A	
WV: Container Temperature is recorded.	N/A	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
There are no discrepancies between the containers received and the COC.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
There is sufficient vol. for all requested analyses.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
Sample custody seals are intact.	True	
VOA sample vials do not have headspace >6mm in diameter (none, if from WV)?	True	

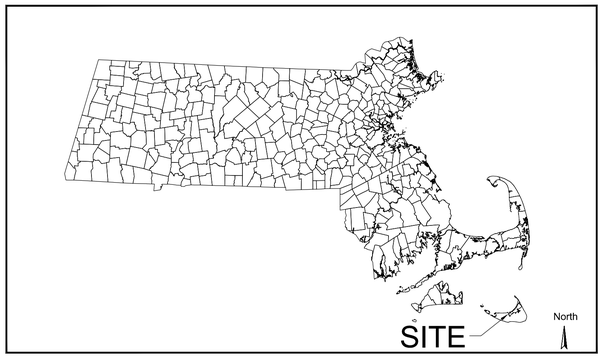
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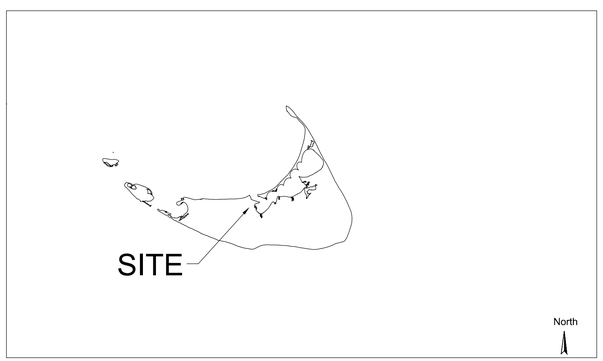
Last Modified: 06/24/2026 at 9:48AM EDT

APPENDIX F – Construction Drawings – Lily Pond Park Improvements Nantucket, Massachusetts, Prepared by Horsley Witten Group, Inc. June 2026

LILY POND PARK IMPROVEMENTS
CONSTRUCTION DOCUMENTS
NANTUCKET, MASSACHUSETTS
JUNE 2026



MASSACHUSETTS
Graphic Scale
0 150000
SCALE IN FEET
1:150000



NANTUCKET
Graphic Scale
0 12000
SCALE IN FEET
1:12000



VICINITY MAP
Graphic Scale
1-inch = 1000-feet

Sheet List Table	
Sheet Number	Sheet Title
C-1	COVER SHEET
C-2	CONSTRUCTION NOTES AND DETAILS
C-3	PHASING PLAN
C-4	DEMOLITION & EROSION CONTROL PLAN
C-5	DEWATERING PLAN
C-6	OVERALL LAYOUT PLAN
C-7	RESTORATION AREA 1A-LAYOUT & GRADING
C-8	RESTORATION AREA 1A - SECTIONS
C-9	RESTORATION AREA 1B-LAYOUT & GRADING
C-10	RESTORATION AREA 2-SITE LAYOUT
C-11	RESTORATION AREA 2-GRADING
C-12	RESTORATION AREA 3-LAYOUT & GRADING
C-13	NEW GATEWAY - LAYOUT & GRADING
C-14	BOARDWALK PROFILES AND DETAILS
C-15	BOARDWALK PROFILES
C-16	CONSTRUCTION DETAILS (1)
C-17	CONSTRUCTION DETAILS (2)
L-1	RESTORATION AREA 1A - PLANTING
L-2	WESCO BUFFER PLANTING
L-3	RESTORATION AREA 1B - PLANTING
L-4	RESTORATION AREA 2 - PLANTING
L-5	RESTORATION AREA 3 - PLANTING
L-6	NEW GATEWAY - PLANTING
L-7	PLANTING DETAILS

GENERAL NOTES:

1. SITE INFORMATION:
   PLAT & LOT: 242-43, 1802-74, 320-204, 712-001
   ADDRESS: 8 WESCO PLACE, 36 LILY STREET, 17-19 N LIBERTY STREET
   ZONING DISTRICT: R40
2. THE PROPERTY IS LOCATED WITHIN F.I.R.M. ZONE X AS SHOWN ON COMMUNITY PANEL NO.250019 0086G DATED JUNE 9, 2014.
3. WETLANDS ARE PRESENT ON THE SITE.

Plan Set:

LILY POND PARK IMPROVEMENTS
CONSTRUCTION DOCUMENTS
NANTUCKET, MASSACHUSETTS

Prepared For:

The Nantucket Land Bank
22 Broad Street
Nantucket, MA
(508) 228-7240

Prepared By:

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com

Headquarters
90 Route 6A
Sandwich, MA 02563
(508) 833-6600 voice
(508) 833-3150 fax

112 Water Street, 3rd Floor
Boston, MA 02109
(857) 263-8193 voice
(617) 574-4799 fax

1 Turks Head Place
Suite 300
Providence, RI 02903
(401) 272-1717 voice
(401) 439-8368 fax

113 R2 Water Street
Exeter, NH 03833
(603) 658-1660 voice

Date Issued: JUNE 2026
Designed By: EEB/JMP
Drawn By: EEB/JMP
Checked By: BRK

Registration: COMMONWEALTH OF MASSACHUSETTS — RICHARD A. CLAYTOR — CIVIL — NO. 45116 — REGISTERED PROFESSIONAL ENGINEER
6-15-2026

Revisions

Rev.	Date	By	Appr.	Description
1				
2				
3				
4				
5				
6				
7				

Project Number: 20008
Sheet Number: 1 of 24
Drawing Number: C - 1

last modified: 06/19/26 printed: 06/19/26 by eb H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008 CV.dwg

Last Modified: 06/24/2026 at 9:48AM EDT

EXISTING CONDITION NOTES:

1. THE EXISTING CONDITIONS DEPICTED WERE TAKEN FROM THE SURVEY PLAN ENTITLED "EXISTING CONDITIONS PLOT PLAN: LILY POND" PREPARED BY NANTUCKET SURVEYORS, LLC ON 12/13/23.
2. THE WATER ELEVATIONS WERE TAKEN ON 3/25/19 AND 10/17/23 UNLESS OTHERWISE NOTED.
3. THE WETLAND DELINEATION SHOWN HEREON WAS CONDUCTED BY THE HORSLEY WITTEN GROUP, INC. ON 5/20/22.

GENERAL CONSTRUCTION NOTES:

1. ALL SITE WORK TO COMPLETE THIS PROJECT AS INDICATED ON THE DRAWINGS AND IN THE SPECIFICATIONS IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
2. IMMEDIATELY CONTACT AND COORDINATE WITH THE ENGINEER AND OWNER IF ANY DEVIATION OR ALTERATION OF THE WORK PROPOSED ON THESE DRAWINGS IS REQUIRED.
3. UTILIZE ALL PRECAUTIONS AND MEASURES TO ENSURE THE SAFETY OF THE PUBLIC, ALL PERSONNEL AND PROPERTY DURING CONSTRUCTION IN ACCORDANCE WITH OSHA STANDARDS, INCLUDING THE INSTALLATION OF TEMPORARY FENCING BARRICADES, SAFETY LIGHTING, CONES, POLICE DETAIL AND/OR FLAGMEN AS DETERMINED NECESSARY BY THE TOWN. THE CONTRACTOR IS RESPONSIBLE FOR THE COST OF POLICE DETAIL AND FOR COORDINATING WITH THE LOCAL OR STATE POLICE DEPARTMENT FOR ALL REQUIRED POLICE DETAIL.
4. MAKE ALL NECESSARY CONSTRUCTION NOTIFICATIONS AND APPLY FOR AND OBTAIN ALL NECESSARY CONSTRUCTION PERMITS, PAY ALL FEES INCLUDING POLICE DETAILS AND POST ALL BONDS, IF NECESSARY, ASSOCIATED WITH THE SAME, AND COORDINATE WITH THE OWNER AND THE ENGINEER.
5. ALL EXISTING CONDITIONS SHOWN ARE APPROXIMATE AND ARE BASED ON THE BEST INFORMATION AVAILABLE. PRIOR TO THE START OF CONSTRUCTION VERIFY THAT THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS DO NOT CONFLICT WITH ANY KNOWN EXISTING OR OTHER PROPOSED IMPROVEMENTS. IF ANY CONFLICTS ARE DISCOVERED, NOTIFY THE OWNER AND THE ENGINEER PRIOR TO INSTALLING ANY PORTION OF THE SITE WORK WHICH WOULD BE AFFECTED.
6. THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS INDICATED ON THE DRAWINGS ARE BASED ON THE SURVEY PLAN ENTITLED 'EXISTING CONDITIONS PLOT PLAN: LILY POND' PREPARED BY NANTUCKET SURVEYORS, LLC ON 12/13/23. THIS INFORMATION IS NOT TO BE RELIED UPON AS BEING EXACT OR COMPLETE. VERIFY THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY IN THE TOWN, AND "DIGSAFE" (1-888-344-7233) AT LEAST THREE BUSINESS DAYS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES. THE CONTRACTOR MUST RESOLVE CONFLICTS BETWEEN THE PROPOSED UTILITIES AND FIELD-LOCATED UTILITIES AND SITE ELEMENTS AND REPORT ANY DISCREPANCIES TO THE ENGINEER IMMEDIATELY. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR DAMAGES INCURRED AS A RESULT OF UTILITIES OMITTED, INCOMPLETELY OR INACCURATELY SHOWN. THE CONTRACTOR MUST MAINTAIN ACCURATE RECORDS OF THE LOCATION AND ELEVATION OF ALL WORK INSTALLED AND EXISTING UTILITIES FOUND DURING CONSTRUCTION FOR THE PREPARATION OF THE AS-BUILT PLAN.
7. THE CONTRACTOR MUST MAINTAIN ALL EXISTING UTILITIES IN WORKING ORDER AND FREE FROM DAMAGE DURING THE ENTIRE DURATION OF THE PROJECT. REPAIR ANY DAMAGE TO EXISTING UTILITY LINES OR STRUCTURES INCURRED DURING CONSTRUCTION OPERATIONS AT NO COST TO THE OWNER. THE CONTRACTOR IS RESPONSIBLE FOR ALL COST RELATED TO THE REPAIR OF UTILITIES. EXCAVATION REQUIRED WITHIN THE PROXIMITY OF EXISTING UTILITY LINES MUST BE DONE BY HAND.
8. COORDINATE ALL TRENCHING WORK WITHIN ROADWAYS WITH THE PROPER LOCAL & STATE AGENCY. THE CONTRACTOR IS RESPONSIBLE FOR ALL TRENCH SAFETY INCLUDING ANY LOCAL AND/OR STATE PERMITS REQUIRED FOR THE TRENCH WORK. IF THIS WORK IS REQUIRED TO OCCUR OUTSIDE THE AGREED UPON HOURS OF OPERATION FOR THE FACILITY, THE CONTRACTOR MUST PLAN ACCORDINGLY.
9. SAWCUT ALL TRENCH WORK WITHIN EXISTING PAVEMENT AS INDICATED ON THE DRAWINGS. BACKFILL AND COMPACT TRENCH WORK AS INDICATED ON THE DRAWING AND IN THE SPECIFICATIONS. IF SETTLEMENT OCCURS DUE TO INADEQUATE COMPACTION, AS DETERMINED BY THE ENGINEER, WITHIN THE WARRANTY PERIOD, CONTRACTOR IS REQUIRED TO REMOVE, PATCH AND REPAVE AFTER ONE COMPLETE 12-MONTH CYCLE.
10. IMPORT ONLY CLEAN MATERIAL. MATERIAL FROM AN EXISTING OR FORMER 21E SITE AS DEFINED BY THE MASSACHUSETTS CONTINGENCY PLAN 310 CMR 40.0000 WILL NOT BE ACCEPTED .
11. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ESTABLISH AND MAINTAIN ALL CONTROL POINTS AND BENCHMARKS DURING CONSTRUCTION INCLUDING BENCHMARK LOCATIONS AND ELEVATIONS AT CRITICAL AREAS. COORDINATE WITH THE ENGINEER THE LOCATION OF ALL CONTROL POINTS AND BENCHMARKS.
12. SITE LAYOUT SURVEY REQUIRED FOR CONSTRUCTION MUST BE PROVIDED BY THE CONTRACTOR AND PERFORMED BY A MASSACHUSETTS' REGISTERED PROFESSIONAL LAND SURVEYOR. THE CONTRACTOR IS RESPONSIBLE FOR COORDINATING WITH THE SURVEYOR FOR ALL SITE SURVEY WORK.
13. MAINTAIN ALL GRADE STAKES SET BY THE SURVEYOR. GRADE STAKES ARE TO REMAIN UNTIL A FINAL INSPECTION OF THE ITEM HAS BEEN COMPLETED BY THE ENGINEER. RE-STAKING OF PREVIOUSLY SURVEYED SITE FEATURES IS THE RESPONSIBILITY (INCLUDING COST) OF THE CONTRACTOR.
14. UNLESS OTHERWISE INDICATED ON THE DRAWINGS AND/OR IN THE SPECIFICATIONS, ALL SITE CONSTRUCTION MATERIALS AND METHODOLOGIES ARE TO CONFORM TO THE MOST RECENT VERSION OF THE MASSACHUSETTS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS (THE COMMONWEALTH OF MASSACHUSETTS DEPARTMENT OF TRANSPORTATION SPECIFICATIONS FOR HIGHWAY AND BRIDGES 2020 EDITION, AND THE SUPPLEMENTAL SPECIFICATIONS DATED JUNE 30, 2020).
15. PROVIDE ALL CONSTRUCTION SERVICE IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS REGARDING NOISE, VIBRATION, DUST, SEDIMENTATION CONTAINMENT, AND TRENCH WORK.
16. RESTORE ALL SURFACES EQUAL TO THEIR ORIGINAL CONDITION AFTER CONSTRUCTION IS COMPLETE PER SPECIFICATIONS. LEAVE ALL AREAS NOT DISTURBED BY CONSTRUCTION IN THEIR NATURAL STATE. TAKE CARE TO PREVENT DAMAGE TO SHRUBS, TREES, OTHER LANDSCAPING AND/OR NATURAL FEATURES. WHEREAS THE PLANS DO NOT SHOW ALL LANDSCAPE FEATURES, EXISTING CONDITIONS MUST BE VERIFIED BY THE CONTRACTOR IN ADVANCE OF THE WORK.
17. REGULARLY INSPECT THE PERIMETER OF THE PROPERTY TO CLEAN UP AND REMOVE LOOSE CONSTRUCTION DEBRIS BEFORE IT LEAVES THE SITE. PROMPTLY REMOVE ALL DEMOLITION DEBRIS FROM THE SITE TO AN APPROVED DUMP SITE.
18. ALL TRUCKS LEAVING THE SITE MUST BE COVERED.
19. DO NOT WASH ANY CONCRETE TRUCKS ONSITE. REMOVE BY HAND ANY CEMENT OR CONCRETE DEBRIS LEFT IN THE DISTURBED AREA.
20. BURIAL OF ANY STUMPS, SOLID DEBRIS, AND/OR STONES/BOULDERS ONSITE IS PROHIBITED. DO NOT USE ROAD SALT OR OTHER DE-ICING CHEMICALS ON THE SITE.
21. AT THE END OF EACH CONSTRUCTION PHASE, REMOVE ALL CONSTRUCTION DEBRIS AND SURPLUS MATERIALS FROM THE SITE AS INDICATED IN THE SPECIFICATIONS. PERFORM A THOROUGH INSPECTION OF THE WORK PERIMETER. COLLECT AND REMOVE ALL MATERIALS AND BLOWN OR WATER CARRIED DEBRIS FROM THE SITE.
22. PROVIDE AS BUILT SURVEY BY A MASSACHUSETTS REGISTERED PROFESSIONAL LAND SURVEYOR PRIOR TO SUBSTANTIAL COMPLETION PER THE SPECIFICATIONS.

STORMWATER FACILITY OPERATION & MAINTENANCE:

THE CONTRACTOR IS RESPONSIBLE FOR THE PROPER INSPECTION AND MAINTENANCE OF ALL STORMWATER MANAGEMENT FACILITIES AS OUTLINED BELOW DURING ALL PHASES OF CONSTRUCTION AND SHUTDOWNS AND UNTIL SUCH TIME THAT THE COMPLETED PROJECT IS ACCEPTED BY THE OWNER AND THE ENGINEER.

1. INSPECT AND RESTORE/CLEAN ALL FACILITIES (INLETS, MANHOLES, STORMWATER MANAGEMENT AREAS) AS DESCRIBED BELOW OF SEDIMENT AND DEBRIS PRIOR TO THE OWNER'S ACCEPTANCE.
2. REMOVE AND DISPOSE ALL SEDIMENT AND DEBRIS TO A PRE-APPROVED OFF-SITE LOCATION.
3. REFER TO THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) FOR ADDITIONAL INFORMATION PERTAINING TO STORMWATER FACILITY OPERATION AND MAINTENANCE REQUIREMENTS. MAINTAIN A WORKING COPY OF THE SWPPP ON SITE AT ALL TIMES.
4. AT A MINIMUM INSPECT MONTHLY AND AFTER STORM EVENTS GREATER THAN OR EQUAL TO 1" OF RAINFALL AS NECESSARY FOR THE ENTIRE DURATION OF THE CONSTRUCTION PROJECT AND THE FIRST 3 MONTHS AFTER CONSTRUCTION TO ENSURE PROPER STABILIZATION.
5. SPECIFIC MAINTENANCE REQUIRED DURING CONSTRUCTION:
   - A. DRAINAGE STRUCTURES (INLETS, MANHOLES, CATCHBASINS, WATER QUALITY UNITS): MONITOR AND REGULARLY INSPECT ALL EXISTING AND PROPOSED DRAINAGE STRUCTURES FOR PROPER OPERATION, COLLECTION OF LITTER OR TRASH, AND STRUCTURAL DETERIORATION. CLEAN AND REMOVE SEDIMENT FRO THE STRUCTURES (INCLUDING SUMPS) AS NECESSARY, AND REPAIR WHEN REQUIRED.
   - B. RIP-RAP SLOPE PROTECTION: FOR PIPE OUTLETS, OVERFLOW SPILLWAYS AND SLOPE PROTECTION. MONITOR, REGULARLY INSPECT AND REPAIR AS NECESSARY.
   - C.
   - E. BIORETENTION SYSTEMS: REGULARLY INSPECT TO ENSURE PROPER FUNCTION. MONITOR AND INSPECT STRUCTURAL COMPONENTS, INCLUDING WEIR WALLS, DRAINAGE INLETS, OUTLET STRUCTURES AND SPILLWAYS, FOR PROPER FUNCTION. CLEAN AND REPAIR ANY CLOGGED STRUCTURES DURING INSPECTIONS. PRIOR TO THE COMPLETION OF CONSTRUCTION, REMOVE AND REPLACE ILL-ESTABLISHED, DEAD OR SEVERELY DISEASED PLANTS, REMOVE SEDIMENT BUILD-UP AS NEEDED, AND REPLACE SOIL WHEN NECESSARY. IF SEDIMENT OR ORGANIC DEBRIS BUILD-UP LIMITS THE INFILTRATION CAPABILITIES, REMOVE THE TOP 6" OR GREATER AND SURFACE ROTO-TILLED TO A DEPTH OF 12".
   - F.
   - G. SEDIMENT FOREBAY: REGULARLY INSPECT TO ENSURE PROPER FUNCTION. REMOVE SEDIMENT BUILD-UP ON THE FLOOR OF THE FOREBAY AND PROPERLY DISPOSE , AS NECESSARY, TO LIMIT CLOGGING. CLEAN SEDIMENT FOREBAYS PRIOR TO COMPLETION OF CONSTRUCTION.
   - H. CONSTRUCTED WETLAND SYSTEM: MONITOR AND INSPECT STRUCTURAL COMPONENTS OF THE SYSTEM, INCLUDING ORIFICE STRUCTURES, WEIR WALLS, DRAINAGE INLETS, TRASH CHECK RACKS, VALVES, PIPES, AND SPILLWAY STRUCTURES, FOR PROPER FUNCTION. CLEAN AND REPAIR ANY CLOGGED OPENINGS IDENTIFIED DURING INSPECTIONS. FOR PROPER OPERATION. REMOVE SEDIMENT OR ORGANIC BUILD-UP FROM THE CONSTRUCTED WETLAND AS NEEDED FOR PROPER OPERATION. REMOVE AND REPLACE ILL-ESTABLISHED, DEAD OR SEVERELY DISEASED PLANTS. TREAT AND REMOVE FROM THE SITE ANY INVASIVE VEGETATION. CHECK EMBANKMENTS FOR STABILITY AND REMOVE ANY BURROWING ANIMALS. RE-VEGETATE PER THE PLANTING DESIGN ALL BARREN AREAS WITHIN THE EXTENTS OF THE FACILITY.
   - I. ROUTINE MAINTENANCE: OTHER ROUTINE MAINTENANCE INCLUDES THE REMOVAL OF TRASH AND LITTER FROM PAVED AND PERIMETER AREAS, AND STREET AND PARKING LOT SWEEPING UPON COMPLETION OF CONSTRUCTION TO AVOID EXCESSIVE ACCUMULATION OF SEDIMENT IN THE DRAINAGE SYSTEM. INSPECT THE PIPES AND STRUCTURES FOR SEDIMENT ACCUMULATION AND PROPER FLOW.

CONSTRUCTION SEQUENCE:

THE FOLLOWING CONSTRUCTION SEQUENCE IS TO BE USED AS A GENERAL GUIDELINE TO BE COMPLETED DURING THE PHASES LISTED IN THE SPECIFICATIONS. COORDINATE WITH THE OWNER, ENGINEERS, AND LANDSCAPE ARCHITECT AND SUBMIT A PROPOSED CONSTRUCTION SEQUENCE WITH WORK TO BE COMPLETED DURING EACH PHASE FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.

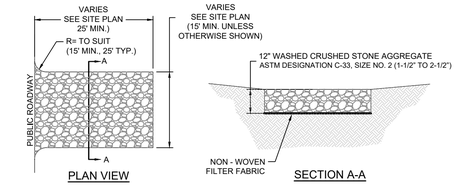
1. SURVEY AND STAKE THE PROPOSED LIMIT OF DISTURBANCE AND LIMIT OF SEDIMENTATION BARRIERS. STAKES TO BE INSTALLED AND MAINTAINED EVERY 30' ALONG THE LIMIT OF WORK AND PLANTING ONLY LIMIT OF WORK. FLAG INVASIVE PLANT SOIL AREA TO BE REMOVED. INSTALL TREE PROTECTION FENCE AS INDICATED ON PLANS. STAKE ROOT ZONE AREAS 10' O.C.
2. INSTALL SIGNS AND BARRIERS TO PREVENT THE PUBLIC FROM ENTERING THE PARK UNLESS OTHERWISE NOTED.
3. PLACE SEDIMENTATION BARRIERS AS INDICATED ON DRAWINGS AND STAKED OUT IN THE FIELD. UNDER NO CIRCUMSTANCES IS THE LIMIT OF WORK TO EXTEND BEYOND THE SEDIMENTATION BARRIERS/LIMIT OF DISTURBANCE AS INDICATED ON DRAWINGS AS APPROVED BY THE CONSERVATION COMMISSION.
4. CONVENE ON SITE WITH OWNER AND ENGINEER FOR REVIEW AND APPROVAL.
5. EXCAVATE AND REMOVE INVASIVE PLANT SOIL AREAS TO A MINIMUM DEPTH OF 12". INSTALL TEMPORARY CONSTRUCTION ENTRANCES IN LOCATIONS INDICATED ON DRAWINGS. NO OTHER ENTRANCES ARE TO BE USED TO GAIN ACCESS TO THE SITE BY ANY CONSTRUCTION OR DELIVERY VEHICLES.
6. STAGE WORK TO BEGIN IN THE NORTHEAST AREA OF THE PROJECT SITE AND PROGRESS INWARD TO THE CENTER OF THE SITE. COMPLETE WORK IN THE SOUTHEAST AREA OF THE SITE (NEW GATEWAY, LILY STREET ENTRANCE) BEFORE FINISHING WORK AT SOUTHWEST AREA OF THE SITE (NORTH LIBERTY STREET ENTRANCE). STABILIZE ALL OTHER AREAS OF THE PROJECT SITE BEFORE STABILIZING THE SOUTHWEST AREA (NORTH LIBERTY STREET ENTRANCE). DURING EACH PHASE OF WORK:
   - 6.1. INSTALL MUD MAT OR APPROVED EQUIVALENT FOR STABILIZATION IN ANY WETLAND AREAS PRIOR TO BEGINNING EARTH WORK. RELOCATE, AS NEEDED, TO ENSURE EQUIPMENT IS SUPPORTED.
   - 6.2. BEGIN CLEARING THE SITE AS REQUIRED. DO NOT CLEAR BEYOND AREA THAT CAN BE WORKED ON DURING EACH PHASE AND DEADLINES AS DESCRIBED IN THE SPECIFICATIONS.
   - 6.3. SURVEY AND STAKE THE PROPOSED STORMWATER MANAGEMENT AREAS, WETLAND RESTORATION AREAS, DRAINAGE LINES, BOARDWALK CENTER LINE, AND STRUCTURES AS REQUIRED FOR EACH PHASE.
   - 6.4. CONVENE ON SITE WITH OWNER AND ENGINEER FOR REVIEW AND APPROVAL.
   - 6.5. EXCAVATE AND ROUGH GRADE THE PROPOSED STORMWATER MANAGEMENT AREAS, WETLAND RESTORATION AREAS AND ANY ADDITIONAL TEMPORARY BASINS NECESSARY TO CONTROL SITE RUNOFF AND SEDIMENT. TEMPORARILY STABILIZE/SEED PERMANENT STORMWATER MANAGEMENT AREAS AS NECESSARY TO REDUCE SIDE SLOPE EROSION AND SEDIMENT ACCUMULATION.
   - 6.6. BEGIN CLEARING AND GRUBBING THE FOOTPRINTS OF STORMWATER MANAGEMENT AREAS AND WETLAND RESTORATION AREAS. TOPSOIL IS TO BE STRIPPED FROM THE AREA OF THE PROPOSED STORMWATER MANAGEMENT AREAS AND STOCKPILED IN APPROVED LOCATIONS. TOPSOIL STOCKPILES MUST BE PROTECTED BY A SEDIMENT BARRIER.
   - 6.7. INSTALL TEMPORARY CONVEYANCE DEVICES (SWALES, CHECK DAMS, PIPES, ETC.) AS NECESSARY TO MANAGE ON SITE RUNOFF AND CONTRIBUTING OFF SITE RUNOFF, BASEFLOW, AND PROTECT ABUTTING PROPERTIES.
   - 6.8. INSTALL DRAINAGE PIPES, DRAINAGE MANHOLES, CATCH BASINS, AND HYDRODYNAMIC SEPARATORS. BEGIN WORK AT THE STORMWATER MANAGEMENT AREAS AND PROGRESS UP-GRADIENT. PROTECT DISCHARGE OUTLETS WITH RIP-RAP APRONS. THE STORMWATER MANAGEMENT AREA(S) AND DRAINAGE NETWORK ARE TO BE PROTECTED FROM SEDIMENTATION UNTIL ALL UN-STABILIZED AREAS ARE STABILIZED WITH STONE SUB-BASE OR VEGETATION. INSTALL SEDIMENT BARRIERS AT ALL POINTS OF ENTRY INTO THE DRAINAGE NETWORK. TAKE PARTICULAR CARE TO PROTECT THE UNDERGROUND STRUCTURES FROM SEDIMENT.
   - 6.9. BEGIN ROUGH GRADING AND WALL INSTALLATIONS. BRING ROUGH GRADING TO PROPER ELEVATIONS AS SOON AS PRACTICABLE. COORDINATE WORK TO MINIMIZE TIME SOILS ARE UN-STABILIZED.
   - 6.10. PERMANENTLY SEED ALL DISTURBED AREAS.
   - 6.11. UPON COMPLETION OF DRAINAGE INSTALLATION, PLACE COMPACTED GRAVEL BASE AND FINISH GRADE OF THE PARTHS, SIDEWALKS AND PARKING AREAS.
   - 6.12. FINISH PERMANENT STABILIZATION. COMPLETE PERMANENT STORMWATER MANAGEMENT AREA AND WETLAND RESTORATION AREA SEEDING AND PLANTING AFTER THE CONTRIBUTING DRAINAGE AREAS HAVE REACHED A MINIMUM OF 80% STABILIZATION.
7. COMPLETE ALL REMAINING PLANTING AND SEEDING.
8. SWEEP THE ROADWAY TO REMOVE ALL SEDIMENTS. REPAIR DRAINAGE OUTLETS AND BASINS AS REQUIRED. CLEAN AND FLUSH THE DRAINAGE STRUCTURES AND PIPES AT THE END OF CONSTRUCTION AND REMOVE ALL ACCUMULATED SEDIMENTS IN THE STORMWATER MANAGEMENT AREAS. CONTRACTOR MUST INSPECT THE DRAINAGE NETWORK AND REPAIR ANY DAMAGE IMMEDIATELY.
9. ENGINEER TO APPROVE THE REMOVAL OF ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING VEGETATIVE ESTABLISHMENT OF ALL DISTURBED AREAS AND DETERMINE WHEN THE CONTRIBUTING AREA HAS REACHED A MINIMUM OF 90% STABILIZATION.

GENERAL GRADING AND DRAINAGE NOTES:

1. ALL CUT AND FILL SLOPES SHALL BE 3:1 OR FLATTER UNLESS OTHERWISE NOTED.
2. EXISTING GRADE CONTOUR INTERVALS SHOWN AT 1 FOOT.
3. PROPOSED GRADE CONTOUR INTERVALS SHOWN AT 1 FOOT.
4. ADJUST AND/OR CUT EXISTING PAVEMENT AS NECESSARY TO ASSURE A SMOOTH FIT AND CONTINUOUS GRADE.
5. PROVIDE POSITIVE DRAINAGE AWAY FROM SURROUNDING BUILDINGS FOR ALL NATURAL AND PAVED AREAS. IMMEDIATELY NOTIFY THE ENGINEER IF POSITIVE DRAINAGE CANNOT BE PROVIDED.
6. PROPOSED ELEVATIONS ARE SHOWN TO FINISH GRADE OR SURFACES UNLESS NOTED OTHERWISE.

WETLAND RESTORATION NOTES:

1. RESTORATION AREA SHALL BE CONSTRUCTED TO MEET THE REQUIREMENTS OF ALL ASSOCIATED PERMITS AND CERTIFICATIONS, INCLUDING RELEVANT PERFORMANCE STANDARDS OF THE MASSACHUSETTS WETLANDS PROTECTION ACT (MGL C. 131, S40), SECTION 401 WATER QUALITY CERTIFICATION, AND SECTION 404, U.S. ARMY CORPS OF ENGINEERS GENERAL PERMIT.
2. MATTING SHALL BE PLACED AS REQUIRED TO PROTECT THE WETLAND SOIL AND VEGETATION FROM COMPACTION, CONTAMINATION, AND/OR OTHER DAMAGES. MATS SHALL BE PLACED AS SPECIFIED AND THE APPROVED BY THE ENGINEER. UPON COMPLETION OF CONSTRUCTION TEMPORARY MATS SHALL BE REMOVED AND PROPERLY DISPOSED, IF NECESSARY.
6. IF REQUIRED FOR SEDIMENT CONTROL DURING RESTORATION WORK ADDITIONAL SEDIMENT BARRIERS SHALL BE INSTALLED ALONG THE DOWNSLOPE PERIMETER OF THE RESTORATION AREA BEGINNING AND ENDING IN THE SURROUNDING UPLAND SO THAT NO DISTURBED SOIL CAN ENTER ADJACENT WETLANDS OR WATERS. SEDIMENT BARRIERS SHALL BE IN PLACE AND APPROVED BY THE ENGINEER PRIOR TO ANY SOIL DISTURBANCE. NO WORK SHALL TAKE PLACE OUTSIDE THE BARRIERS.
7. IF REQUIRED, GRADES SHALL BE RESTORED TO PRE-CONSTRUCTION ELEVATIONS AS SHOWN IN THE BASELINE SURVEY OR AS REQUIRED BY THE ENGINEER TO RESTORE HYDROLOGIC FUNCTIONS. FINAL ELEVATIONS SHALL BE APPROVED BY THE ENGINEER PRIOR TO SOIL PREPARATION AND SEEDING.
8. UPON APPROVAL OF GRADING TO THE REQUIRED ELEVATIONS OF EACH RESTORATION AREA, SOIL SHALL BE PREPARED AND SEEDED AS FOLLOWS.
   - 8.1. SOIL SCARIFICATION - COMPACTED SOIL SHALL BE SCARIFIED WITH EQUIPMENT APPROVED BY THE ENGINEER. UPON APPROVAL OF SOIL SCARIFICATION, THE AREA SHALL BE SEEDED WITH MULCH //OR// SEEDED WITH COMPOST BLANKET AS SPECIFIED BELOW. SEEDING SHALL IMMEDIATELY FOLLOW SOIL PREPARATION.
   - 8.2. SOIL TILLING - WHERE COMPACTION IS SEVERE OR ORGANIC MATTER NEED TO FACILITATE FASTER RESTORATION TWO INCHES OF COMPOST SHALL BE APPLIED OVER THE IMPACTED AREA AND SOIL SHALL BE TILLED TO A DEPTH OF 4 INCHES BELOW THE EXISTING GRADE. FOLLOWING TILLING, SOIL SHALL BE RAKED RELATIVELY SMOOTH, OR AS DIRECTED. UPON APPROVAL OF PREPARED SOIL, AREA SHALL BE SEEDED AND HYDROMULCHED.
9. RESTORATION AREAS TO BE USED FOR DEWATERING UPON COMPLETION OF GRADING THE SIDE SLOPES MUST BE STABILIZED WITH GEOTEXTILE FABRIC, EROSION CONTROL BLANKET, COMPOST BLANKET OR BONDED FIBER MATRIX TO PREVENT EROSION AND SEDIMENTATION OF THE NEWLY GRADED AREAS.
   - 9.1. COMPOST BLANKET TO MEET MASSDOT SPECIFICATIONS.
   - 9.2. COMPOST SHALL BE PNEUMATICALLY APPLIED (BLOWN ON) TO A DEPTH OF ONE HALF TO ONE INCH AT THE SAME TIME THAT SEED IS BROADCAST SUCH THAT SEED IS COVERED BY A LIGHT APPLICATION OF COMPOST.
   - 9.3. WHEN PLANTING. THE ADDITIONAL STABILIZATION AS DESCRIBED ABOVE AND SEED SHALL BE RE-APPLIED TO THE SATISFACTION OF THE ENGINEER AND AT NOT COST TO THE CONTRACT.
10. PLANT INSTALLATION - SEE PLANTING PLAN AND PLANTING DETAIL SHEET.
    - 10.1. TO THE MAXIMUM EXTENT PRACTICABLE, RESTORATION AREA SHALL BE PLANTED IN THE DRY. PLANTS SHALL BE PLACED ACCORDING TO THE PLANTING DETAILS AND WITHIN THE RANGE OF TARGET ELEVATIONS AND AT THE SPACING SHOWN ON THE PLANS OR AT THE DIRECTION OF THE LANDSCAPE ARCHITECT. UNLESS OTHERWISE NOTED ON THE PLANS, FINAL PLANT LOCATIONS SHALL BE DETERMINED ON SITE AND LOCATED WITH REGARD TO EXPECTED HYDROLOGY, PLANT GROWTH CHARACTERISTICS, HABITAT DESIRED, AND WATER PROTECTION.
11. UPON COMPLETION OF THE WETLAND RESTORATION THE FOLLOWING CONDITIONS MUST BE MET:
    - 11.1. THE TARGET ELEVATIONS HAVE BEEN RESTORED PER THE SURVEY OR ADJUSTED PER THE ENGINEER. AREAS THAT ARE TOO HIGH OR TOO LOW SHOULD BE IDENTIFIED ALONG WITH SUGGESTED CORRECTIVE MEASURES.
    - 11.2. SOIL COMPACTION HAS BEEN MITIGATED.
    - 11.3. SOILS ARE STABILIZED AND THERE IS NO SEDIMENT IN THE WETLAND AND NO CHANNELING OF SLOPES.
    - 11.4. HYDROLOGY IS FUNCTIONING AS INTENDED.
    - 11.5. SPECIFIED SEED MIX HAS BEEN SEEDED AND SEEDED SPECIES IN THE WETLAND AND ADJACENT UPLAND SHOW SIGNS OF GOOD GERMINATION AND HEALTHY GROWTH.
    - 11.6. PLANTED WOODY AND HERBACEOUS SPECIES (IF INCLUDED) MEET SPECIFICATIONS AND ARE ESTABLISHING WELL.
    - 11.7. THERE ARE NO INVASIVE PLANTS VISIBLE IN THE RESTORED WETLAND AREA.
    - 11.8. SILT FENCE AND NON-BIODEGRADABLE SEDIMENT BARRIER MATERIALS HAVE BEEN REMOVED.

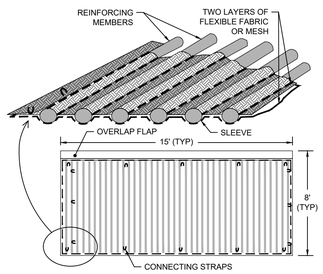


PLAN VIEW — SECTION A-A

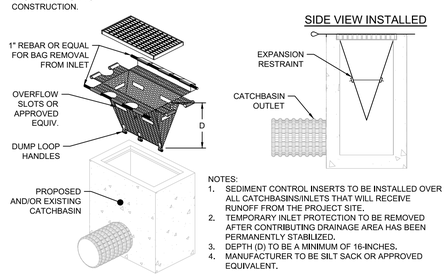
NOTE:
1. STONE CONSTRUCTION ENTRANCE(S) TO REMAIN UNTIL MAJOR SITE GRADING IS COMPLETE
2. SEE SITE PLAN FOR LOCATION & ACTUAL DIMENSIONS

STONE CONSTRUCTION ENTRANCE
NOT TO SCALE

NOTES
1. SWAMP / MUD MATS OR ENGINEER APPROVED EQUIVALENT.
2. MATS MUST BE OVERLAPPED ACCORDING TO MANUFACTURER RECOMMENDATIONS OR AS APPROVED BY THE ENGINEER.
3. ENDS AND SEAMS ARE TO BE SEWN, CLIPPED, OR WELDED SHUT TO CONFINE REINFORCING MEMBERS.
4. CONTRACTOR TO PROVIDE AS MANY MATS AS NECESSARY TO TRAVERSE THE RESOURCE AREA WITHOUT DISTURBING SOILS AND SIZED TO HANDLE EQUIPMENT REQUIRED TO COMPLETE SITE WORK. ALTERNATIVE METHODS FOR TRAVERSING THE RESOURCE AREA MAY INCLUDE THE USE OF REINFORCED FIBERGLASS (MUD-TRAKS®), WOOD MATS, COMPOSITE MATS, OR STEEL PLATES. ALL METHODS MUST BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
5.

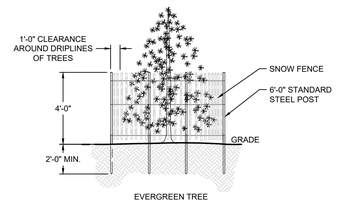


SWAMP / MUD MAT DETAIL
NOT TO SCALE

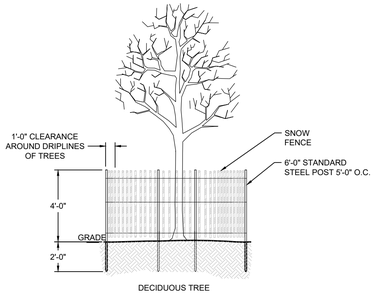


NOTES:
1. SEDIMENT CONTROL INSERTS TO BE INSTALLED OVER ALL CATCHBASINS/INLETS THAT WILL RECEIVE RUNOFF FROM THE PROJECT SITE.
2. TEMPORARY INLET PROTECTION TO BE REMOVED AFTER CONTRIBUTING DRAINAGE AREA HAS BEEN PERMANENTLY STABILIZED.
3. DEPTH (D) TO BE A MINIMUM OF 16-INCHES.
4. MANUFACTURER TO BE SILT SACK OR APPROVED EQUIVALENT.

INLET PROTECTION (CATCH BASIN INSERT)
NOT TO SCALE



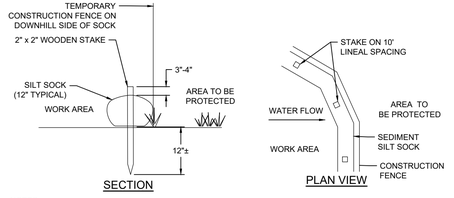
EVERGREEN TREE



DECIDUOUS TREE

NOTES:
1. FENCING SHALL BE ORANGE RESINET SM60 BARRIER FENCE "SNOW FENCE" OR APPROVED EQUIVALENT.
2. POST SHALL BE HOT ROLLED RAIL STEEL AND FORMED INTO A "T". DIMENSIONS OF "T" POST SECTION, APPROXIMATELY 1 7/16" X 1 5/16" X 1/8" X 6' (SIX FEET) LONG. THE POST SHALL BE PAINTED GREEN OR GALVANIZED.
3. THE FENCING SHALL REMAIN IN PLACE UNTIL ALL EXCAVATION HAS BEEN COMPLETED AND THE SURFACE HAS BEEN RE-ESTABLISHED

TREE PROTECTION
NOT TO SCALE



SECTION — PLAN VIEW

NOTES:
1. SILT SOCK SILTSOXX NATURAL ORIGINAL WITH ALL NATURAL BIODEGRADABLE COTTON FIBER OR APPROVED EQUIVALENT..
2. ALL MATERIAL TO MEET MANUFACTURER'S SPECIFICATIONS.
3. SEDIMENT SILT SOCK TO BE FILLED WITH COMPOST AND/OR WOODY MULCH PER MANUFACTURER'S REQUIREMENTS.
4. FOLLOWING CONSTRUCTION AND SITE STABILIZATION COMPOST MATERIAL SHALL BE REMOVED.

SILT SOCK (TUBULAR SEDIMENT BARRIER)
NOT TO SCALE

LEGEND:

GENERAL

| EXISTING | PROPOSED |

PROJECT PHASES:

WORK TO BE COMPLETED IN PHASES DURING THE FOLLOWING DATES.

1. PHASE 1: SEPTEMBER 8TH, 2026 - JUNE 11TH, 2027
2. SUMMER SHUT DOWN: JUNE 14TH, 2027 - SEPTEMBER 6TH, 2027
3. PHASE 2: SEPTMEBER 7TH, 2027-MAY 15TH, 2028

SEE SPECIFICATION 01 10 00 SUMMARY FOR SPECIFIC SITE ELEMENTS IN EACH PHASE.

PHASE 1 NOTES:

1. PHASE ONE, AS INDICATED ON THE PLAN, IS THE MINIMUM PROJECT AREA THAT NEEDS TO BE COMPLETED PRIOR TO THE SUMMER SHUTDOWN.
2. IF PHASE 1 IS COMPLETED AHEAD OF SCHEDULE, ADDITIONAL WORK BEYOND PHASE 1 MAY BE COMPLETED WITH OWNER APPROVAL.
3. PRIOR TO SUMMER SHUTDOWN, PROVIDE PLAN FOR PUBLIC ACCESS TO THE OWNER AND ENGINEER FOR APPROVAL.
4. ALL EQUIPMENT AND EXCESS MATERIAL MUST BE REMOVED FROM THE SITE PRIOR TO SHUTDOWN.
5. LEAVE SITE IN CLEAN, STABLE CONDITION THAT IS ACCEPTABLE FOR PUBLIC ACCESS.
6. ALL DISTURBED AREAS TO BE SEEDED AND STABILIZED. BEGIN WORK IN WETLAND AREAS ONLY IF GRADING AND PLANTING CAN BE COMPLETED PRIOR TO SHUTDOWN. AREAS THAT HAVE NOT BEEN DISTURBED DO NOT NEED TO BE PLANTED WITH SEED MIX.
7. IF NEEDED, PROVIDE TEMPORARY WOODEN RAMP FOR PEDESTRIAN ACCESS TO BOARDWALK. RAMP TO MEET ADA STANDARDS AND BE CAPABLE OF SUPPORTING A LARGE LAWN MOWER AND PEDESTRIAN ACCESS.
8. MAINTAIN EXISTING STORMWATER INLETS TO WETLAND IF ALL IMPROVEMENTS TO WATER INLET CANNOT BE COMPLETED PRIOR TO SHUTDOWN.
9. SITE INSPECTION WILL OCCUR PRIOR TO SUMMER SHUTDOWN, AND PRIOR TO REMOBILIZATION IN THE FALL TO DOCUMENT CONDITIONS.
10. CONTRACTOR IS RESPONSIBLE FOR PLANT AND SEEDING MAINTENANCE AND INVASIVE TREATMENT DURING SUMMER SHUT DOWN.

LEGEND:

PHASE 1

PHASE 2

WESCO PLACE

PHASE 2
SEE C-8, C-9, & L-2

PHASE 1: RESTORE ENTIRE EASEMENT ACCESS TO EXISTING CONDITIONS

PHASE 1: STABILIZED TURF SEED MIX 5: PLAYER'S BEST OR APPROVED EQUIVALENT, TYP.

LIMIT OF WORK, TYP.

LIMIT OF GRADING, TYP.

PROPERTY BOUNDARY, TYP.

NORTH LIBERTY STREET

PHASE 2
SEE C-8, C-9, & L-4

PHASE 1: PROVIDE TEMPORARY WOODEN RAMP TO TURF AREA FOR PEDESTRIAN ACCESS

SMH RIM ELEV.=13.25 INV.=8.97

PHASE 1: PROVIDE SMOOTH SURFACE FOR PEDESTRIAN ACCESS

PHASE 1: STABILIZED TURF SEED MIX 5: PLAYER'S BEST OR APPROVED EQUIVALENT, TYP.

IRRIGATION WELL: PHASE 1

BENCHMARK: UP-35-10-BENCHTIE ELEV. 14.35

GROVE LANE

PHASE 1: TEMPORARY WOODEN BOARDWALK WITH SLEEPER BOARD 4' WIDE MIN.

PHASE 1: PROVIDE TEMPORARY WOODEN RAMP TO TURF AREA FOR PEDESTRIAN ACCESS

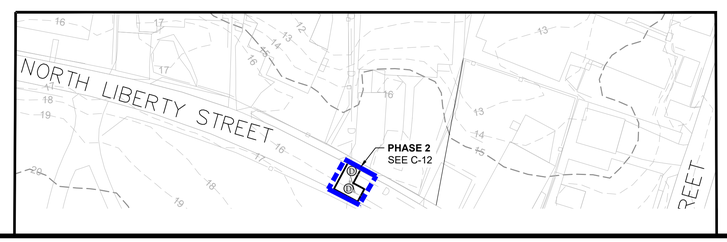
PHASE 1: TEMPORARY WOODEN BOARDWALK WITH SLEEPER BOARD 4' WIDE MIN.

PHASE 2
SEE C-10 & L-5

PHASE 1: STABILIZED TURF SEED MIX 5: PLAYER'S BEST OR APPROVED EQUIVALENT, TYP.

PHASE 1: PROVIDE SMOOTH SURFACE FOR PEDESTRIAN ACCESS

LILY STREET



GRAPHIC SCALE

40 0 20 40 80 160

(in feet)

1 INCH = 40 FEET

Revisions

Rev.	Date	By	Appr.	Description

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Drawn By: EEB/JMP
Designed By: EEB/JMP
Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS CONSTRUCTION DOCUMENTS NANTUCKET, MASSACHUSETTS

Plan Title: PHASING PLAN

Prepared For: The Nantucket Land Bank, 22 Broad Street, Nantucket, MA, Phone: (508) 228-7240, Fax: ---

Survey Provided By: Nantucket Surveyors LLC, 5 Windy Way, Nantucket, MA, Phone: (508) 228-4240, Fax: ---, Dated: 12/13/23

Registration:

COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED
PROFESSIONAL ENGINEER

6-15-2026

Project Number: 20008

Sheet : 3 of 24

Sheet Number: C - 3

last modified: 06/12/26 printed: 06/12/26 by eb H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008_PHASE 1 PLAN.dwg

Last Modified: 06/04/2026 at 8:48AM EDT

EROSION & SEDIMENT CONTROL NOTES:

1. SEE ADDITIONAL EROSION CONTROL REQUIREMENTS DURING CONSTRUCTION AS INDICATED ON THE LAYOUT AND GRADING PLANS.
2. FILE A NOTICE OF INTENT (NOI) WITH NPDES PRIOR TO THE START OF CONSTRUCTION AND PROVIDE ALL REQUIRED DOCUMENTATION INCLUDING A STORMWATER AND POLLUTION PREVENTION PLAN (SWPPP). REFER TO THE SWPPP REGARDING ALL EROSION CONTROL MATTERS. MAINTAIN A WORKING COPY OF THE SWPPP ONSITE AT ALL TIMES. FOLLOW THE SWPPP PROTOCOL FOR SITE MAINTENANCE, INSPECTIONS AND PROPER DOCUMENTATION UNTIL THE SITE HAS BEEN ACCEPTED BY THE OWNER. AT THE COMPLETION OF THE PROJECT THE CONTRACTOR OR OWNER MUST FILE A NOTICE OF TERMINATION WITH NPDES. IN ACCORDANCE WITH NPDES REGULATIONS, THE COMPLETED SWPPP MUST INCLUDE ALL OF THE SITE EROSION CONTROL DOCUMENTATION, WEEKLY EROSION INSPECTION REPORTS COMPLETED BY THE DESIGNATED SITE PERSONNEL, AND ANY OTHER PERTINENT SITE DOCUMENTATION MUST BE RETAINED FOR A MINIMUM OF 3 YEARS FROM THE DATE OF TERMINATION.
3. DESIGNATE THE SITE CONSTRUCTION FOREMAN AS THE ON-SITE PERSONNEL RESPONSIBLE FOR THE DAILY INSPECTION AND MAINTENANCE OF ALL SEDIMENT AND EROSION CONTROLS AND IMPLEMENTATION OF ALL NECESSARY MEASURES TO CONTROL EROSION AND PREVENT SEDIMENT FROM LEAVING THE SITE.
4. INSTALL ALL EROSION AND SEDIMENT CONTROL (ESC) MEASURES AND TEMPORARY BARRIERS AS INDICATED ON DRAWINGS IN CONSULTATION WITH THE CONSERVATION AGENT, AND ENGINEER BEFORE ANY CONSTRUCTION ACTIVITIES BEGIN. INSPECT, MAINTAIN REPAIR AND REPLACE EROSION CONTROL MEASURES AND TEMPORARY FENCE AS NECESSARY, DURING THE ENTIRE CONSTRUCTION PERIOD OF THE PROJECT. THE SITE PERIMETER EROSION CONTROLS ARE THE DESIGNATED LIMIT OF WORK. INFORM ALL PERSONNEL WORKING ON THE PROJECT SITE THAT NO CONSTRUCTION ACTIVITY IS TO OCCUR BEYOND THE LIMIT OF WORK AT ANY TIME THROUGHOUT THE CONSTRUCTION PERIOD.
5. MAINTAIN A MINIMUM SURPLUS OF 100 FEET OF EROSION CONTROL BARRIER (SILT FENCE &/OR SILT SOCK) ONSITE AT ALL TIMES.
6. PROTECT THE ADJACENT RESOURCE AREA AND ALL ABUTTING PROPERTIES FROM SEDIMENTATION DURING THE ENTIRE CONSTRUCTION PERIOD INCLUDING THE SUMMER SHUTDOWN UNTIL ACCEPTANCE BY THE OWNER & IN CONFORMANCE WITH THE ORDER OF CONDITIONS.
7. PROVIDE CONSTRUCTION EXITS AS INDICATED ON DRAWINGS TO SHED DIRT FROM CONSTRUCTION VEHICLE TIRES. CLEAN AND/OR REPLACE THE CRUSHED STONE PAD, AS NECESSARY, TO MAINTAIN ITS EFFECTIVENESS.
8. KEEP THE LIMIT OF CLEARING, GRADING AND DISTURBANCES TO A MINIMUM WITHIN THE PROPOSED AREA OF CONSTRUCTION. COMPLETE WORK IN A MANNER TO MINIMIZE AREAS OF EXPOSED SOIL. IF TREES ARE TO BE CUT ON THE ENTIRE SITE, CLEAR AND GRUB ONLY THOSE AREAS WHICH ARE ACTIVELY UNDER CONSTRUCTION DURING EACH PHASE. PROPERLY INSTALL THE SEDIMENTATION CONTROLS PRIOR TO BEGINNING ANY LAND CLEARING ACTIVITY AND/OR OTHER CONSTRUCTION RELATED WORK.
9. MONITOR LOCAL WEATHER REPORTS DURING CONSTRUCTION AND PRIOR TO SCHEDULING EARTHMOVING OR OTHER CONSTRUCTION ACTIVITIES WHICH LEAVE LARGE DISTURBED AREAS UNSTABILIZED. IF INCLEMENT WEATHER IS PREDICTED, USE BEST PROFESSIONAL JUDGEMENT AND GOOD CONSTRUCTION PRACTICES WHEN SCHEDULING CONSTRUCTION ACTIVITIES AND ENSURE THE NECESSARY EROSION CONTROL DEVICES ARE INSTALLED AND FUNCTIONING PROPERLY TO MINIMIZE EROSION FROM ANY IMPENDING WEATHER EVENTS.
10. INSPECT EROSION AND SEDIMENT CONTROL DEVICES AND STABILIZED SLOPES ON A WEEKLY BASIS AND AFTER EACH RAINFALL EVENT OF 0.25 INCH OR GREATER. REPAIR IDENTIFIED PROBLEMS WITHIN 24 HOURS TO ENSURE EROSION AND SEDIMENT CONTROLS ARE IN GOOD WORKING ORDER. RESET OR REPLACE MATERIALS AS REQUIRED.
11. SURROUND THE PERIMETER OF SOIL STOCKPILES WITH SILT SOCK OR SILT FENCE AS DETERMINED NECESSARY.
12. DISTURBED AREAS AND SLOPES MUST NOT BE LEFT UNATTENDED OR EXPOSED FOR EXCESSIVE PERIODS OF TIME SUCH AS THE INACTIVE WINTER SEASON. PROVIDE APPROPRIATE STABILIZATION PRACTICES ON ALL DISTURBED AREAS AS SOON AS POSSIBLE BUT NOT MORE THAN 14 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT AREA HAS TEMPORARILY OR PERMANENTLY CEASED, REINFORCE TEMPORARY AREAS HAVING A SLOPE GREATER THAN 4:1 WITH EROSION BLANKETS OR APPROVED EQUAL UNTIL THE SITE IS PROPERLY STABILIZED. TEMPORARY SWALES MAY ALSO BE REQUIRED IF DETERMINED NECESSARY IN THE FIELD BY THE ENGINEER.
13. INSTALL A SILT SACK OR APPROVED EQUIVALENT IN EACH EXISTING CATCHBASIN RECEIVING RUNOFF FROM THE SITE. UPON THE INSTALLATION OF EACH CATCH BASIN, INSTALL A SILT SACK OR APPROVED EQUIVALENT. INSPECT SILT SACKS, AFTER EACH SIGNIFICANT STORM EVENT AND REMOVE AND EMPTY AS NEEDED FOR THE DURATION OF THE CONSTRUCTION PERIOD.
14. SMALL SEDIMENTATION BASINS MAY BE CONSTRUCTED ON AN AS-NEEDED BASIS DURING CONSTRUCTION TO AID IN THE CAPTURE OF SITE RUNOFF AND SEDIMENT. IT WILL BE THE RESPONSIBILITY OF THE SITE CONTRACTOR, IN CONSULTATION WITH THE ENGINEER, TO SIZE AND CREATE THESE BASINS IN APPROPRIATE LOCATIONS TO RETAIN ALL SEDIMENT ON SITE.
15. CONTAIN ALL SEDIMENT ONSITE. SWEEP ALL EXITS FROM THE SITE AS NECESSARY INCLUDING ANY SEDIMENT TRACKING. SWEEP PAVED AREAS AS NEEDED TO REMOVE SEDIMENT AND POTENTIAL POLLUTANTS ACCUMULATED DURING SITE CONSTRUCTION.
16. REMOVE ACCUMULATED SEDIMENT FROM ALL TEMPORARY PRACTICES AND DISPOSE OF IN A PRE-APPROVED LOCATION.
17. PROVIDE ON SITE OR MAKE READILY AVAILABLE THE NECESSARY EQUIPMENT AND SITE PERSONNEL DURING CONSTRUCTION HOURS FOR THE DURATION OF THE PROJECT TO ENSURE ALL EROSION AND SEDIMENTATION CONTROL DEVICES ARE PROPERLY MAINTAINED AND REPAIRED IN A TIMELY AND RESPONSIBLE MANNER. IF SITE WORK IS SHUTDOWN FOR AN EXTENDED PERIOD OF TIME THE CONTRACTOR MUST CONTINUE TO PROVIDE PERSONNEL AND EQUIPMENT EITHER ON SITE OR READILY AVAILABLE TO PROPERLY MAINTAIN AND REPAIR ALL EROSION AND SEDIMENTATION CONTROL DEVICES IN A TIMELY AND RESPONSIBLE MANNER
18. CONTROL DUST BY WATERING OR OTHER APPROVED METHODS AS NECESSARY, OR AS DIRECTED BY THE ENGINEER.
19. THE CONTRACTOR IS RESPONSIBLE FOR THE INSPECTION AND MAINTENANCE DURING CONSTRUCTION AND THE SUMMER SHUTDOWN OF ALL STORMWATER FACILITIES INSTALLED OR AFFECTED BY THE PROJECT. REMOVE SEDIMENT OR DEBRIS COLLECTED WITHIN THESE FACILITIES FROM THE PROJECT WORK PRIOR TO THE OWNER'S ACCEPTANCE.

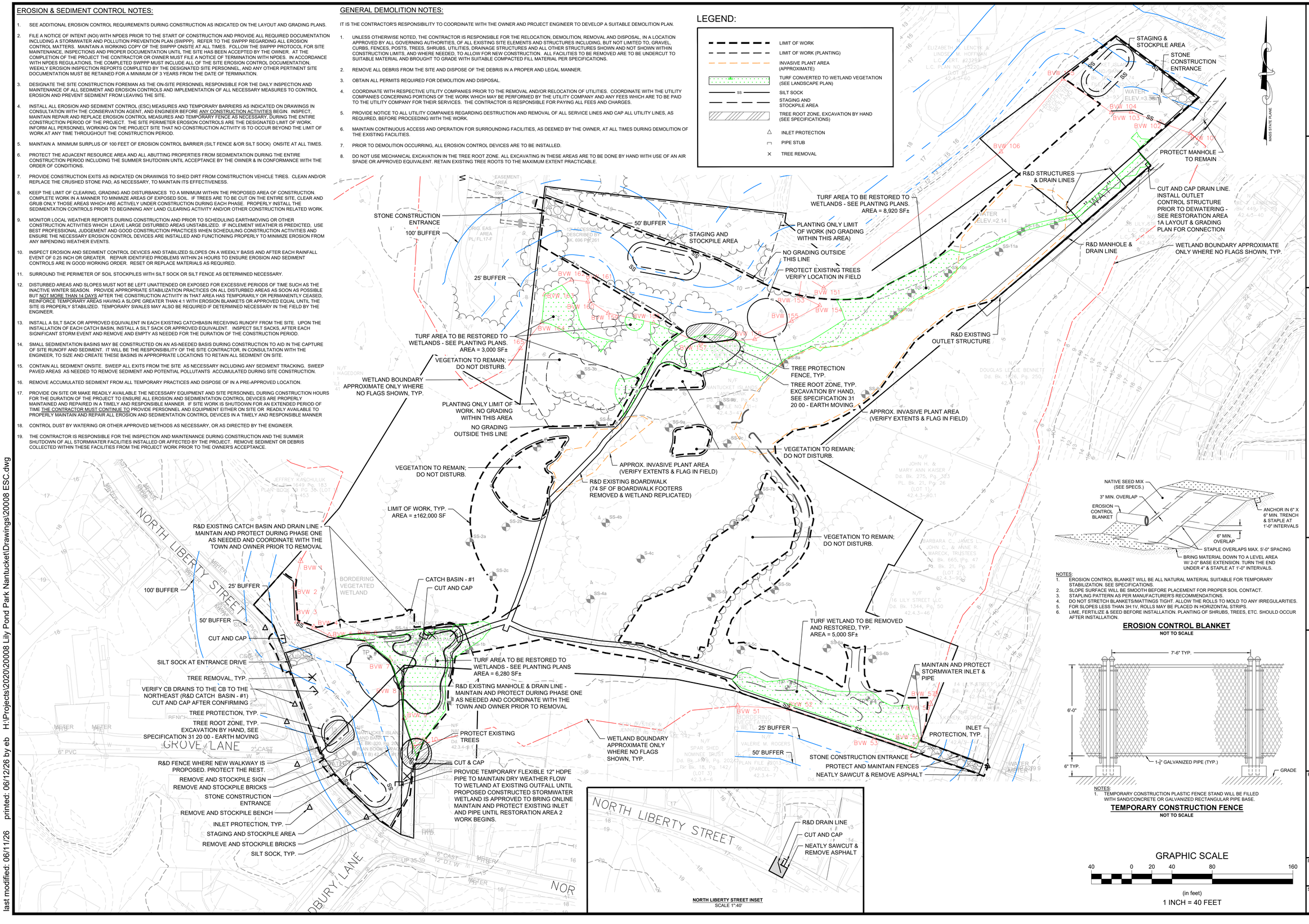
GENERAL DEMOLITION NOTES:

IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE OWNER AND PROJECT ENGINEER TO DEVELOP A SUITABLE DEMOLITION PLAN.

1. UNLESS OTHERWISE NOTED, THE CONTRACTOR IS RESPONSIBLE FOR THE RELOCATION, DEMOLITION, REMOVAL AND DISPOSAL, IN A LOCATION APPROVED BY ALL GOVERNING AUTHORITIES, OF ALL EXISTING SITE ELEMENTS AND STRUCTURES INCLUDING, BUT NOT LIMITED TO, GRAVEL, CURBS, FENCES, POSTS, TREES, SHRUBS, UTILITIES, DRAINAGE STRUCTURES AND ALL OTHER STRUCTURES SHOWN AND NOT SHOWN WITHIN CONSTRUCTION LIMITS, AND WHERE NEEDED, TO ALLOW FOR NEW CONSTRUCTION. ALL FACILITIES TO BE REMOVED ARE TO BE UNDERCUT TO SUITABLE MATERIAL AND BROUGHT TO GRADE WITH SUITABLE COMPACTED FILL MATERIAL PER SPECIFICATIONS.
2. REMOVE ALL DEBRIS FROM THE SITE AND DISPOSE OF THE DEBRIS IN A PROPER AND LEGAL MANNER.
3. OBTAIN ALL PERMITS REQUIRED FOR DEMOLITION AND DISPOSAL.
4. COORDINATE WITH RESPECTIVE UTILITY COMPANIES PRIOR TO THE REMOVAL AND/OR RELOCATION OF UTILITIES. COORDINATE WITH THE UTILITY COMPANIES CONCERNING PORTIONS OF THE WORK WHICH MAY BE PERFORMED BY THE UTILITY COMPANY AND ANY FEES WHICH ARE TO BE PAID TO THE UTILITY COMPANY FOR THEIR SERVICES. THE CONTRACTOR IS RESPONSIBLE FOR PAYING ALL FEES AND CHARGES.
5. PROVIDE NOTICE TO ALL UTILITY COMPANIES REGARDING DESTRUCTION AND REMOVAL OF ALL SERVICE LINES AND CAP ALL UTILITY LINES, AS REQUIRED, BEFORE PROCEEDING WITH THE WORK.
6. MAINTAIN CONTINUOUS ACCESS AND OPERATION FOR SURROUNDING FACILITIES, AS DEEMED BY THE OWNER, AT ALL TIMES DURING DEMOLITION OF THE EXISTING FACILITIES.
7. PRIOR TO DEMOLITION OCCURRING, ALL EROSION CONTROL DEVICES ARE TO BE INSTALLED.
8. DO NOT USE MECHANICAL EXCAVATION IN THE TREE ROOT ZONE. ALL EXCAVATING IN THESE AREAS ARE TO BE DONE BY HAND WITH USE OF AN AIR SPADE OR APPROVED EQUIVALENT. RETAIN EXISTING TREE ROOTS TO THE MAXIMUM EXTENT PRACTICABLE.

LEGEND:

- LIMIT OF WORK
- LIMIT OF WORK (PLANTING)
- INVASIVE PLANT AREA (APPROXIMATE)
- TURF CONVERTED TO WETLAND VEGETATION (SEE LANDSCAPE PLAN)
- SILT SOCK
- STAGING AND STOCKPILE AREA
- TREE ROOT ZONE, EXCAVATION BY HAND (SEE SPECIFICATIONS)
- INLET PROTECTION
- PIPE STUB
- TREE REMOVAL



NOTES:
1. EROSION CONTROL BLANKET WILL BE ALL NATURAL MATERIAL SUITABLE FOR TEMPORARY STABILIZATION. SEE SPECIFICATIONS.
2. SLOPE SURFACE WILL BE SMOOTH BEFORE PLACEMENT FOR PROPER SOIL CONTACT.
3. STAPLING PATTERN AS PER MANUFACTURER'S RECOMMENDATIONS.
4. DO NOT STRETCH BLANKETS/MATTINGS TIGHT. ALLOW THE ROLLS TO MOLD TO ANY IRREGULARITIES.
5. FOR SLOPES LESS THAN 3H:1V, ROLLS MAY BE PLACED IN HORIZONTAL STRIPS.
6. LIME, FERTILIZE & SEED BEFORE INSTALLATION. PLANTING OF SHRUBS, TREES, ETC. SHOULD OCCUR AFTER INSTALLATION.

EROSION CONTROL BLANKET
NOT TO SCALE

NOTES:
1. TEMPORARY CONSTRUCTION PLASTIC FENCE STAND WILL BE FILLED WITH SAND/CONCRETE OR GALVANIZED RECTANGULAR PIPE BASE.

TEMPORARY CONSTRUCTION FENCE
NOT TO SCALE

GRAPHIC SCALE
40 0 20 40 80 160
(in feet)
1 INCH = 40 FEET

Revisions

Rev.	Date	By	Appr.	Description

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Drawn By: EEB/JMP
Designed By: EEB/JMP
Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS CONSTRUCTION DOCUMENTS NANTUCKET, MASSACHUSETTS

Plan Title: DEMOLITION & EROSION CONTROL PLAN

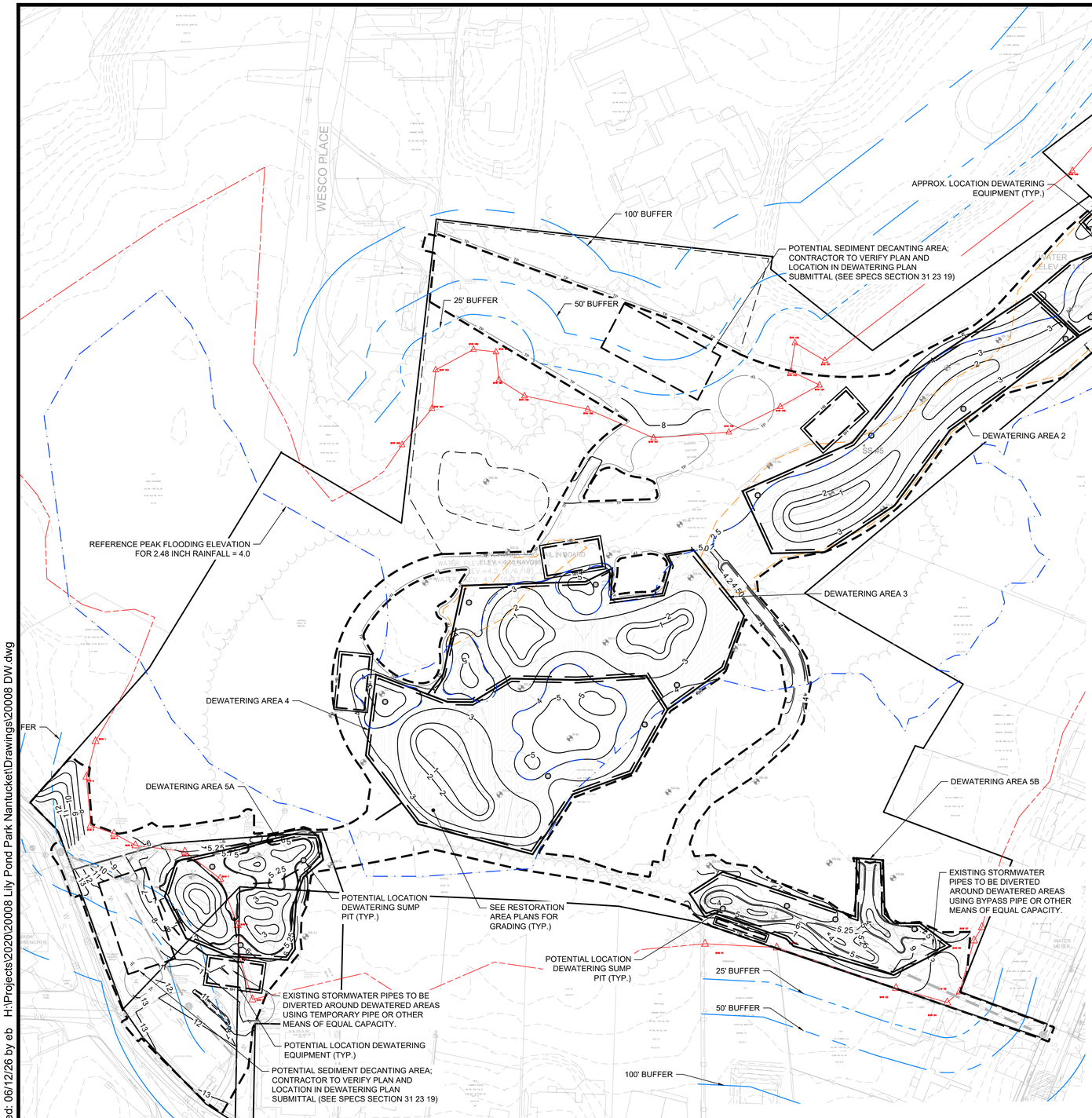
Prepared For: The Nantucket Land Bank, 22 Broad Street, Nantucket, MA, Phone: (508) 228-7240, Fax: ----

Survey Provided By: Nantucket Surveyors LLC, 5 Windy Way, Nantucket, MA, Phone: (508) 228-0240, Fax: ----, Dated: 12/13/23

Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
6-15-2026

Project Number: 20008
Sheet: 4 of 24
Sheet Number: C - 4

last modified: 06/11/26 printed: 06/12/26 by eb H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008 ESC.dwg
Last Modified: 06/24/2026 at 9:43AM EDT

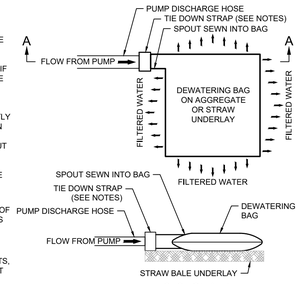


DEWATERING NOTES:

1. SEE DEWATERING SPECIFICATION 31 23 19.
2. CONTRACTOR TO SUBMIT A DEWATERING PLAN FOR ENGINEER APPROVAL PRIOR TO THE START OF CONSTRUCTION.
3. CONTRACTOR MAY USE ONE OR MULTIPLE DEWATERING MEASURES AS NEEDED IN ORDER FOR EFFLUENT TO MEET THE PERFORMANCE PER DEWATERING SPEC 31 23 19
   - 3.1. NEED FOR A FRAC TANK IS ANTICIPATED.
   - 3.1.1. DEWATERING FRAC TANK SIZE MAY VARY PER MANUFACTURER AND DEWATERING REQUIREMENTS.
   - 3.1.2. TANK TO INCLUDE A MINIMUM OF TWO WEIRS (ONE UNDER WEIR AND ONE OVER WEIR)
   - 3.1.3. AT NO TIME SHALL THE DEWATERING TANK OVERTOP. IF A GRAVITY DISCHARGE LINE IS DETERMINED INSUFFICIENT THEN ONE OR MORE PUMPS MAY BE REQUIRED FOR DISCHARGE. ALL NECESSARY PUMPS WILL BE PROVIDED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
   - 3.1.4. DISCHARGE LINES TO BE PLACED AT ENGINEER APPROVED LOCATIONS ALONG WITH NECESSARY EROSION CONTROL MEASURES.
   - 3.1.5. FRAC TANK TO BE CLEANED UPON COMPLETION OF DEWATERING PRACTICES.
4. TOTAL DEWATERING MAX DISCHARGE RATE = 1,000 GPM WITHOUT PRIOR TOWN AND ENGINEER APPROVAL

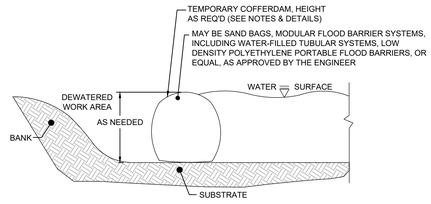
INSTALLATION NOTES:
1. PLACE LIFTING STRAPS (NOT INCLUDED) UNDER THE UNIT TO FACILITATE REMOVAL AFTER USAGE
2. UNFOLD DEWATERING BAG ON STABILIZED AREA OVER DENSE VEGETATION, STRAW, OR GRAVEL (IF AN INCREASED DRAINAGE SURFACE IS NEEDED)
3. INSERT DISCHARGE HOSE FROM PUMP INTO DEWATERING BAG A MINIMUM OF SIX INCHES AND TIGHTLY SECURE WITH ATTACHED TIE DOWN STRAP TO PREVENT WATER FROM FLOWING OUT OF THE UNIT WITHOUT BEING FILTERED
4. IF USING OPTIONAL ABSORBENTS, PLACE ABSORBENT BOOM INTO THE DEWATERING BAG

MAINTENANCE:
5. REPLACE THE UNIT WHEN 1/2 FULL OF SEDIMENT OR WHEN SEDIMENT HAS REDUCED THE FLOW RATE OF THE PUMP DISCHARGE TO AN IMPRACTICAL RATE
6. IF USING OPTIONAL OIL ABSORBENTS, REMOVE AND REPLACE ABSORBENT PILLOW WHEN NEAR SATURATION

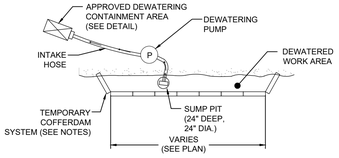


SECTION A - A

DEWATERING FILTER BAG
NOT TO SCALE



TEMPORARY COFFERDAM INSTALLATION DETAIL



DEWATERING PUMP PLAN

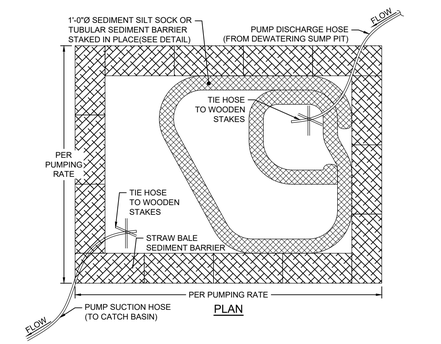
NOTES:
1. THE DEWATERING PLAN, INCLUDING THE TEMPORARY COFFERDAM SYSTEM TO BE USED, SHALL BE APPROVED BY THE ENGINEER. WATER-INFLATED BARRIERS, LOW DENSITY POLYETHYLENE PORTABLE FLOOD BARRIERS OR EQUAL ARE ACCEPTABLE ALTERNATIVES.
2. THE TEMPORARY COFFERDAM SYSTEM SHALL BE INSTALLED ACCORDING TO THE MANUFACTURER RECOMMENDATIONS, LOCATED TO ISOLATE SURFACE AND GROUNDWATER FLOWS FROM EXCAVATION AREAS.
3. ANY SANDBAGS USED IN THE DEWATERING PROCESS SHALL CONSIST OF MATERIALS WHICH ARE RESISTANT TO ULTRA-VIOLET RADIATION, TEAR AND PUNCTURE AND WOVEN TIGHTLY ENOUGH TO PREVENT LEAKAGE OF FILL MATERIAL (I.E. SAND, FINE GRAVEL).
4. ALL DEWATERING CONTAINMENT AREAS AND EROSION/SEDIMENT CONTROL DEVICES SHALL BE INSTALLED PRIOR TO ANY COFFERDAM INSTALLATION AND ACCORDING TO THE CONSTRUCTION PLANS AND DETAILS.
5. ALL EXCAVATED SEDIMENTS OR DEBRIS SHALL BE DISPOSED OF IN AN APPROVED STOCK PILE AREA AND PROTECTED WITH EROSION/SEDIMENT CONTROL BARRIERS.
6. EROSION/SEDIMENT CONTROL DEVICES ARE TO REMAIN IN PLACE UNTIL ALL DISTURBED AREAS ARE STABILIZED IN ACCORDANCE WITH THE SPECIFICATIONS.

TEMPORARY COFFERDAM INSTALLATION
NOT TO SCALE

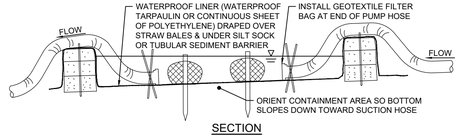


NOTES:
1. SUMP AND EQUIPMENT IS TEMPORARY AND MUST BE REMOVED AFTER USE. STONE AND/OR NATURAL MATERIAL CAN REMAIN IF APPROVED BY ENGINEER
2. LOCATE PUMP OUTSIDE OF THE MAIN EXCAVATION AREA TO MINIMIZE SEDIMENTATION.
3. SIZE PUMP TO SUFFICIENTLY DEWATER EXCAVATION. MULTIPLE PUMPS TO BE INSTALLED AS NECESSARY.
4. PUMP CHAMBER SIZE TO BE DETERMINED BASED ON PUMP DIMENSIONS.
5. FINAL DEPTH TO BE DETERMINED BY CONTRACTOR BASED ON EXISTING GRADE AND DEPTH OF WATER.
6. SIZE, PLAN AND LAYOUT TO BE SUBMITTED TO ENGINEER FOR APPROVAL PRIOR TO INSTALLATION.

DEWATERING SUMP
NOT TO SCALE



PLAN



SECTION

NOTES:
1. NUMBER OF STRAW BALES MAY VARY DEPENDING ON SITE CONDITIONS.
2. THE BASIN WILL BE SIZED TO PREVENT WATER FROM OVERTOPPING STRAW BALES.
3. INLET HOSE WILL BE INSTALLED IN AN EXCAVATED SUMP PIT FILLED WITH CRUSHED STONE.

DEWATERING CONTAINMENT AREA
NOT TO SCALE

GRAPHIC SCALE

40 0 20 40 80 160

(in feet)

1 INCH = 40 FEET

Revisions

Rev.	Date	By	Appr.	Description

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Sustainable Environmental Solutions
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90 Route 6A, Unit 1
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150

Checked By: BWK
Drawn By: EEB/JAP
Designed By: EEB/JAP
Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS CONSTRUCTION DOCUMENTS NANTUCKET, MASSACHUSETTS

Plan Title: DEWATERING PLAN

Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
Phone: (508) 228-7240
Fax: ----

Survey Provided By:
Nantucket Surveyors LLC
5 Windy Way
Nantucket, MA
Phone: (508) 228-0240
Fax: ----
Dated: 12/13/23

Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
6-15-2026

Project Number: 20008
Sheet : 5 of 24

Sheet Number: C - 5

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WETLAND RESTORATION AREA 1A
SHEET C-7

NEW GATEWAY
SHEET C-13

WETLAND RESTORATION AREA 1B
SHEET C-9

WETLAND RESTORATION AREA 2
SHEET C-10

WETLAND RESTORATION AREA 3
SHEET C-12

100' BUFFER
50' BUFFER
25' BUFFER

10-YEAR ELEV
EXISTING: 4.66'
PROPOSED: 4.66'

25-YEAR ELEV
EXISTING: 5.32'
PROPOSED: 5.31'

100-YEAR ELEV
EXISTING: 6.36'
PROPOSED: 6.34'

APPROXIMATE OFFSITE WETLANDS, TYP.

PLANTING ONLY
LIMIT OF WORK

LIMIT OF WORK

RESTORATION AREA
1A BOARDWALK

RESTORATION AREA 1A
PROFILE A-A'

AREA TO REMAIN UNDISTURBED

RESTORATION AREA 1B
BOARDWALK

RESTORATION AREA 1B
PROFILE

RESTORATION AREA 2
BOARDWALK

RESTORATION AREA 2
PROFILE

RESTORATION AREA 3 BOARDWALK

RESTORATION AREA 3
PROFILE

6' WIDE BOARDWALK, TYP.

LILY STREET

BENCHMARK: MAG NAIL IN BOARD
ELEV = 4.38 NAVD88
MAG ELEV. = 4.38
WATER ELEV. = 3.8 (3/25/19)
WATER ELEV. = 4.2 (6/6/19)
WATER ELEV. = 4.1 (10/17/23)

SMH
RIM =15.02
INV =8.15

SMH RIM
ELEV.=13.25
INV.=8.97

DMH RIM
ELEV.=13.08
INV.(IN)(E)=10.45
INV.(IN)(N/S)=10.57
INV.(OUT)=9.38

SMH
RIM =13.12
INV.=9.82

NORTH LIBERTY INSET

NORTH LIBERTY STREET
SCALE 1":40'

NORTH LIBERTY STREET
IMPROVEMENTS SHEET C-12

GRAPHIC SCALE
40 0 20 40 80 160
(in feet)
1 INCH = 40 FEET

Revisions

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Designed By: EEB/JMP
Drawn By: EEB/JMP
Checked By: BRK
Date: JUNE 2026

Plan Set:
LILY POND PARK IMPROVEMENTS
CONSTRUCTION DOCUMENTS
NANTUCKET, MASSACHUSETTS

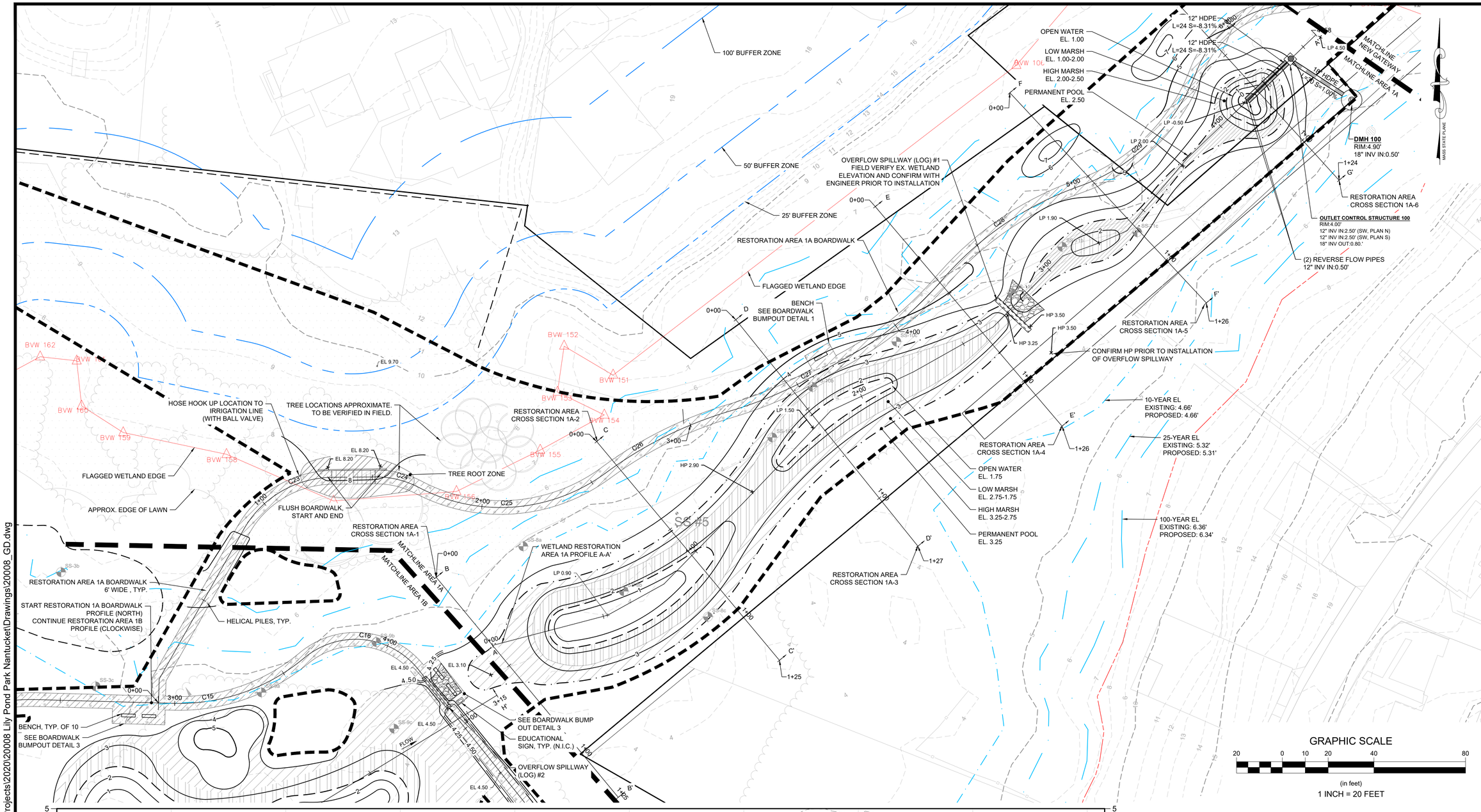
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OVERALL LAYOUT PLAN

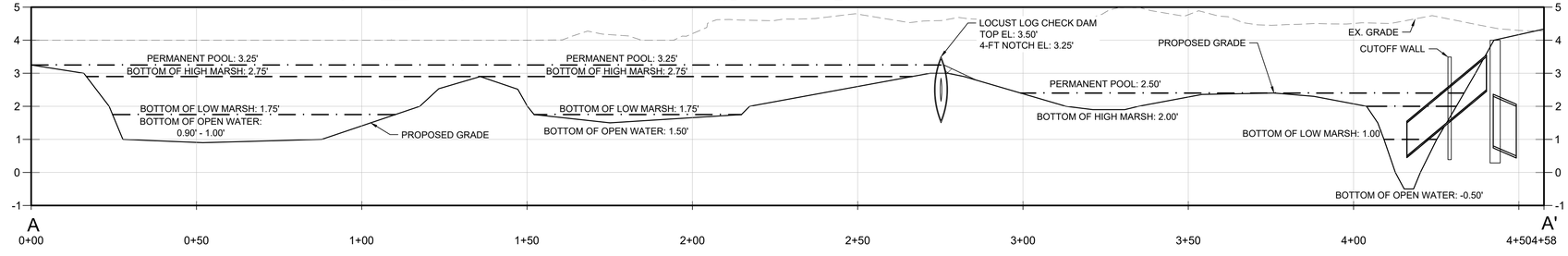
Prepared For:
The Nantucket Land Bank
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Survey Provided By:
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RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
6-15-2026

Project Number: 20008
Sheet : 6 of 24
Sheet Number: C - 6





PROFILE A-A' WETLAND RESTORATION AREA 1A
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE 1" = 2'

RESTORATION AREA 1A BOARDWALK

Number	Radius	Length	STARTING STATION	END STATION	NORTHING - START	EASTING - START
C23	45.00	46.88	0+85.4	1+32.3	1748982.0649	1748982.06
C24	40.00	19.68	1+51.3	1+71.0	1749039.6097	1749039.61
C25	77.20	85.69	1+71.0	2+56.7	1749058.5474	1749058.55
C26	175.00	61.92	2+56.7	3+18.6	1749139.6908	1749139.69
C27	175.00	38.20	3+18.6	3+56.8	1749194.7876	1749194.79
C28	140.00	73.36	4+28.4	5+01.8	1749287.0680	1749287.07
C29	85.00	74.10	5+01.8	5+75.9	1749346.9183	1749346.92
C30	45.00	50.14	5+75.9	6+26.0	1749398.2440	1749398.24
C31	80.00	49.21	6+26.0	6+75.2	1749436.0470	1749436.05

Revisions

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Designed By: EEB/LaMP
Drawn By: EEB/LaMP
Checked By: BRK
Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS
CONSTRUCTION DOCUMENTS
NANTUCKET, MASSACHUSETTS

Plan Title: RESTORATION AREA 1A-LAYOUT & GRADING

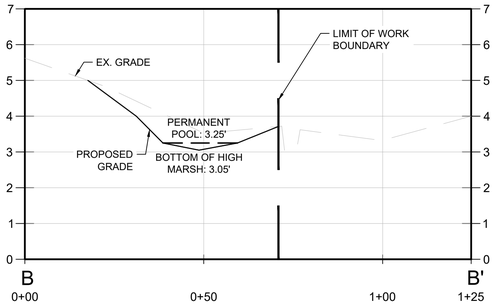
Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
Phone: (508) 228-7240
Fax: —

Survey Provided By:
Nantucket Surveyors LLC
5 Windy Way
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Phone: (508) 228-0240
Fax: —
Dated: 12/13/23

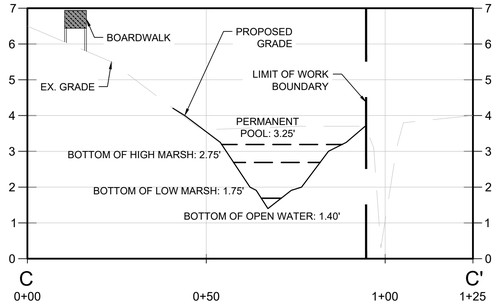
Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
6-15-2026

Project Number: 20008
Sheet : 7 of 24
Sheet Number: C - 7

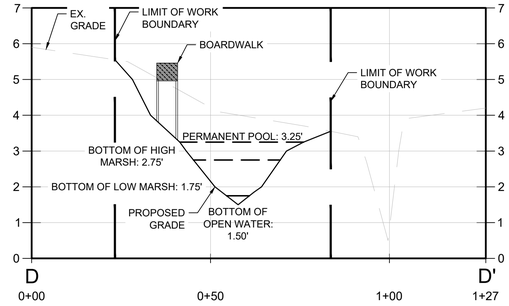
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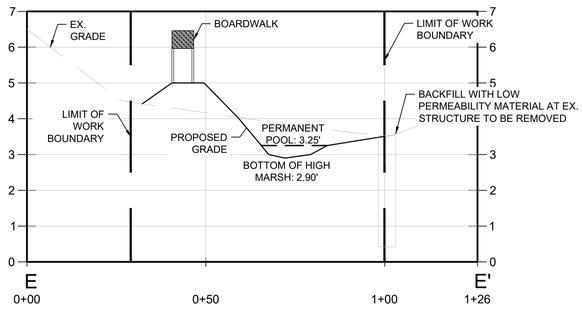
RESTORATION AREA CROSS SECTION 1A-1
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE 1" = 2'



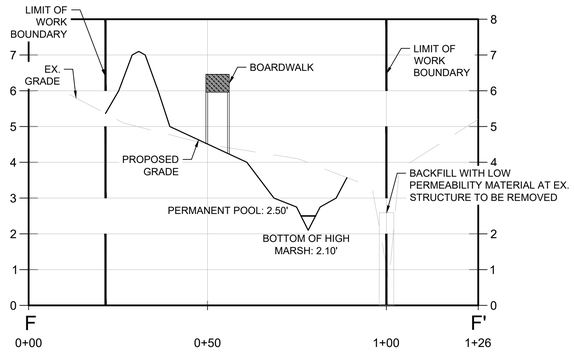
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HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE 1" = 2'



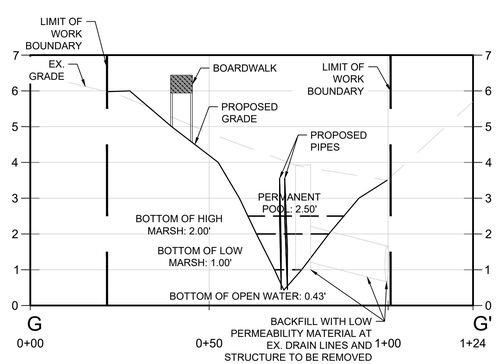
RESTORATION AREA CROSS SECTION 1A-3
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE 1" = 2'



RESTORATION AREA CROSS SECTION 1A-4
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE 1" = 2'



RESTORATION AREA CROSS SECTION 1A-5
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE 1" = 2'



RESTORATION AREA CROSS SECTION 1A-6
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE 1" = 2'

Revisions

Rev.	Date	By	Appr.	Description
1	----	----	----	----
2	----	----	----	----
3	----	----	----	----
4	----	----	----	----
5	----	----	----	----
6	----	----	----	----

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Drawn By: EEB/JMP
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Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS CONSTRUCTION DOCUMENTS NANTUCKET, MASSACHUSETTS

Plan Title: RESTORATION AREA 1A - SECTIONS

Prepared For:
The Nantucket Land Bank
22 Broad Street
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Fax: ----

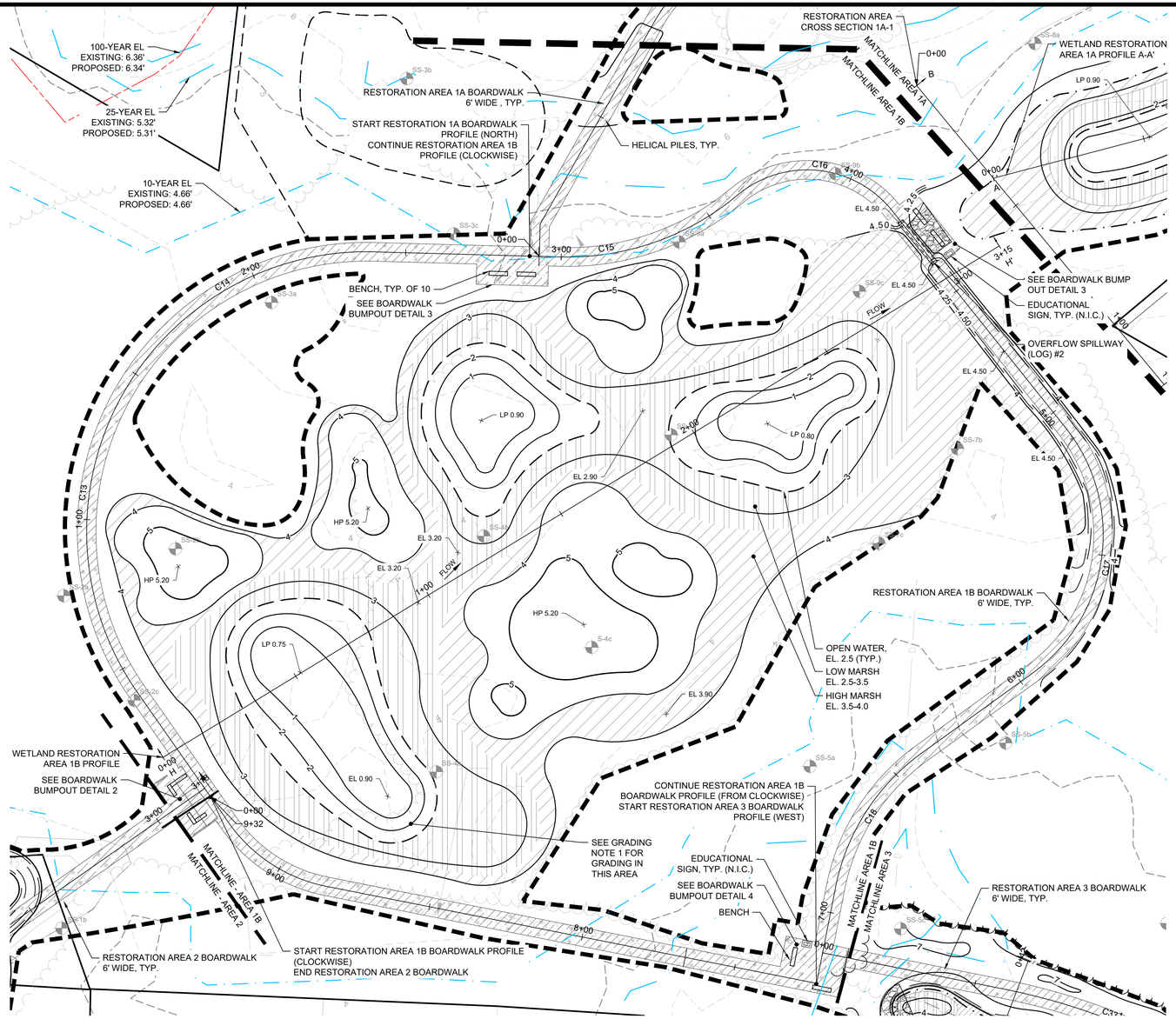
Survey Provided By:
Nantucket Surveyors LLC
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Phone: (508) 228-0240
Fax: ----
Dated: 12/13/23

Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
6-15-2026

Project Number: 20008
Sheet: 8 of 24

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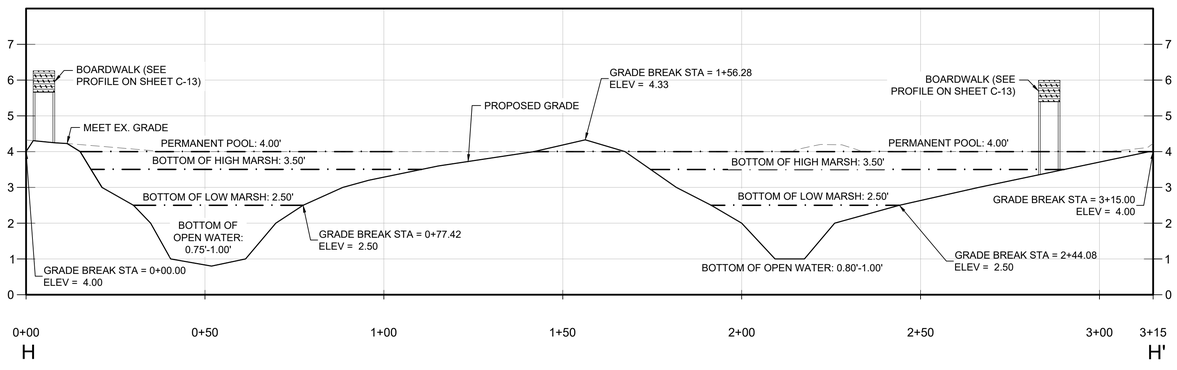


GRADING NOTES:

1. INTERIOR WETLAND RESTORATION AREA 1B TO BE REGRADED TO KEEP SOIL EXPORT TO A MINIMUM TO THE MAXIMUM EXTENT PRACTICABLE. SOIL TO REMAIN ON SITE AND REGRADED TO CREATE VARIED TOPOGRAPHY WITH MICROPOOLS AND HUMMOCKS WITH THE LOWEST GRADE TO BE 0.50' AND THE HIGHEST GRADE TO BE 5.20'.

RESTORATION AREA 1B BOARDWALK

Number	Radius	Length	STARTING STATION	END STATION	NORTHING - START	EASTING - START
C13	90.00	198.83	0+41.1	2+39.9	104208.4840	1748815.7843
C14	90.00	198.83	0+41.1	2+39.9	104208.4840	1748815.7843
C15	85.00	61.62	2+99.6	3+61.2	104348.4492	1748951.6113
C16	35.00	55.81	3+61.2	4+17.0	104368.2702	1749008.5395
C17	55.00	89.07	5+06.4	5+95.5	104293.4496	1749114.1145
C18	70.00	52.51	6+39.2	6+91.7	104188.9595	1749067.8660



PROFILE H-H' WETLAND RESTORATION AREA 1B
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE 1" = 2'

GRAPHIC SCALE
20 0 10 20 40 80
(in feet)
1 INCH = 20 FEET

Revisions

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Horsley Witten Group, Inc.
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Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS CONSTRUCTION DOCUMENTS NANTUCKET, MASSACHUSETTS

Plan Title: RESTORATION AREA 1B-LAYOUT & GRADING

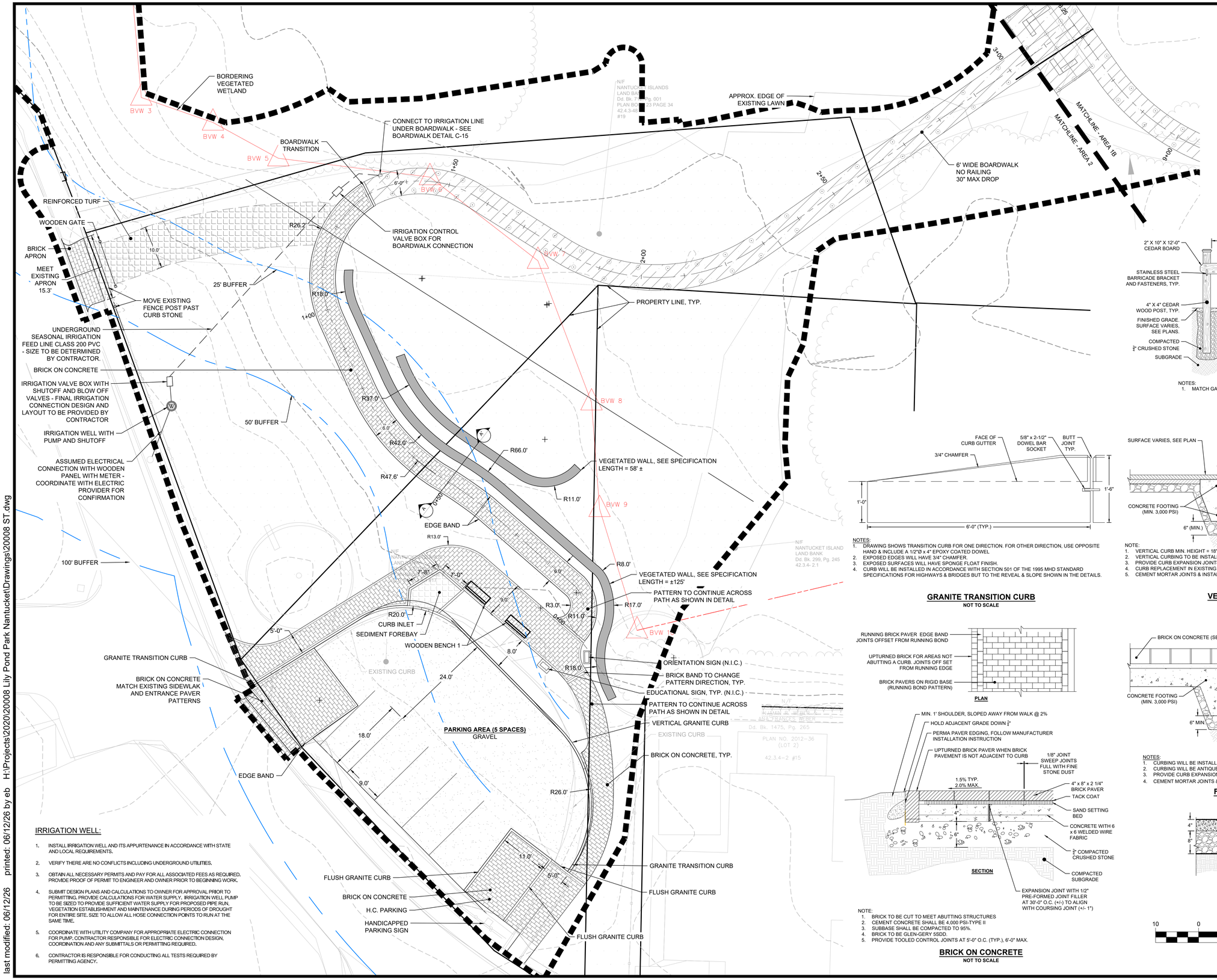
Prepared For:
The Nantucket Land Bank
22 Broad Street
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Fax: —

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Nantucket Surveyors LLC
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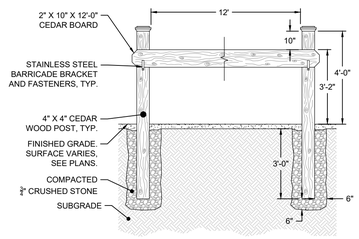
Project Number: 20008
Sheet : 9 of 24
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IRRIGATION WELL:

1. INSTALL IRRIGATION WELL AND ITS APPURTENANCE IN ACCORDANCE WITH STATE AND LOCAL REQUIREMENTS.
2. VERIFY THERE ARE NO CONFLICTS INCLUDING UNDERGROUND UTILITIES.
3. OBTAIN ALL NECESSARY PERMITS AND PAY FOR ALL ASSOCIATED FEES AS REQUIRED. PROVIDE PROOF OF PERMIT TO ENGINEER AND OWNER PRIOR TO BEGINNING WORK.
4. SUBMIT DESIGN PLANS AND CALCULATIONS TO OWNER FOR APPROVAL PRIOR TO PERMITTING. PROVIDE CALCULATIONS FOR WATER SUPPLY. IRRIGATION WELL PUMP TO BE SIZED TO PROVIDE SUFFICIENT WATER SUPPLY FOR PROPOSED PIPE RUN, VEGETATION ESTABLISHMENT AND MAINTENANCE DURING PERIODS OF DROUGHT FOR ENTIRE SITE. SIZE TO ALLOW ALL HOSE CONNECTION POINTS TO RUN AT THE SAME TIME.
5. COORDINATE WITH UTILITY COMPANY FOR APPROPRIATE ELECTRIC CONNECTION FOR PUMP. CONTRACTOR RESPONSIBLE FOR ELECTRIC CONNECTION DESIGN, COORDINATION AND ANY SUBMITTALS OR PERMITTING REQUIRED.
6. CONTRACTOR IS RESPONSIBLE FOR CONDUCTING ALL TESTS REQUIRED BY PERMITTING AGENCY.

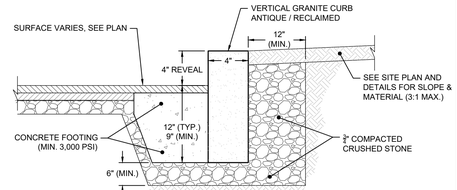


NOTES:
1. MATCH GATE AT LILY POND WESCO PLACE ENTRANCE.

WOODEN GATE
NOT TO SCALE

NOTES:
1. DRAWING SHOWS TRANSITION CURB FOR ONE DIRECTION. FOR OTHER DIRECTION, USE OPPOSITE HAND & INCLUDE A 1/2"Ø x 4" EPOXY COATED DOWEL
2. EXPOSED EDGES WILL HAVE 3/4" CHAMFER.
3. EXPOSED SURFACES WILL HAVE SPONGE FLOAT FINISH.
4. CURB WILL BE INSTALLED IN ACCORDANCE WITH SECTION 501 OF THE 1995 MHD STANDARD SPECIFICATIONS FOR HIGHWAYS & BRIDGES BUT TO THE REVEAL & SLOPE SHOWN IN THE DETAILS.

GRANITE TRANSITION CURB
NOT TO SCALE



NOTE:
1. VERTICAL CURB MIN. HEIGHT = 18" MIN. WIDTH = 4"
2. VERTICAL CURBING TO BE INSTALLED AS SHOWN ON THE SITE PLAN.
3. PROVIDE CURB EXPANSION JOINTS AT 5'-0" TO 6'-0" O.C.
4. CURB REPLACEMENT IN EXISTING PAVEMENT - SAWCUT EDGE MIN. 12" FROM CURB.
5. CEMENT MORTAR JOINTS & INSTALL PREFORMED (1/2") EXPANSION JOINT WHERE REQUIRED.

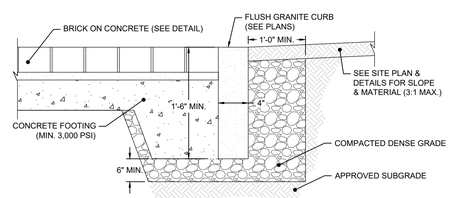
VERTICAL GRANITE CURB
NOT TO SCALE

PLAN

SECTION

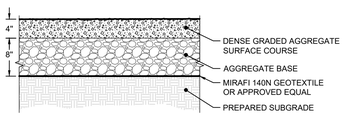
NOTE:
1. BRICK TO BE CUT TO MEET ABUTTING STRUCTURES
2. CEMENT CONCRETE SHALL BE 4,000 PSI-TYPE II
3. SUBBASE SHALL BE COMPACTED TO 95%.
4. BRICK TO BE GLEN-GERY 5SDD.
5. PROVIDE TOOLED CONTROL JOINTS AT 5'-0" O.C. (TYP.), 6'-0" MAX.

BRICK ON CONCRETE
NOT TO SCALE



NOTES:
1. CURBING WILL BE INSTALLED AS SHOWN ON THE SITE PLAN.
2. CURBING WILL BE ANTIQUE/RECLAIMED GRANITE.
3. PROVIDE CURB EXPANSION JOINTS AT 5'-0" TO 6'-0" O.C.
4. CEMENT MORTAR JOINTS & INSTALL PREFORMED (½") EXPANSION JOINT WHERE REQUIRED.

FLUSH GRANITE CURB
NOT TO SCALE



GRAVEL PARKING
NOT TO SCALE

GRAPHIC SCALE

10 0 5 10 20 40

(in feet)
1 INCH = 10 FEET

Revisions

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Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS CONSTRUCTION DOCUMENTS NANTUCKET, MASSACHUSETTS

Plan Title: RESTORATION AREA 2-SITE LAYOUT

Prepared For:
The Nantucket Land Bank
22 Broad Street
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Phone: (508) 228-7240
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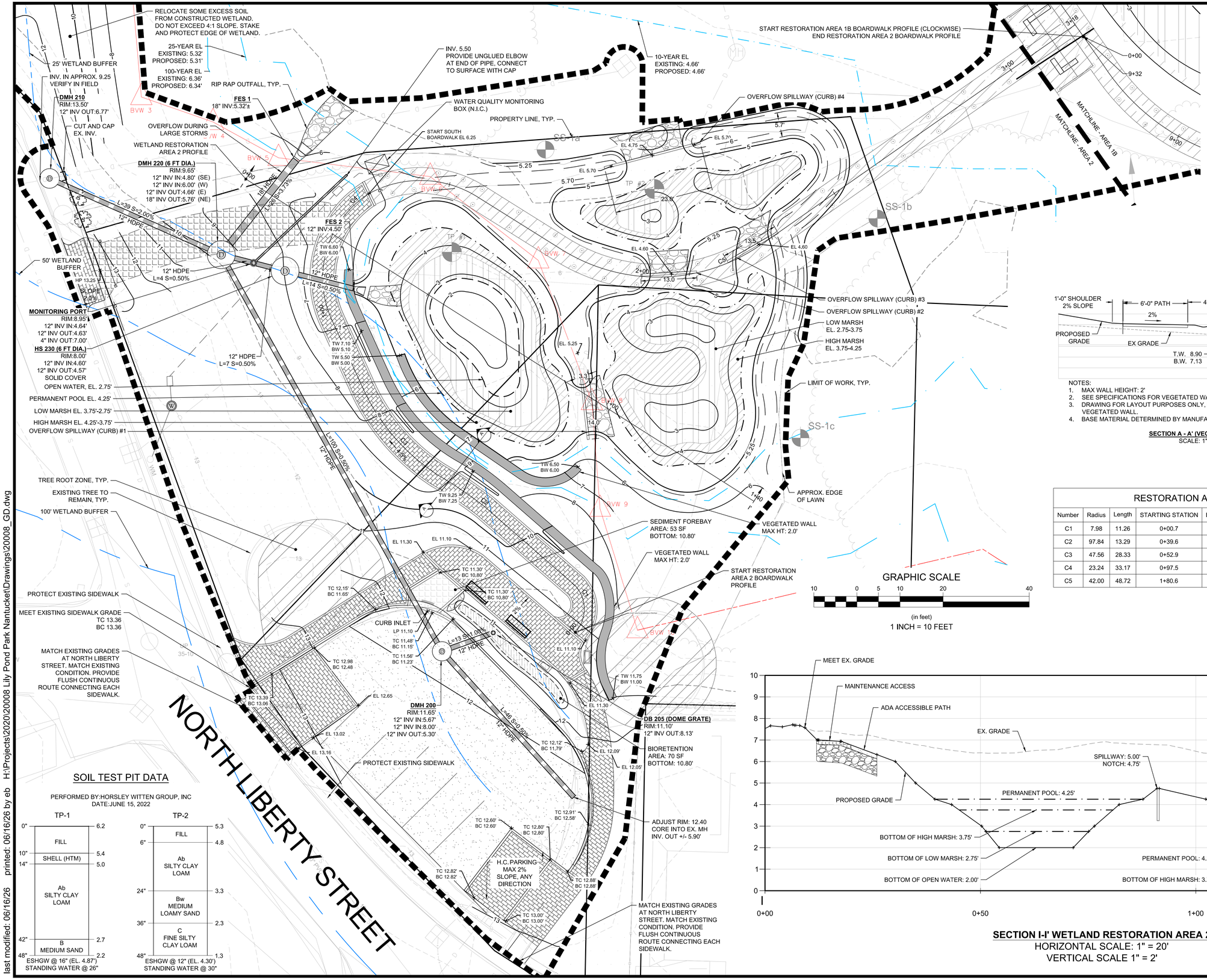
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1'-0" SHOULDER 2% SLOPE
6'-0" PATH
4'-0"
4'-9"
2%
1.77'
PROPOSED GRADE
EX GRADE
5%
T.W. 8.90
B.W. 7.13
T.W. 7.00
B.W. 5.00
100-YEAR FLOOD
2.00'
25-YEAR FLOOD
PERM. POOL

NOTES:
1. MAX WALL HEIGHT: 2'
2. SEE SPECIFICATIONS FOR VEGETATED WALL PRODUCT AND WALL PLANT INSTALLATION.
3. DRAWING FOR LAYOUT PURPOSES ONLY, PROVIDE STAMPED ENGINEERING PLANS FOR VEGETATED WALL.
4. BASE MATERIAL DETERMINED BY MANUFACTURER.

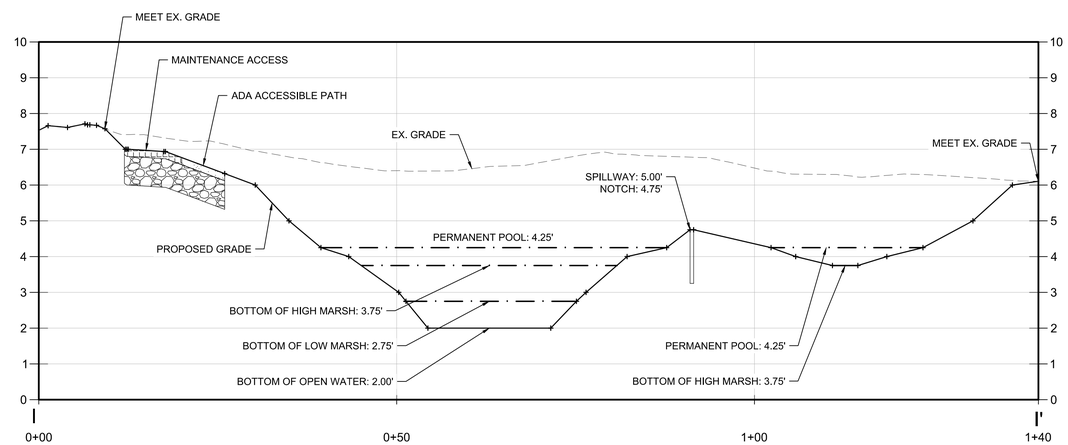
SECTION A - A' (VEGETATED WALL)
SCALE: 1" =4'-0"

RESTORATION AREA 2 BOARDWALK

Number	Radius	Length	STARTING STATION	END STATION	NORTHING - START	EASTING - START
C1	7.98	11.26	0+00.7	0+11.9	1748721.7884	1748721.79
C2	97.84	13.29	0+39.6	0+52.9	1748700.5152	1748700.52
C3	47.56	28.33	0+52.9	0+81.2	1748689.5398	1748689.54
C4	23.24	33.17	0+97.5	1+30.7	1748664.8411	1748664.84
C5	42.00	48.72	1+80.6	2+29.4	1748718.6062	1748718.61

SOIL TEST PIT DATA

PERFORMED BY:HORSLEY WITTEN GROUP, INC
DATE:JUNE 15, 2022



SECTION I-I' WETLAND RESTORATION AREA 2
HORIZONTAL SCALE: 1" = 20'
VERTICAL SCALE 1" = 2'

Revisions

No.	Date	By	Appr.	Description

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A, Unit 1
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150

Designed By: EEB/JMP
Drawn By: EEB/JMP
Checked By: BRK
Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS CONSTRUCTION DOCUMENTS NANTUCKET, MASSACHUSETTS

Plan Title: RESTORATION AREA 2-GRADING

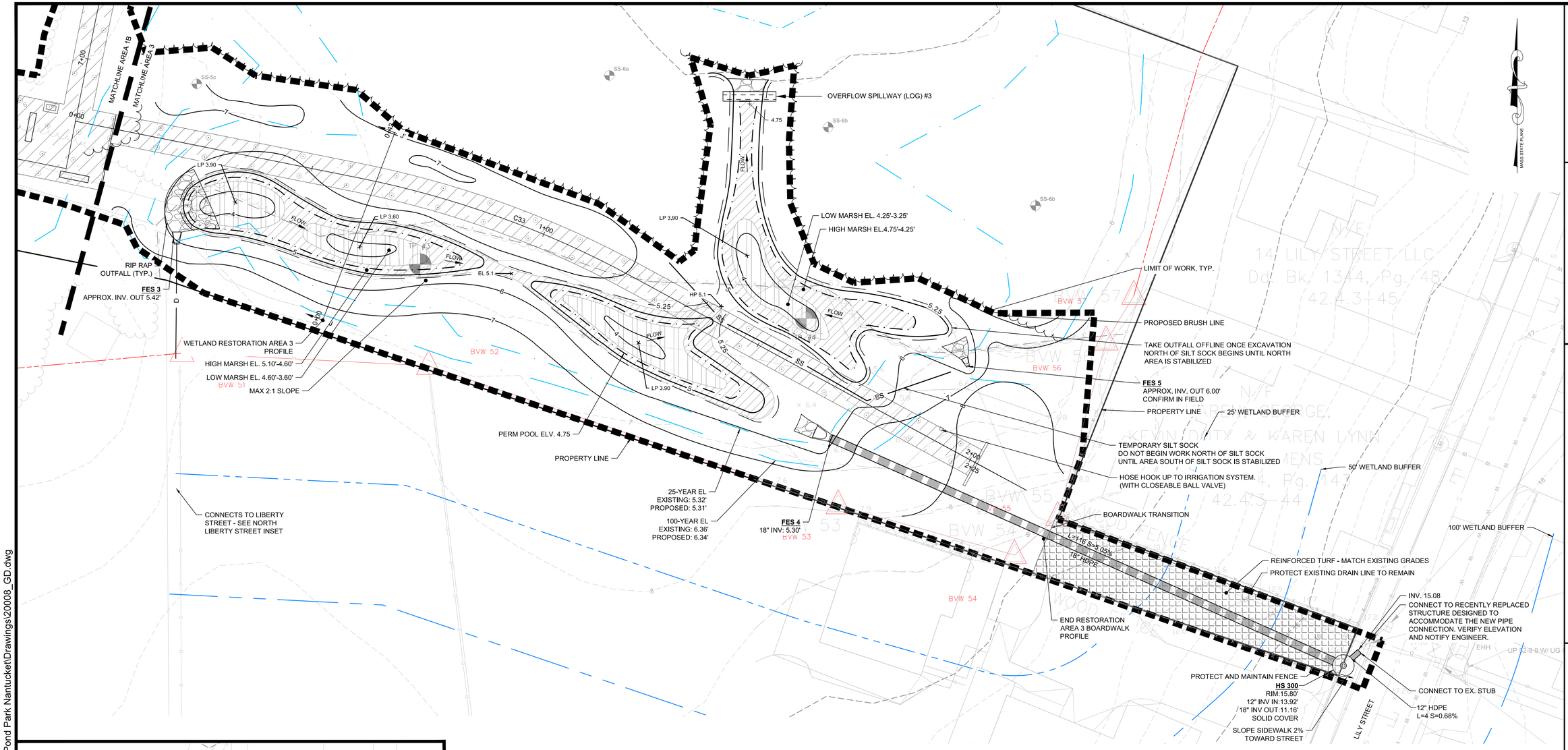
Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
Phone: (508) 228-7240
Fax: ----

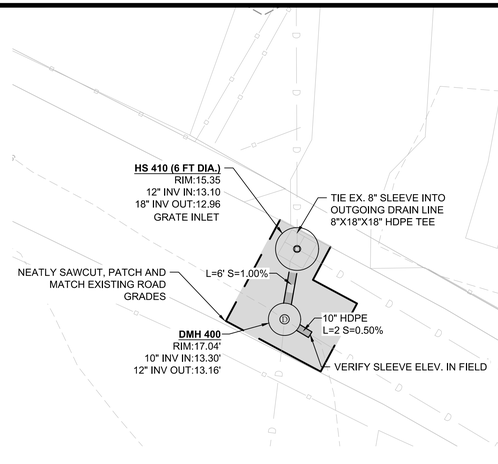
Survey Provided By:
Nantucket Surveyors LLC
5 Windy Way
Nantucket, MA
Phone: (508) 228-0240
Fax: ----
Dated: 12/13/23

Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
6-15-2026

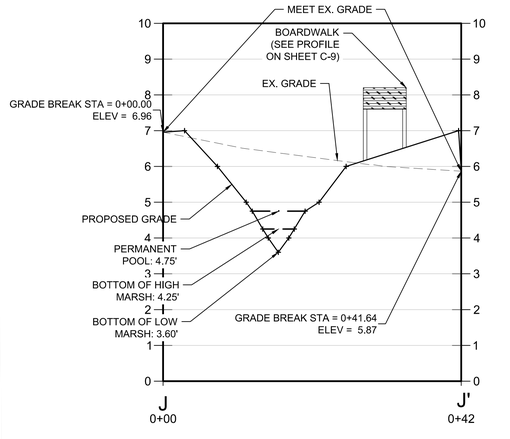
Project Number: 20008
Sheet : 11 of 24
Sheet Number: C - 11

last modified: 06/16/26 printed: 06/16/26 by eb H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008_GD.dwg
Last Modified: 06/24/2026 at 8:46AM EDT





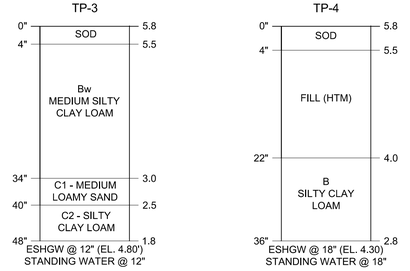
NORTH LIBERTY STREET INSET
SCALE: 1" = 10'



SECTION J-J' WETLAND RESTORATION AREA 3
HORIZONTAL SCALE: 1" = 10'
VERTICAL SCALE 1" = 2'

SOIL TEST PIT DATA

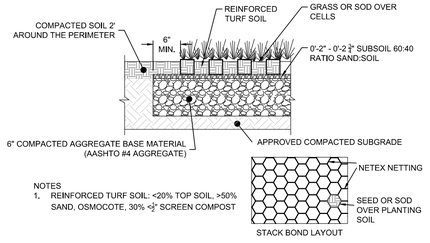
PERFORMED BY:HORSLEY WITTEN GROUP, INC
DATE:JUNE 15, 2022



ESHGW @ 12" (EL. 4.80')
STANDING WATER @ 12"

ESHGW @ 18" (EL. 4.30)
STANDING WATER @ 18"

RESTORATION AREA 3 BOARDWALK BOARDWALK						
Number	Radius	Length	STARTING STATION	END STATION	NORTHING - START	EASTING - START
C33	200.00	59.98	0+60.2	1+20.2	1749095.0381	1749095.04



NOTES
1. REINFORCED TURF SOIL: <20% TOP SOIL, >50% SAND, OSMOCOTE, 30% <¼" SCREEN COMPOST

REINFORCED TURF
NOT TO SCALE

GRAPHIC SCALE
10 0 5 10 20 40
(in feet)
1 INCH = 10 FEET

Revisions

Rev.	Date	By	Appr.	Description

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Sustainable Environmental Solutions
www.horsleywitten.com
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Sandwich, MA 02563
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Fax: (508) 833-3150

Checked By: BRK
Drawn By: EEB/JMP
Designed By: EEB/JMP
Date: JUNE 2026

Plan Set:
LILY POND PARK IMPROVEMENTS
CONSTRUCTION DOCUMENTS
NANTUCKET, MASSACHUSETTS

Plan Title:
RESTORATION AREA 3-LAYOUT & GRADING

Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
Phone: (508) 228-7240
Fax: —

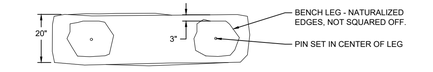
Survey Provided By:
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5 Windy Way
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Phone: (508) 228-0240
Fax: —
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CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
6-15-2026

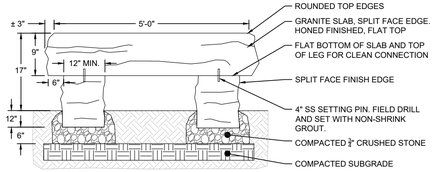
Project Number: 20008
Sheet : 12 of 24
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Last Modified: 06/12/2026 at 8:46AM EDT



PLAN



SECTION

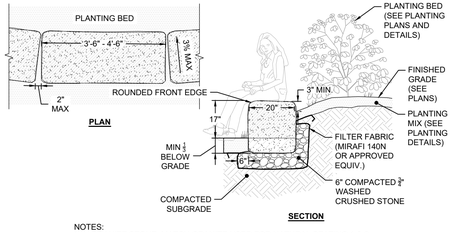
NOTES:
1. SET TOP OF BENCH FLAT.
2. GRANITE STONE TO MATCH GRANITE STONE FOR NATURAL SEATING 2 & 3.
3. COMPACTION: 95% FOR SUBBASE TO PREVENT ANY SETTLING
4. PROVIDE STONE SAMPLE FOR APPROVAL

NATURAL STONE SEATING 1
NOT TO SCALE



NOTES:
1. GRANITE STONE, MATCH GRANITE USED FOR NATURAL SEATING 1 & 3. NATURAL SHAPE WITH FLAT AREA ON TOP FOR SEATING.
2. NATURAL STONE FINISH, ROUNDED EDGES, CUSHION EDGE FINISH IF NEEDED.
3. SELECT BROAD, FLAT BASE TO SIT ON COMPACTED SETTING BED.
4. POSITION BOULDERS ON SITE IN CONSULTATION WITH THE OWNER'S REPRESENTATIVE.

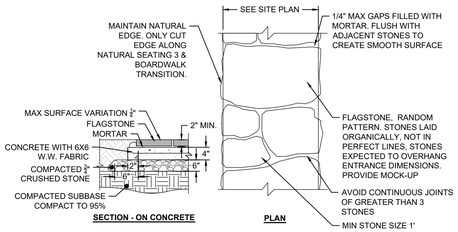
NATURAL STONE SEATING 2
NOT TO SCALE



PLAN **SECTION**

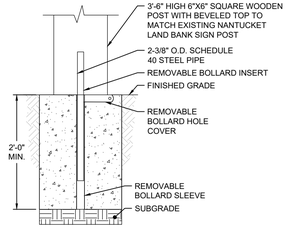
NOTES:
1. GRANITE STONE. MATCH GRANITE USED FOR NATURAL SEATING 1 & 2.
2. SPLIT FACE EDGES WITH FLAT, HONED FINISH TOP.
3. SELECT BROAD, FLAT BASE TO SIT ON COMPACTED SETTING BED.

NATURAL STONE SEATING 3
NOT TO SCALE



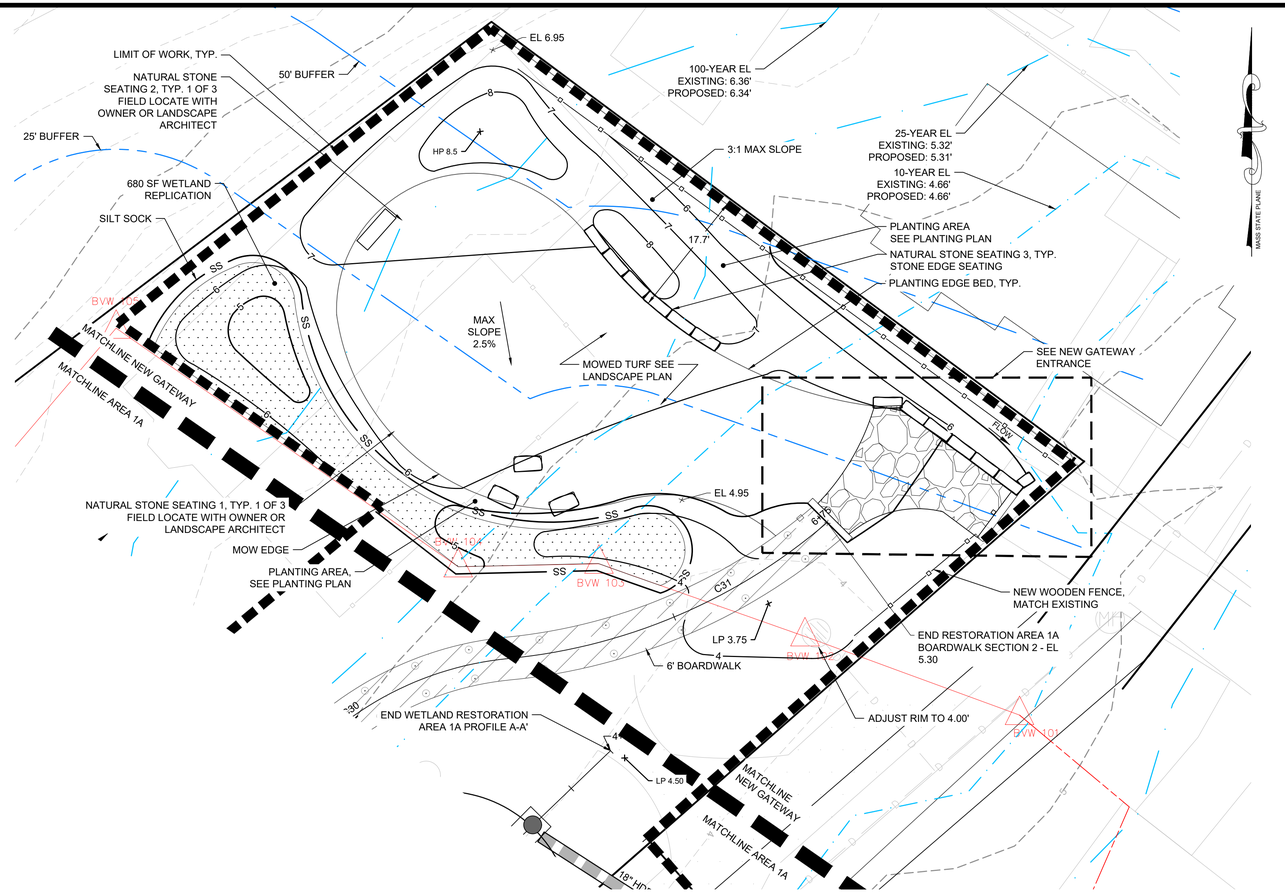
NOTE:
1. MIN SLOPE 1%, MAX SLOPE 2%.

FLAGSTONE ON CONCRETE
NOT TO SCALE



NOTE:
PROVIDE SHOP DRAWING TO ENGINEER FOR APPROVAL.

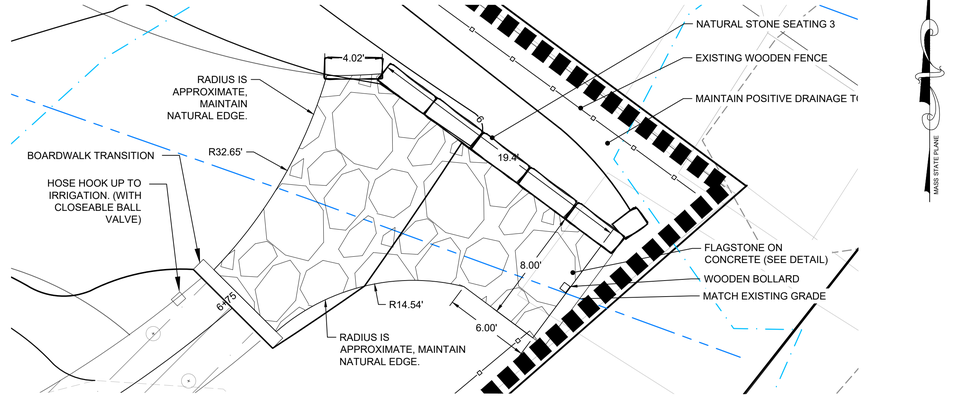
WOODEN BOLLARD
NOT TO SCALE



GRAPHIC SCALE
10 0 5 10 20 40
(in feet)
1 INCH = 10 FEET

WETLAND REPLICATION NOTES:

1. PRIOR TO BEGINNING ANY WORK VERIFY THAT ALL EROSION AND SEDIMENTATION CONTROLS ARE INSTALLED. SEE EROSION CONTROL PLAN.
2. GRADE IDENTIFIED REPLACEMENT AREA TO SOIL LAYER THAT MATCHES ADJACENT WETLAND (APPROX. 6"-12"). LANDSCAPE ARCHITECT, ENVIRONMENTAL SCIENTIST OR ENGINEER MUST BE PRESENT ON SITE TO VERIFY SOILS AND DEPTH.
3. SEED AND PLANT AREA AS NOTED ON THE LANDSCAPE PLANS.
4. IF DRY, WATER RECENTLY INSTALLED PLANTS UNTIL SOIL IS THOROUGHLY SOAKED TO SEVERAL INCHES DEEP.
5. INSTALL OUTER SEDIMENT CONTROLS, AROUND WETLAND REPLACEMENT AREA AND MONITOR THROUGHOUT THE DURATION OF CONSTRUCTION.



NEW GATEWAY ENTRANCE
SCALE: 1" = 5'

Revisions

Rev.	Date	By	Appr.	Description

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
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Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150

Checked By: BRK
Drawn By: EEB/JMP
Designed By: EEB/JMP
Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS CONSTRUCTION DOCUMENTS NANTUCKET, MASSACHUSETTS

Plan Title: NEW GATEWAY - LAYOUT & GRADING

Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
Phone: (508) 228-7240
Fax: —

Survey Provided By:
Nantucket Surveyors LLC
5 Windy Way
Nantucket, MA
Phone: (508) 228-0240
Fax: —
Dated: 12/13/23

Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
6-15-2026

Project Number: 20008
Sheet : 13 of 24

Sheet Number: C - 13

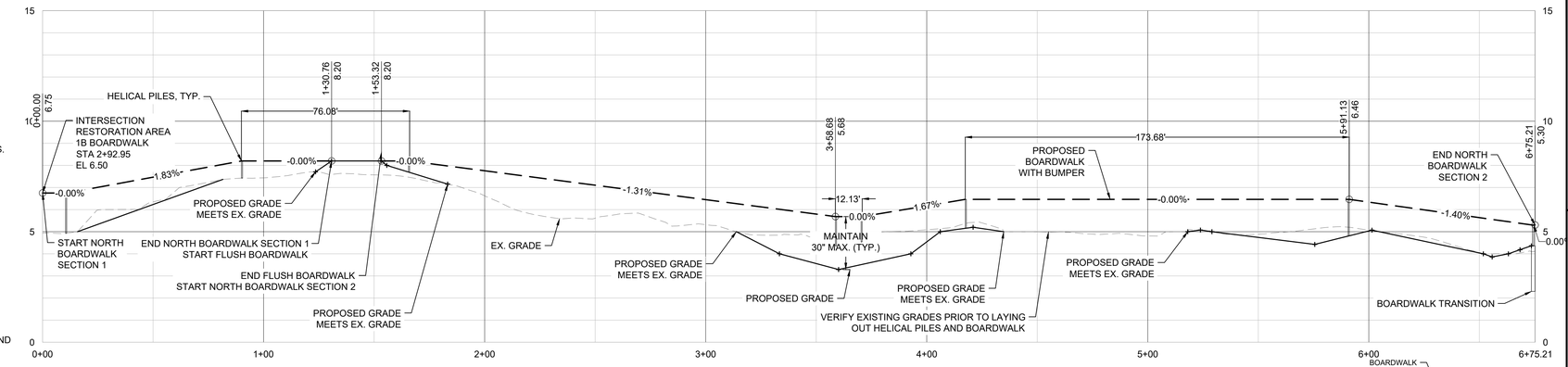
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last modified: 06/12/26 printed: 06/12/26 by eb H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008_GD.dwg

GENERAL BOARDWALK NOTES:

1. CONSTRUCT BOARDWALK PER PLANS AND SPECIFICATIONS.
2. DESIGNED FOR PEDESTRIAN USE ONLY. LIVE LOAD: 120-PSF (PEDESTRIAN AND WALK BEHIND MOWER).
3. MAXIMUM HEIGHT: NO GREATER THAN 30" ABOVE FINISHED GRADES.
5. MEET ADA REQUIREMENTS.
6. MAXIMUM SLOPE: 2.5%.
7. BOARDWALK PROFILES ARE PROVIDED FOR REFERENCE PURPOSES ONLY. ALL FINAL BOARDWALK SLOPE AND ELEVATIONS ARE TO BE FIELD DETERMINED BASED UPON BOARDWALK MAXIMUM HEIGHT AND ADA REQUIREMENTS.

SUPPORT PIER GENERAL NOTES:

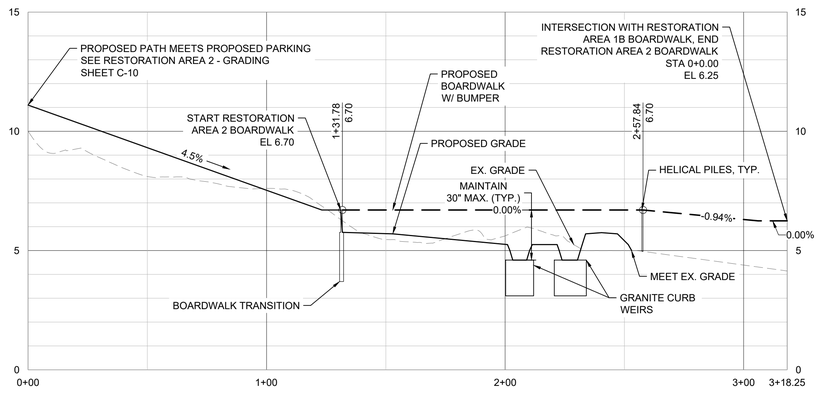
1. SEE PLANS AND DETAILS FOR PIER LOCATIONS AND SPACING.
2. HELICAL FOUNDATION SUPPORT SYSTEM MANUFACTURED FOR SUPPORT OF A GROUND BASED DECKING SYSTEM. SYSTEM SHALL BE BY ONE MANUFACTURER FOR ALL ASSOCIATED COMPONENTS AS INDICATED IN THE DRAWINGS AND SPECIFICATIONS.
3. HELICAL FOUNDATION SUPPORT SYSTEM SHALL CONSIST OF HELICAL PIERS, HELICAL PLATES, AND HELICAL BRACKETS TO SUPPORT DECK BEAMS AND MAINTAIN A HEIGHT OF LESS THAN 30 INCHES.
4. DESIGN PIERS AS SPECIFIED BY MANUFACTURER OR PIER DESIGNER FOR LOADING REQUIREMENTS. CAPABLE OF HOLDING A 1,200 LB STAND ON LAWN MOWER.
5. ALL PIERS AND HARDWARE MUST BE DESIGNED TO WITHSTAND BUOYANCY FORCES EXERTED ON BOARDWALKS AND BRIDGES BY PERIODIC FLOODWATER INUNDATION.
6. ASSUME 10'-0" PIER DEPTH (EMBEDDED DEPTH) FOR COMPARATIVE BIDDING PURPOSES ONLY. FINAL DEPTHS WILL BE AS REQUIRED TO MEET MINIMUM BEARING CAPACITY AS DETERMINED DURING GEOTECHNICAL INVESTIGATION TO BE PROVIDED BY THE CONTRACTOR.
7. FURNISH ALL ASSOCIATED HARDWARE TO ATTACH DECK BEAMS TO THE PIER SUPPORT SYSTEM BRACKETS.
8. FINAL DESIGN OF PIERS AND PIER BRACKETS SHALL BE BY AN ENGINEER ENGAGED AND PAID FOR BY THE CONTRACTOR. SEE SPECIFICATIONS.
9. THE CONTRACTOR SHALL PERFORM ANY NECESSARY GEOTECHNICAL INVESTIGATIONS (E.G. TEST PITS, BORINGS, ETC.) IF REQUIRED TO PREPARE AND STAMP THESE CALCULATIONS. SEE SPECIFICATIONS.
10. THE OWNER'S REPRESENTATIVE SHALL OBSERVE INSTALLATION OF HELICAL PIERS TO CONFIRM THE PIERS ARE INSTALLED TO REQUIRED EMBEDMENT DEPTHS AND CAPACITIES.



NOTE: SEE PLANS AND DETAILS FOR PIER LOCATIONS

RESTORATION AREA 1A BOARDWALK - PROFILE

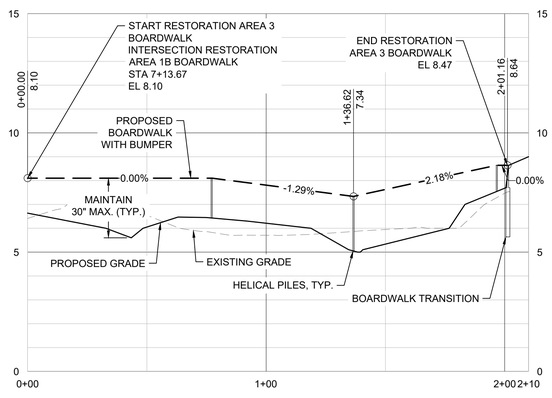
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 3'



NOTE: SEE PLANS AND DETAILS FOR PIER LOCATIONS

RESTORATION AREA 2 BOARDWALK PROFILE

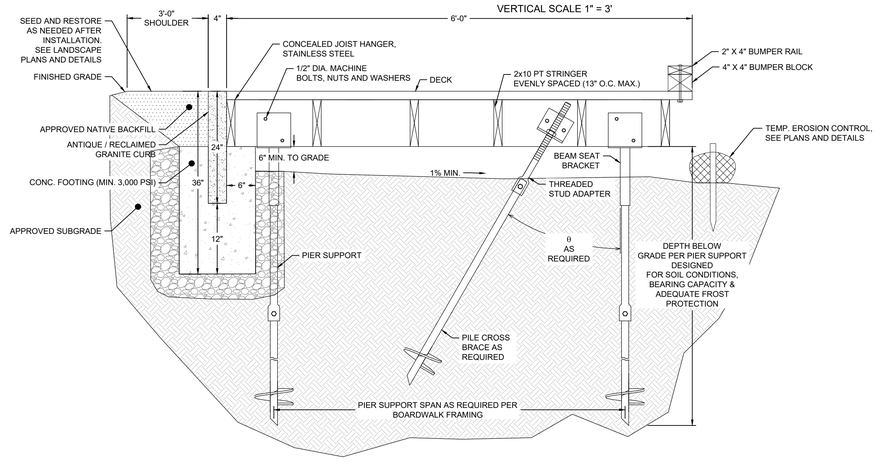
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 3'



NOTE: SEE PLANS AND DETAILS FOR PIER LOCATIONS

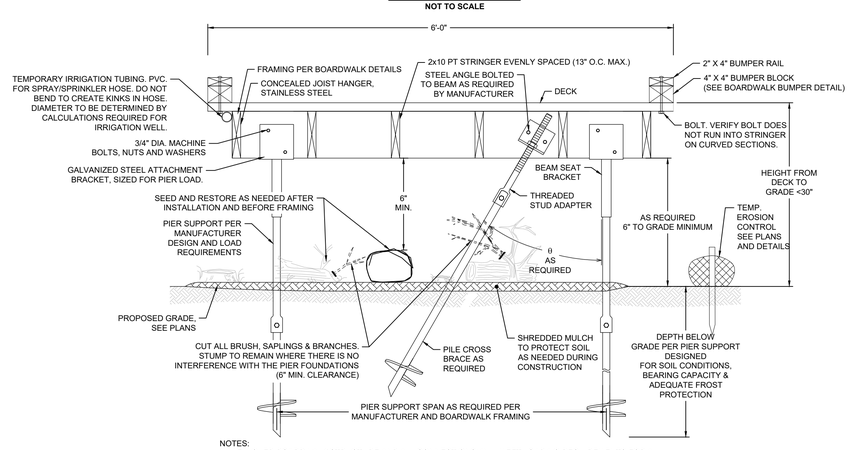
RESTORATION AREA 3 BOARDWALK PROFILE

HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 3'



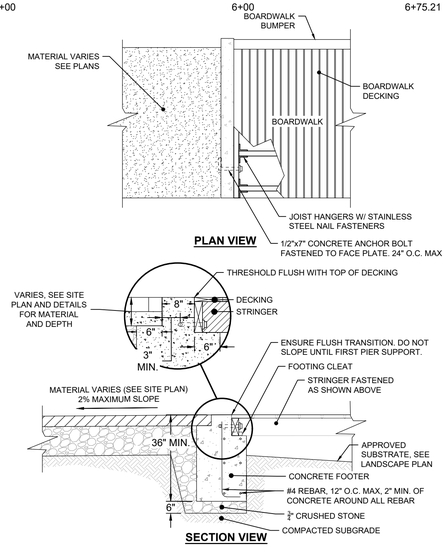
NOTES:
1. REFER TO ELEVATED BOARDWALK DETAIL FOR NOTES.

FLUSH BOARDWALK
NOT TO SCALE



NOTES:
1. FINISHED BOARDWALK STRUCTURE AND ALL CONNECTIONS WILL MEET LOADING REQUIREMENTS FOR A SMALL UTV (LIGHT UTILITY VEHICLE) OR H-5 LOADING.
2. PIER TO BE MADE OF MATERIAL SUITABLE FOR SALT CONDITIONS. FINAL DESIGN OF THE PIER SUPPORT SYSTEM SHALL BE PROVIDED BY THE MANUFACTURER OR LICENSED ENGINEER RESPONSIBLE FOR PILE DESIGN. ENGINEER STAMPED PIER DESIGN SHOP DRAWINGS AND PRODUCT SPECIFICATIONS TO BE SUBMITTED FOR APPROVAL.
3. PILES ARE INSTALLED (SCREWED) TO A MINIMUM DEPTH AND TORQUE AS REQUIRED BY THE MANUFACTURER WITH THE SOIL INFORMATION.
4. ALL HARDWARE STAINLESS STEEL UNLESS NOTED OTHERWISE.

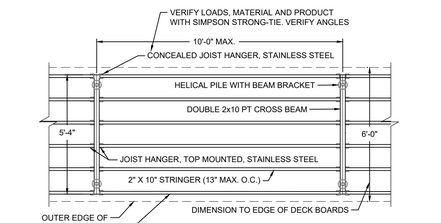
ELEVATED BOARDWALK - SECTION
NOT TO SCALE



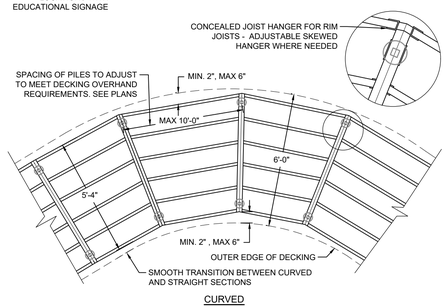
PLAN VIEW

SECTION VIEW

BOARDWALK TRANSITION
NOT TO SCALE



STRAIGHT



CURVED

BOARDWALK - FRAMING
NOT TO SCALE

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6600 phone
508-833-3150 fax

Revisions

Rev.	Date	By	Appr.	Description

Checked By: BWK
Drawn By: EEB/JMP
Designed By: EEB/JMP
Date: JUNE 2026

Plan Set:
LILY POND PARK IMPROVEMENTS
CONSTRUCTION DOCUMENTS
NANTUCKET, MASSACHUSETTS

Plan Title:
BOARDWALK PROFILES AND DETAILS

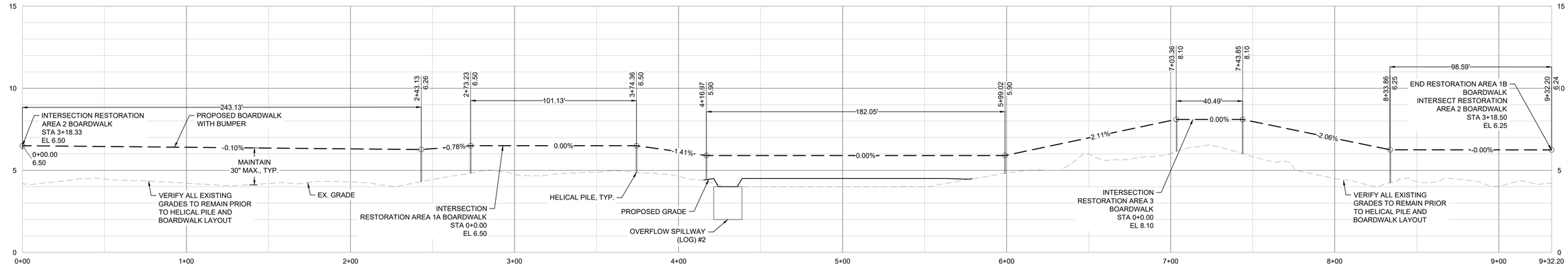
Prepared For:
The Nantucket Land Bank
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Phone: (508) 228-7240
Fax: ----

Survey Provided By:
Nantucket Surveyors LLC
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Fax: ----
Dated: 12/13/23

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RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
6-15-2026

Project Number: 20008
Sheet : 14 of 24
Sheet Number: C - 14

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last modified: 06/12/26 printed: 06/12/26 by eb H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008 PROFILES.dwg



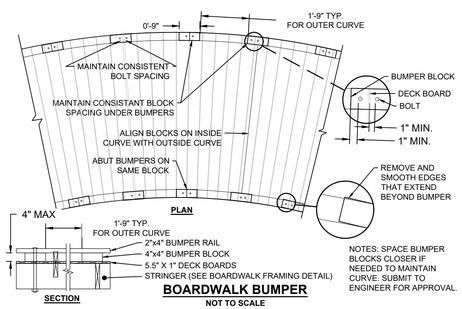
NOTE: SEE PLANS AND DETAILS FOR PIER LOCATIONS

PROFILE - RESTORATION AREA 1B BOARDWALK

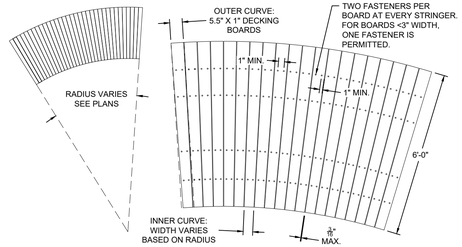
HORIZONTAL SCALE 1" = 30'
VERTICAL SCALE 1" = 3'

WOOD FRAMING GENERAL NOTES:

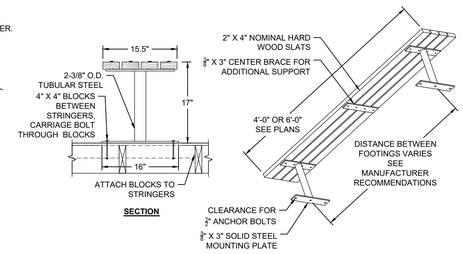
1. FABRICATE AND INSTALL ALL LUMBER FRAMING AND BUILDING COMPONENTS IN ACCORDANCE WITH THE MASSACHUSETTS BUILDING CODE, MANUFACTURER'S REQUIREMENTS, THE AMERICAN FOREST AND PAPER ASSOCIATION (AFPA)/NATIONAL DESIGN SPECIFICATION FOR WOOD CONSTRUCTION (NDS), AND THE PROJECT PLANS AND SPECIFICATIONS.
2. ALL TREATED LUMBER SHOULD BE CUT OUTSIDE OF THE WETLAND RESOURCE AREA OR ALL CUTTINGS / SAWDUST MUST BE CONTROLLED AND REMOVED OR KEPT FROM ENTERING THE WETLAND RESOURCE AREA.
3. LUMBER MOISTURE CONTENT: 19% AT THE TIME OF INSTALLATION.
4. WOOD FRAMING: SOUTHERN YELLOW PINE NO. 1 OR BETTER WITH A REFERENCE BASE (UNADJUSTED) Fb VALUE OF 1,000 PSI, PRESSURE-TREATED AND RATED FOR GROUND CONTACT.
5. WOOD CONNECTORS: MANUFACTURED BY SIMPSON STRONG-TIE, MITEK, OR AN APPROVED EQUIVALENT RATED FOR THE LOAD INDICATED.
6. ALL COMPONENTS, ANCHORS, AND FASTENERS ARE TO BE STAINLESS STEEL IN ACCORDANCE WITH ASTM A123, A153, OR A653 AS APPROPRIATE UNLESS NOTED OTHERWISE.
7. DECKING JOIST TAPE SHOULD BE USED ON ALL STRINGERS AND CROSS BEAMS.



BOARDWALK BUMPER
NOT TO SCALE

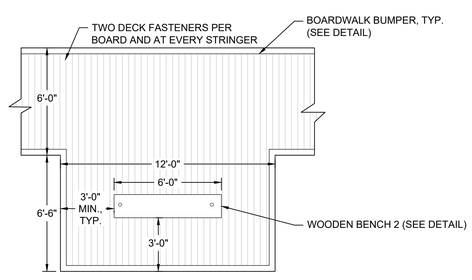


RADIALLY CUT DECKING
NOT TO SCALE

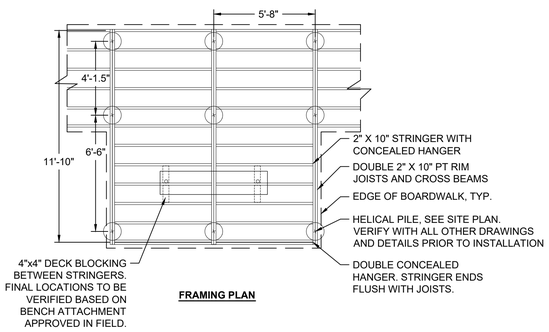


NOTES:
1. KEBONY WOOD BENCH SLATS AND POWDER-COATED STEEL FRAME.

WOODEN BENCH 2
NOT TO SCALE



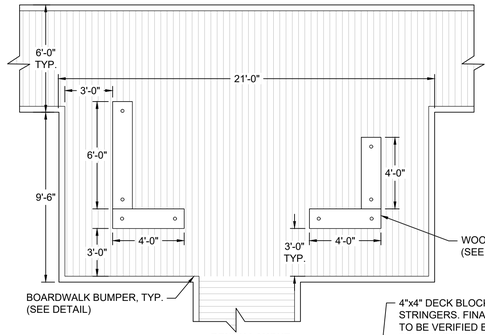
BENCH LAYOUT



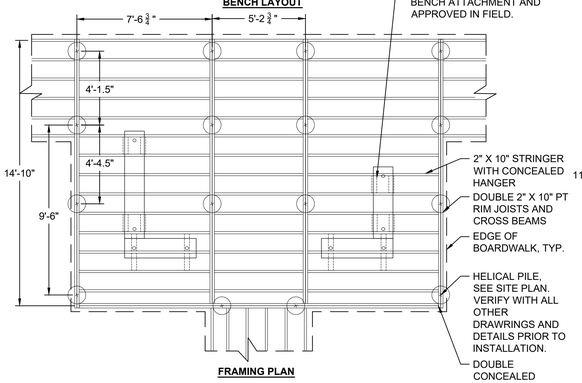
FRAMING PLAN

BOARDWALK BUMPOUT DETAIL 1

1/4" = 1'-0"



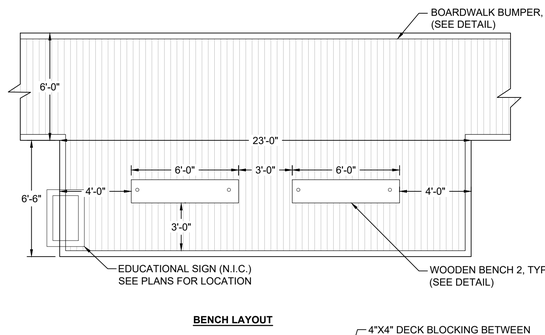
BENCH LAYOUT



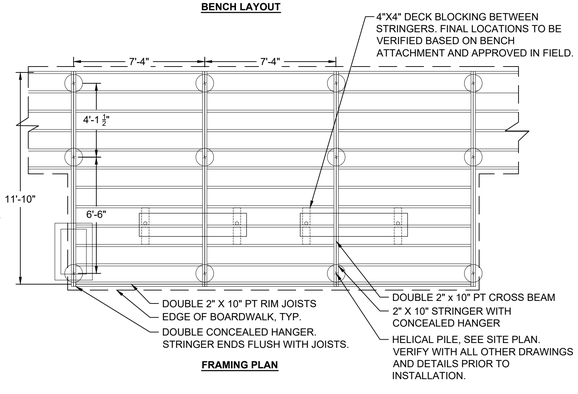
FRAMING PLAN

BOARDWALK BUMPOUT DETAIL 2

1/4" = 1'-0"



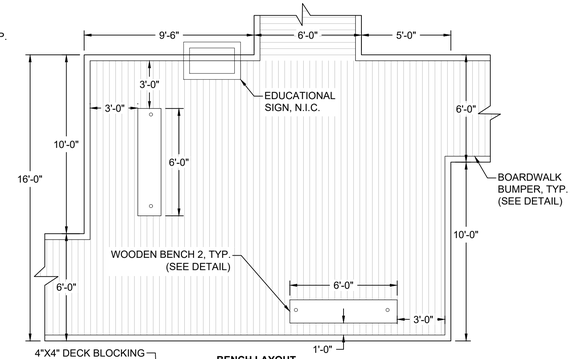
BENCH LAYOUT



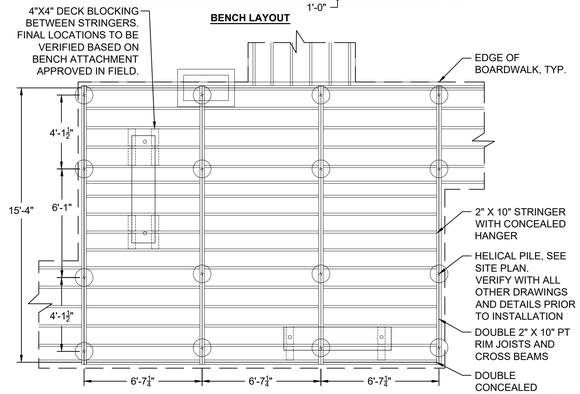
FRAMING PLAN

BOARDWALK BUMPOUT DETAIL 3

1/4" = 1'-0"



BENCH LAYOUT



FRAMING PLAN

BOARDWALK BUMPOUT DETAIL 4

1/4" = 1'-0"

Revisions

Rev.	Date	By	Appr.	Description

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A
Sandwich, MA 02563
508-833-6600 phone
508-833-3150 fax

Checked By: BRK
Drawn By: EEB/JMP
Designed By: EEB/JMP
Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS CONSTRUCTION DOCUMENTS NANTUCKET, MASSACHUSETTS

Plan Title: BOARDWALK PROFILES

Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
Phone: (508) 228-7240
Fax: ----

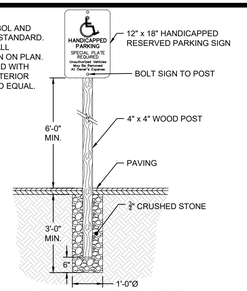
Survey Provided By:
Nantucket Surveyors LLC
5 Windy Way
Nantucket, MA
Phone: (508) 228-0240
Fax: ----
Dated: 12/13/23

Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
6-15-2026

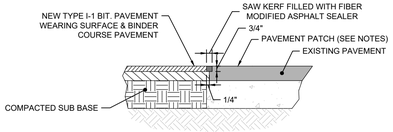
Project Number: 20008
Sheet : 15 of 24
Sheet Number: C - 15

last modified: 06/12/26 printed: 06/12/26 by eb H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008 PROFILES.dwg
Last Modified: 06/24/2026 at 8:40AM EDT

NOTES:
1. SIGN LAYOUT, COLORS, SYMBOL AND LETTERING WILL BE AASHTO STANDARD.
2. TO BE LOCATED ON SITE AT ALL HANDICAP SPACES AS SHOWN ON PLAN.
3. METAL POST TO BE DELIVERED WITH MANUFACTURER PAINTED EXTERIOR BLACK ENAMEL OR APPROVED EQUAL.

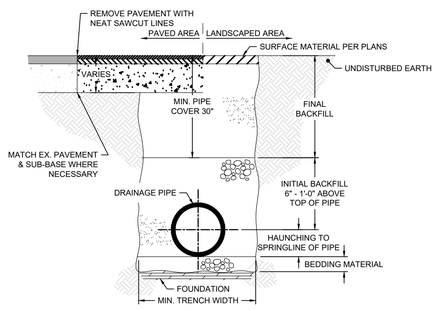


HANDICAPPED PARKING SIGN
NOT TO SCALE



NOTES:
1. EXISTING BITUMINOUS PAVEMENT SHALL BE REMOVED TO A CLEAN STRAIGHT EDGE VIA SAW CUTTING. THE SAW CUT SHALL BE COMPLETED PERPENDICULAR TO THE ROADWAY/SIDEWALK.
2. PRIOR TO INSTALLING THE WEARING COURSE THE EXISTING VERTICAL PAVEMENT SURFACE SHALL BE SWEPT COMPLETELY CLEAN.
3. AFTER PROPER COMPACTION SAW CUT NEW PAVEMENT ABUTMENT 3/4" DEEP AND FILL WITH FIBER MODIFIED ASPHALT SEALER AS SHOWN.
4. REFER TO NANTUCKET STANDARD DETAIL

TYPICAL PAVEMENT PATCH
NOT TO SCALE



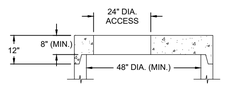
NOTES:
1. INSTALL DRAIN PIPE & FITTINGS IN STRICT ACCORDANCE WITH THE INSTALLATION RECOMMENDATIONS OF THE PIPE FITTING MANUFACTURER. SUCH INSTRUCTIONS INCLUDE BUT ARE NOT LIMITED TO CUTTING, SOLVENT CEMENTING & PRIMING, JOINTS, CONNECTIONS, TRANSITIONS & ALLOWANCE FOR THERMAL EXPANSION.
2. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR WILL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER & REPLACE WITH A SUITABLE COMPACTED GRAVEL MATERIAL OR AS AN ALTERNATIVE & AT THE DISCRETION OF THE ENGINEER. THE TRENCH BOTTOM MAY BE STABILIZED USING A WOVEN GEOTEXTILE FABRIC.
3. BEDDING, HAUNCHING & INITIAL BACKFILL: SUITABLE MATERIAL WILL CONSIST OF CLEAN, HARD, PARTICLES OF GRAVEL MEETING THE FOLLOWING:

SIEVE SIZE	PERCENT PASSING
3/4"	85-95
# 4	5-15
# 8	0-3

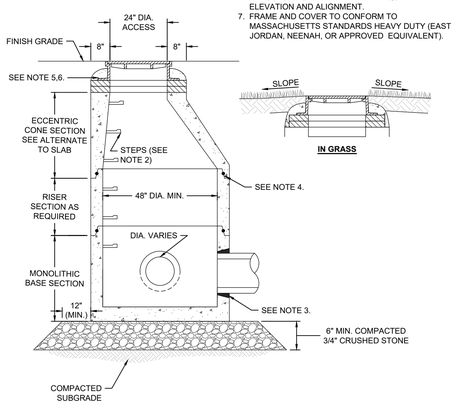
4. BEDDING: UNLESS OTHERWISE APPROVED BY ENGINEER, MATERIAL WILL BE INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION. UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM BEDDING THICKNESS WILL BE 4" FOR 4" - 2'-0" PIPE, 6" FOR 2'-6" - 3'-6 PIPE", & 1'-0" FOR 4'-0" & LARGER PIPE.
5. FINAL BACKFILL: COMPACTED NATIVE GRAVEL OR FLOWABLE FILL.
6. GENERAL BACKFILLING: (INCLUDING DISTURBED AREAS SURROUNDING TRENCHES) WILL BE PLACED & COMPACTED IN 1'-0" MAXIMUM VERTICAL LIFTS. CONTRACTOR WILL ACHIEVE 95% COMPACTION FOR THE BEDDING UNLESS OTHERWISE APPROVED BY THE ENGINEER.
7. TRENCH WIDTH: UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM TRENCH WIDTHS WILL BE AS FOLLOWS:

NOMINAL Ø	MIN. RECOMMENDED TRENCH WIDTH
8"	2'-6"
10"	3'-0"
1'-0"	3'-0"
1'-3"	3'-6"
>1'-6"	5'-0"

DRAINAGE PIPE TRENCH
NOT TO SCALE



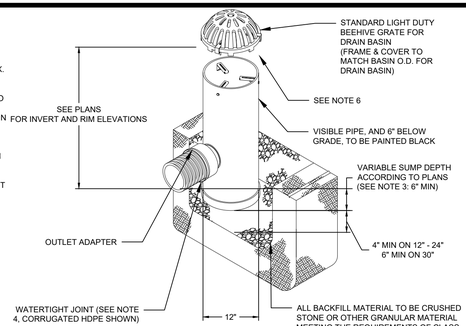
ALTERNATE TOP SLAB



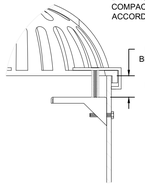
IN GRASS

NOTES:
1. ALL SECTIONS TO BE DESIGNED FOR H-20 LOADING.
2. COPOLYMER MANHOLE STEPS TO BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.
3. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
4. JOINT SEALANT BETWEEN PRECAST SECTIONS TO BE PREFORMED BUTYL RUBBER.
5. DRAIN MANHOLE FRAME AND COVER TO BE SET IN FULL 12" MORTAR BED. ADJUST TO GRADE WITH PRECAST CONCRETE RISER OR BRICK.
6. DO NOT PLACE MORTAR BED AROUND STRUCTURE UNTIL IT IS AT THE REQUIRED FINISH ELEVATION AND ALIGNMENT.
7. FRAME AND COVER TO CONFORM TO MASSACHUSETTS STANDARDS HEAVY DUTY (EAST JORDAN, NEENAH, OR APPROVED EQUIVALENT).

PRECAST DRAIN MANHOLE (DMH)
NOT TO SCALE

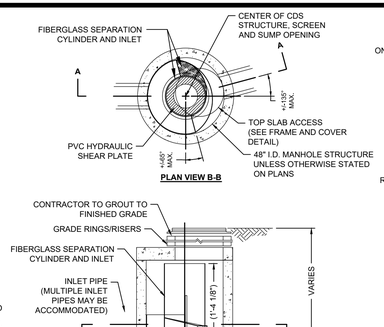


NOTES:
1. GRATES/SOLID COVER TO BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2. FRAMES TO BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS TO CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. PRODUCT BY NYLOPLAST OR APPROVED EQUIVALENT. FOLLOW MANUFACTURER INSTALLATION INSTRUCTIONS.
6. SEE PLANS FOR COVER TYPE AND LOCATIONS.

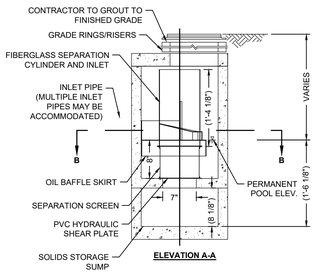


CUTOUT DETAIL

DRAIN BASIN (DB)
NOT TO SCALE



PLAN VIEW B-B

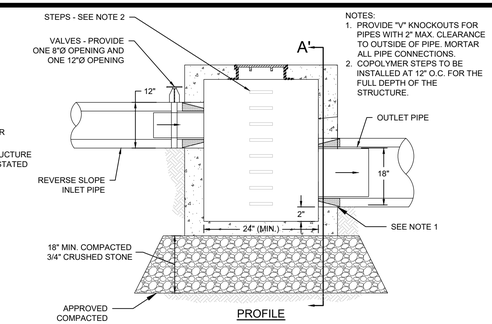


ELEVATION A-A

GENERAL NOTES
1. WQU TO BE MANUFACTURED BY CONTECH OR APPROVED EQUIVALENT.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. WQU CALCULATIONS AND DRAWINGS TO BE PROVIDED TO ENGINEER AND APPROVED PRIOR TO INSTALLATION.
4. STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M306 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
5. PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

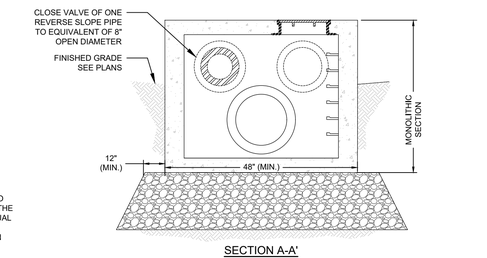
INSTALLATION NOTES
1. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
2. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
3. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
4. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
5. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

HYDRODYNAMIC SEPARATOR (HS)
NOT TO SCALE



NOTES:
1. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 2" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
2. COPOLYMER STEPS TO BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE.

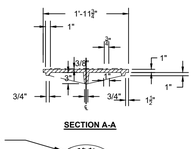
PROFILE



SECTION A-A'

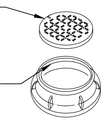
OUTLET CONTROL STRUCTURE (OCS)
NOT TO SCALE

SOLID COVER PLAN



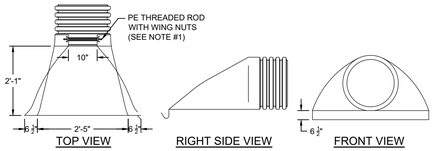
SECTION A-A

NOTES:
1. FRAME AND COVER TO CONFORM TO MASSACHUSETTS STANDARDS HEAVY DUTY (EAST JORDAN, NEENAH, OR APPROVED EQUIVALENT)
2. ALL H20 LOADING
3. MIN. FRAME WEIGHT:
   4" FLANGE 295 LBS
   3" FLANGE 265 LBS
4. MATERIAL-CAST IRON
5. MIN. GRATE WEIGHT: 200LBS.
6. SEE CATCHBASIN AND MANHOLE DETAILS FOR INSTALLATION.



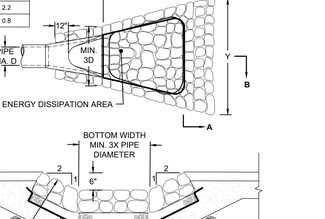
DRAINAGE STRUCTURE FRAME AND COVER
NOT TO SCALE

RIP RAP OUTFALL DIMENSIONS			
LOCATION	X	Y	10 YR FLOW (CFS)
FES 1	13	6.5	17
FES 2	7.5	5	10.7
FES 3	11	10	12.7
FES 4	4	5.5	2.2
FES 5	4	4	0.8

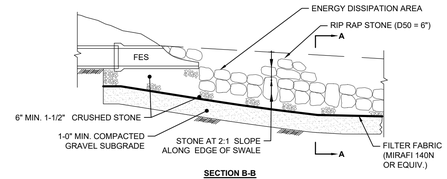


NOTES:
1. PE THREADED ROD WITH WING NUTS PROVIDED FOR END SECTIONS 1'-0" - 2'-0". 2'-6" & 3-0" END SECTIONS WILL BE WELDED TO PIPE PER MANUFACTURER'S RECOMMENDATIONS.
2. ALL DIMENSIONS ARE NOMINAL.
3. DRAIN PIPES LESS THAN 1'-0" IN DIAMETER WILL BE SAWCUT TO MATCH SLOPE.
4. DETAIL PROVIDED BY ADVANCED DRAINAGE SYSTEMS INC.

FLARED END SECTION (FES)
NOT TO SCALE



SECTION A-A



SECTION B-B

RIP RAP OUTFALL
NOT TO SCALE

Revisions

Rev.	Date	By	Appr.	Description

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A, Unit 1
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150

Checked By: BRK
Drawn By: EEB/JMP
Designed By: EEB/JMP
Date: JUNE 2026

Plan Set:
LILY POND PARK IMPROVEMENTS
CONSTRUCTION DOCUMENTS
NANTUCKET, MASSACHUSETTS

Plan Title:
CONSTRUCTION DETAILS (1)

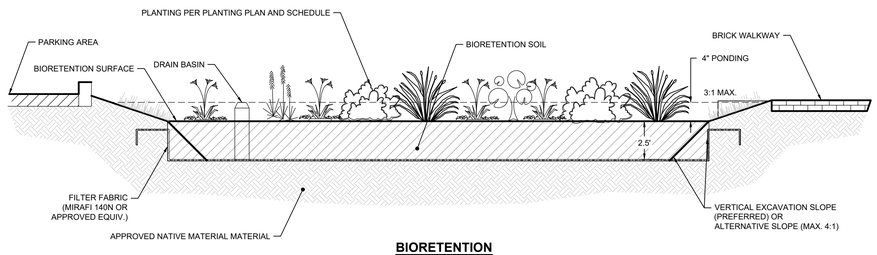
Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
Phone: (508) 228-7240
Fax: ----

Survey Provided By:
Nantucket Surveyors LLC
5 Windy Way
Nantucket, MA
Phone: (508) 228-0240
Fax: ----
Dated: 12/13/23

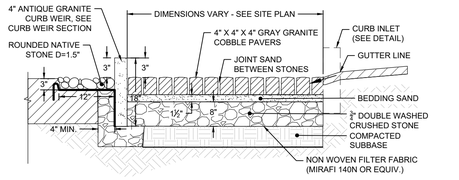
Registration:
COMMONWEALTH OF MASSACHUSETTS
RICHARD A. CLAYTOR
CIVIL
NO. 45116
REGISTERED PROFESSIONAL ENGINEER
6-15-2026

Project Number: 20008
Sheet : 16 of 24
Sheet Number: C - 16

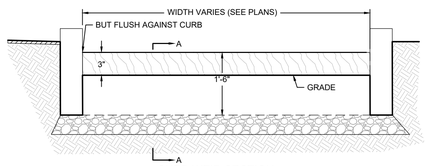
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Last Modified: 06/24/2026 at 9:44AM EDT



BIORETENTION
NOT TO SCALE



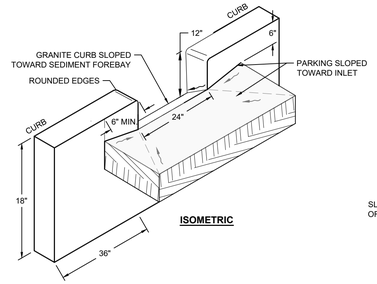
SECTION



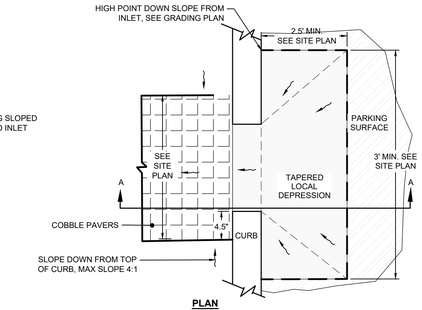
CURB WEIR SECTION

NOTES:
1. SEE SITE PLAN FOR DIMENSIONS, GRADING, AND ELEVATIONS FOR SEDIMENT FOREBAY.
2. COBBLES PLACES AT BASE OF SWALES, DO NOT CONTINUE COBBLES ON ADJACENT SIDE SLOPES

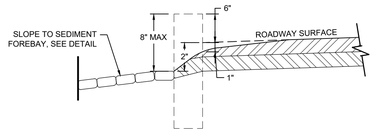
SEDIMENT FOREBAY
NOT TO SCALE



ISOMETRIC



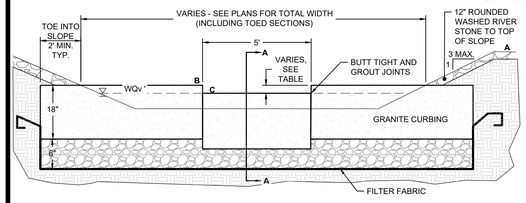
PLAN



SECTION A-A

CURB INLET
NOT TO SCALE

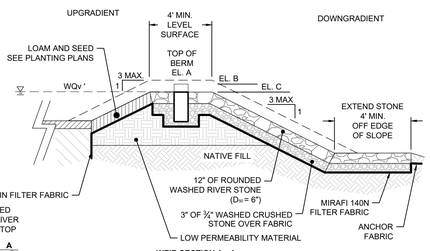
SPILLWAY ELEVATIONS			
LOCATION	A	B	C
1	5.25	5.00	4.75
2	5.25	5.00	4.60
3	5.25	5.00	4.60
4	5.70	5.25	4.75



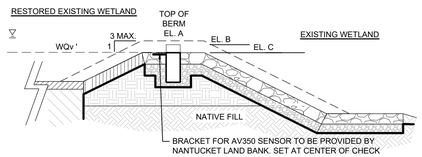
PROFILE

NOTE:
1. KEY CURBING A MINIMUM OF 2' INTO COMPACTED BERM TO PREVENT FLOW FROM DIVERTING THE CHECK DAM.
2. GROUT ABUTTING SECTIONS OF CURBING.
3. STONE IN SPILLWAY CHANNEL TO BE SET LEVEL WITH TOP OF GRANITE.

OVERFLOW SPILLWAY (CURB)
NOT TO SCALE

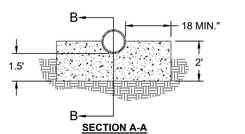


WEIR SECTION A - A



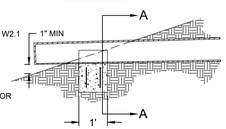
NOTES: PROVIDE SHOP DRAWING AND PRODUCT SUBMITTAL OF PASSIVE FLOW PIPE, STRAINER, AND PLUG WITH ELEVATIONS

OVERFLOW SPILLWAY (CURB) 4 SECTION A - A



SECTION A-A

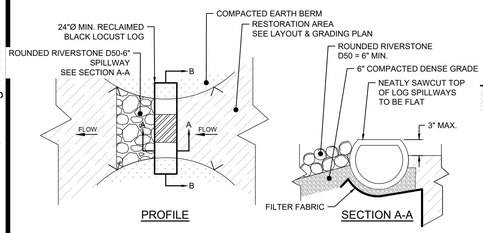
MATERIALS:
1. CONCRETE - 4000 PSI AT 28 DAYS
2. MIN. REINFORCING - 2 MATS OF 6" x 6" W2.1 x W2.1 WIRE MESH
3. PIPE - 12" HDPE



NOTES:
1. STRUCTURE TO BE EITHER PRECAST OR CAST IN PLACE

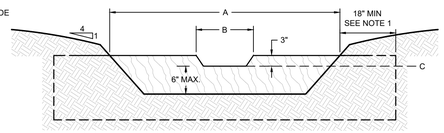
SECTION B-B

REVERSE FLOW DRAIN PIPE AND CONCRETE CUTOFF WALL
NOT TO SCALE



PROFILE

SECTION A-A

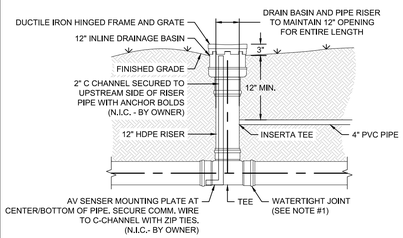


SECTION B-B

NOTES:
1. KEY LOG INTO SIDE SLOPES AND EXTEND A MINIMUM OF 16" INTO EMBANKMENT TO PREVENT FLOW FROM OUT FLANKING THE CHECK DAM.
2. ALL LOG SPILLWAYS ARE TO BE BLACK LOCUST HARDWOOD, OR APPROVED EQUIVALENT.

LOCATION	LENGTH "A"	LENGTH "B"	ELEVATION "C"
1	20.00	10.00	3.25
2	12.00	5.00	4.00
3	8.00	5.00	4.75

OVERFLOW SPILLWAY (LOG)
NOT TO SCALE



NOTES:
1. DRAINAGE CONNECTION STUB JOINT TIGHTNESS WILL CONFORM TO ASTM D3212.
2. AV SENSOR MOUNTING PLATE INSTALLED BY OWNER.
3. PROVIDE PRODUCTS DETAIL SUBMITTAL AND DRAWING FOR APPROVAL PRIOR TO INSTALLATION.

MONITORING PORT
NOT TO SCALE

Revisions

Rev.	Date	By	Appr.	Description

Horsley Witten Group, Inc.
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Drawn By: EEB/JMP
Designed By: EEB/JMP
Date: JUNE 2026

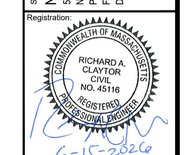
Plan Set: LILY POND PARK IMPROVEMENTS
CONSTRUCTION DOCUMENTS
NANTUCKET, MASSACHUSETTS

Plan Title: CONSTRUCTION DETAILS (2)

Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
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Survey Provided By:
Nantucket Surveyors LLC
5 Windy Way
Nantucket, MA
Phone: (508) 228-0240
Fax: —
Dated: 12/13/23

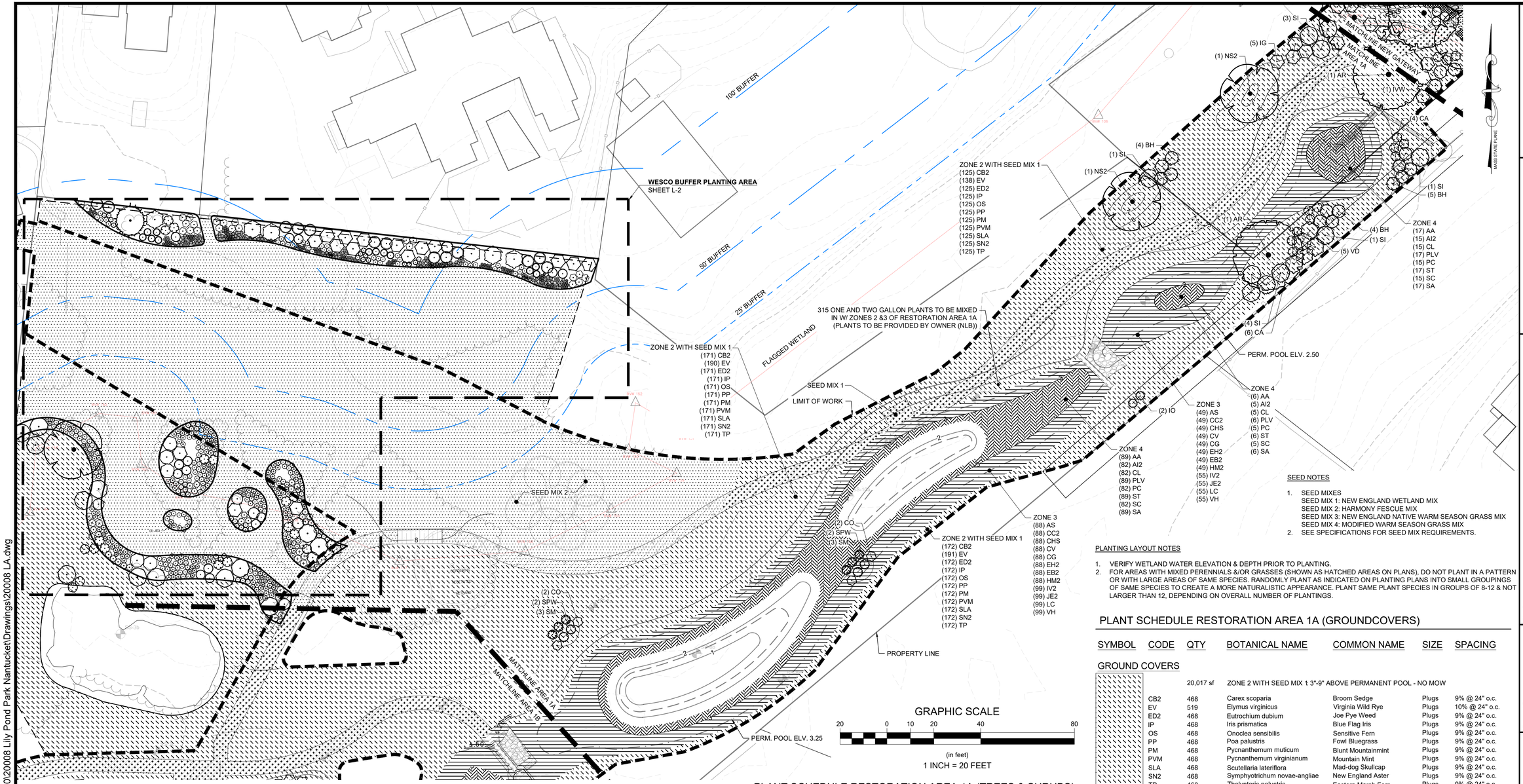
Registration:



Project Number: 20008
Sheet : 17 of 24
Sheet Number: C - 17

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Last Modified: 06/24/2026 at 9:44AM EDT



SEED NOTES

1. SEED MIXES
   SEED MIX 1: NEW ENGLAND WETLAND MIX
   SEED MIX 2: HARMONY FESCUE MIX
   SEED MIX 3: NEW ENGLAND NATIVE WARM SEASON GRASS MIX
   SEED MIX 4: MODIFIED WARM SEASON GRASS MIX
2. SEE SPECIFICATIONS FOR SEED MIX REQUIREMENTS.

PLANTING LAYOUT NOTES

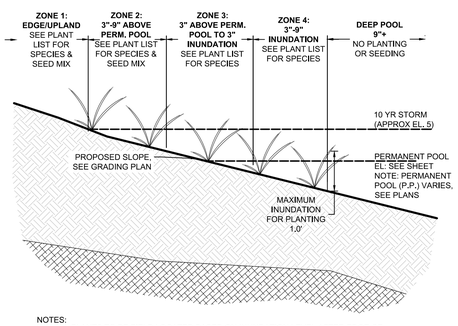
1. VERIFY WETLAND WATER ELEVATION & DEPTH PRIOR TO PLANTING.
2. FOR AREAS WITH MIXED PERENNIALS &/OR GRASSES (SHOWN AS HATCHED AREAS ON PLANS), DO NOT PLANT IN A PATTERN OR WITH LARGE AREAS OF SAME SPECIES. RANDOMLY PLANT AS INDICATED ON PLANTING PLANS INTO SMALL GROUPINGS OF SAME SPECIES TO CREATE A MORE NATURALISTIC APPEARANCE. PLANT SAME PLANT SPECIES IN GROUPS OF 8-12 & NOT LARGER THAN 12, DEPENDING ON OVERALL NUMBER OF PLANTINGS.

PLANT SCHEDULE RESTORATION AREA 1A (GROUNDCOVERS)

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
GROUND COVERS						
		20,017 sf	ZONE 2 WITH SEED MIX 1 3"-9" ABOVE PERMANENT POOL - NO MOW			
	CB2	468	Carex scoparia	Broom Sedge	Plugs	9% @ 24" o.c.
	EV	519	Elymus virginicus	Virginia Wild Rye	Plugs	10% @ 24" o.c.
	ED2	468	Eutrochium dubium	Joe Pye Weed	Plugs	9% @ 24" o.c.
	IP	468	Iris prismatica	Blue Flag Iris	Plugs	9% @ 24" o.c.
	OS	468	Onoclea sensibilis	Sensitive Fern	Plugs	9% @ 24" o.c.
	PP	468	Poa palustris	Fowl Bluegrass	Plugs	9% @ 24" o.c.
	PM	468	Pycnanthemum muticum	Blunt Mountainmint	Plugs	9% @ 24" o.c.
	PVM	468	Pycnanthemum virginianum	Mountain Mint	Plugs	9% @ 24" o.c.
	SLA	468	Scutellaria lateriflora	Mad-dog Skullcap	Plugs	9% @ 24" o.c.
	SN2	468	Symphyotrichum novae-angliae	New England Aster	Plugs	9% @ 24" o.c.
	TP	468	Thelypteris palustris	Eastern Marsh Fern	Plugs	9% @ 24" o.c.
		6,565 sf	ZONE 3: 3" ABOVE PERM. POOL TO 3" INUNDATION			
	AS	137	Alisma subcordatum	American Water Plantain	Plugs	8% @ 24" o.c.
	CC2	137	Carex crinita	Fringed Sedge	Plugs	8% @ 24" o.c.
	CHS	137	Carex lupulina	Hop Sedge	Plugs	8% @ 24" o.c.
	CV	137	Carex vulpinoidea	Fox Sedge	Plugs	8% @ 24" o.c.
	CG	137	Chelone glabra	White Turtlehead	Plugs	8% @ 24" o.c.
	EH2	137	Eupatorium hyssopifolium	Thoroughwort	Plugs	8% @ 24" o.c.
	EB2	137	Eupatorium perfoliatum	Common Boneset	Plugs	8% @ 24" o.c.
	HM2	137	Hibiscus moscheutos	Rose Mallow	Plugs	8% @ 24" o.c.
	IV2	154	Iris versicolor	Blue Flag	Plugs	9% @ 24" o.c.
	JE2	154	Juncus effusus	Soft Rush	Plugs	9% @ 24" o.c.
	LC	154	Lobelia cardinalis	Cardinal Flower	Plugs	9% @ 24" o.c.
	VH	154	Verbena hastata	Blue Vervain	Plugs	9% @ 24" o.c.
		3,286 sf	ZONE 4: 3-9" INUNDATION			
	AA	112	Acorus americanus	Sweet Flag	Plugs	13% @ 24" o.c.
	AI2	102	Asclepias incarnata	Swamp Milkweed	Plugs	12% @ 24" o.c.
	CL	102	Carex lurida	Lurid Sedge	Plugs	12% @ 24" o.c.
	PLV	112	Peltandra virginica	Arrow Arum	Plugs	13% @ 24" o.c.
	PC	102	Pontederia cordata	Pickerel Weed	Plugs	12% @ 24" o.c.
	ST	112	Schoenoplectus tabernaemontani	Softstem Bulrush	Plugs	13% @ 24" o.c.
	SC	102	Scirpus cyperinus	Wool Grass	Plugs	12% @ 24" o.c.
	SA	112	Sparganium americanum	Bur-reed	Plugs	13% @ 24" o.c.
		1,995 sf	SEED MIX 1: NO MOW (SEED ONLY)			
		8,141 sf	SEED MIX 2: MOWED LAWN (SEED ONLY)			

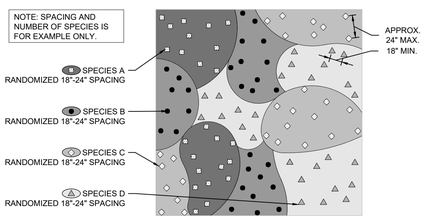
PLANT SCHEDULE RESTORATION AREA 1A (TREES & SHRUBS)

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
TREES					
AR	2	Acer rubrum	Red Maple	1.5-2" cal.	
NS2	2	Nyssa sylvatica	Tupelo	1.5-2" cal.	
SHRUBS					
BH	13	Baccharis halimifolia	Groundsel Bush	5 gal.	72" o.c.
CO	4	Cephalanthus occidentalis	Buttonbush	5 gal.	48" o.c.
CA	10	Clethra alnifolia	Summersweet	5 gal.	48" o.c.
IG	5	Ilex glabra	Inkberry Holly	7 gal.	72" o.c.
IO	2	Ilex opaca	American Holly	5 gal.	48" o.c.
IVW	1	Ilex verticillata	Winterberry	5 gal.	72" o.c.
SPW	4	Salix discolor	Pussy Willow	5 gal.	48" o.c.
SI	10	Sambucus nigra	Black Elderberry	7 gal.	96" o.c.
SM	6	Swida amomum	Wilson's Dogwood	5 gal.	48" o.c.
VD	5	Viburnum dentatum	Viburnum	5 gal.	96" o.c.



NOTES:
1. ALL PLANTS TO BE FIELD LOCATED BASED ON INUNDATION LEVEL AFTER EDGE OF CONSTRUCTED WETLAND HAS BEEN GRADED AND SIZE OF PLAN. A MINIMUM OF ⅓ OF THE PLANT IS TO BE EXPOSED ABOVE AVERAGE WATER LEVEL.
2. PLANTS ANTICIPATED TO MOVE INTO 18" DEPTH OVER TIME.

PLANTING SECTION (INUNDATION LEVEL)
NOT TO SCALE



DO NOT PLANT NATURAL PLANTING AREAS IN A GRID

NATURALIZED PLANT SPACING
NOT TO SCALE

Revisions

Rev.	Date	By	Appr.	Description

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Drawn By: EEB/AG
Designed By: EEB
Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS
CONSTRUCTION DOCUMENTS
NANTUCKET, MASSACHUSETTS

Plan Title: RESTORATION AREA 1A - PLANTING

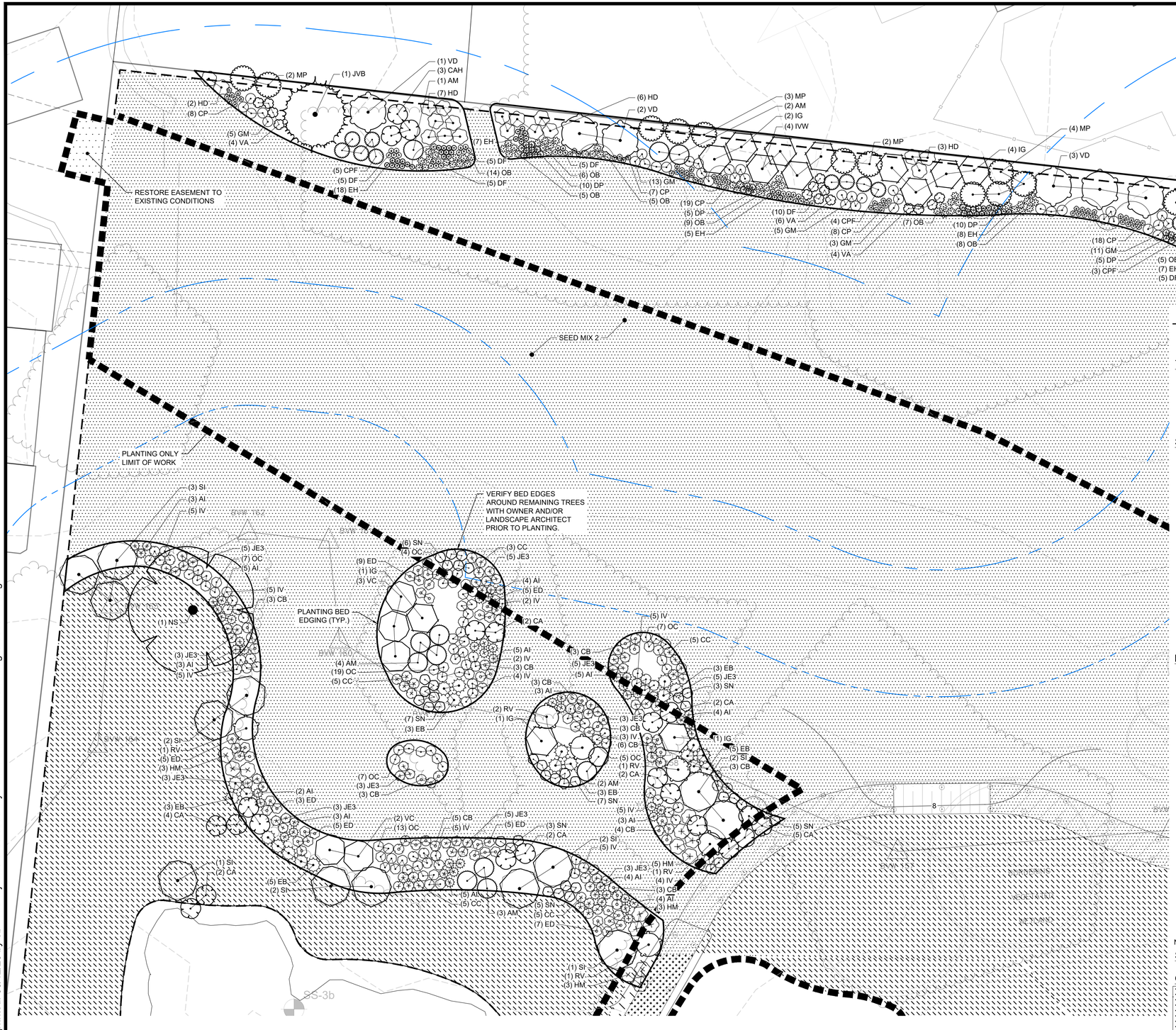
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Survey Provided By:
Nantucket Surveyors LLC
5 Windy Way
Nantucket, MA
Phone: (508) 228-0240
Fax: —
Dated: 12/13/23

Registration:
COMMONWEALTH OF MASSACHUSETTS
BRIAN R. KUCHAR
NO. 1529
REGISTERED LANDSCAPE ARCHITECT
6/15/26

Project Number: 20008
Sheet : 18 of 24
Sheet Number: L - 1

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PLANT SCHEDULE WESCO BUFFER PLANTINGS

	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
TREES						
	JB	1	Juniperus virginiana 'Burkii'	Burk Eastern Redcedar	1.5-2" cal.	
	NS	1	Nyssa sylvatica	Tupelo	2-2.5" cal.	
	CODE	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**SPACING**
SHRUBS						
	AM	14	Aronia melanocarpa	Black Chokeberry	5 gal.	48" o.c.
	CA	19	Clethra alnifolia	Summersweet	5 gal.	48" o.c.
	CAH	3	Clethra alnifolia 'Hummingbird'	Hummingbird Summersweet	5 gal.	48" o.c.
	CPF	12	Comptonia peregrina	Sweet Fern	5 gal.	36" o.c.
	IG	12	Ilex glabra	Inkberry Holly	7 gal.	72" o.c.
	IVW	4	Ilex verticillata	Winterberry	5 gal.	72" o.c.
	MP	14	Morella pensylvanica	Northern Bayberry	5 gal.	60" o.c.
	RV	6	Rhododendron viscosum	Swamp Azalea	5 gal.	60" o.c.
	SI	13	Sambucus nigra	Black Elderberry	7 gal.	96" o.c.
	VA	14	Vaccinium angustifolium	Lowbush Blueberry	3 gal.	24" o.c.
	VC	5	Vaccinium corymbosum	Highbush Blueberry	5 gal.	72" o.c.
	VD	6	Viburnum dentatum	Viburnum	5 gal.	96" o.c.
PERENNIALS						
	AI	53	Asclepias incarnata (NLB)	Swamp Milkweed	Plug	24" o.c.
	CC	23	Carex crinita	Fringed Sedge	1 gal.	24" o.c.
	CP	60	Carex pensylvanica	Pennsylvania Sedge	Plug	12" o.c.
	CB	39	Carex scoparia	Broom Sedge	1 gal.	24" o.c.
	DP	30	Dennstaedtia punctilobula	Hay-scented Fern	1 gal.	18" o.c.
	DF	40	Deschampsia flexuosa	Crinkled Hair Grass	1 gal.	12" o.c.
	EH	61	Eupatorium hyssopifolium (NLB)	Thoroughwort	Plug	24" o.c.
	EB	22	Eupatorium perfoliatum (NLB)	Common Boneset	Plug	36" o.c.
	ED	39	Eutrochium dubium	Joe Pye Weed	1 gal.	24" o.c.
	GM	37	Geranium maculatum	Spotted Geranium	1 gal.	24" o.c.
	HD	23	Helianthus divaricatus	Woodland Sunflower	1 gal.	36" o.c.
	HM	14	Hibiscus moscheutos	Rose Mallow	1 gal.	36" o.c.
	IV	50	Iris versicolor	Blue Flag	1 gal.	24" o.c.
	JE3	43	Juncus effusus (NLB)	Soft Rush	Plug	24" o.c.
	OB	70	Oenothera biennis (NLB)	Common Evening Primrose	Plug	18" o.c.
	OC	62	Osmundastrum cinnamomeum	Cinnamon Fern	1 gal.	24" o.c.
	SN	36	Symphyotrichum novi-belgii	New York Aster	1 gal.	24" o.c.

NOTE: PLANTS LABELED (NLB) WILL BE PROVIDED BY OWNER

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
GROUND COVERS						
		6,531 sf	ZONE 2 WITH SEED MIX 1: 3"-9" ABOVE PERMANENT POOL - NO MOW			
	CB2	153	Carex scoparia	Broom Sedge	Plugs	9% @ 24" o.c.
	EV	170	Elymus virginicus	Virginia Wild Rye	Plugs	10% @ 24" o.c.
	ED2	153	Eutrochium dubium	Joe Pye Weed	Plugs	9% @ 24" o.c.
	IP	153	Iris prismatica	Blue Flag Iris	Plugs	9% @ 24" o.c.
	OS	153	Onoclea sensibilis	Sensitive Fern	Plugs	9% @ 24" o.c.
	PP	153	Poa palustris	Fowl Bluegrass	Plugs	9% @ 24" o.c.
	PM	153	Pycnanthemum muticum	Blunt Mountainmint	Plugs	9% @ 24" o.c.
	PVM	153	Pycnanthemum virginianum	Mountain Mint	Plugs	9% @ 24" o.c.
	SLA	153	Scutellaria lateriflora	Mad-dog Skullcap	Plugs	9% @ 24" o.c.
	SN2	153	Symphyotrichum novae-angliae	New England Aster	Plugs	9% @ 24" o.c.
	TP	153	Thelypteris palustris	Eastern Marsh Fern	Plugs	9% @ 24" o.c.
		22,695 sf	SEED MIX 2: MOWED LAWN (SEED ONLY)			

Revisions

Rev.	Date	By	Appr.	Description

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Sustainable Environmental Solutions
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Checked By: BRK
Drawn By: EEB/AG
Designed By: EEB
Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS CONSTRUCTION DOCUMENTS NANTUCKET, MASSACHUSETTS

Plan Title: WESCO BUFFER PLANTING

Prepared For:
The Nantucket Land Bank
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Nantucket, MA
Phone: (508) 228-7240
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Survey Provided By:
Nantucket Surveyors LLC
5 Windy Way
Nantucket, MA
Phone: (508) 228-0240
Fax: —
Dated: 12/13/23

Registration:
SHAWN R. KUCHAR
REGISTERED LANDSCAPE ARCHITECT
NO. 1525
6/15/26

Project Number: 20008
Sheet : 19 of 24
Sheet Number: L - 2

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PLANT SCHEDULE RESTORATION AREA 1B

	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
SHRUBS						
	BH	5	Baccharis halimifolia	Groundsel Bush	5 gal.	72" o.c.
	CO	3	Cephalanthus occidentalis	Buttonbush	5 gal.	48" o.c.
	CA	8	Clethra alnifolia	Summersweet	5 gal.	48" o.c.
	MC	10	Morella caroliniensis	Bayberry	5 gal.	60" o.c.
	RV	6	Rhododendron viscosum	Swamp Azalea	5 gal.	60" o.c.
	SPW	2	Salix discolor	Pussy Willow	5 gal.	48" o.c.
	SI	9	Sambucus nigra	Black Elderberry	7 gal.	96" o.c.
	SM	3	Swida amomum	Wilson's Dogwood	5 gal.	48" o.c.

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
GROUND COVERS						
		33,918 sf	ZONE 2 WITH SEED MIX 1 3"-9" ABOVE PERMANENT POOL - NO MOW			
	CB2	793	Carex scoparia	Broom Sedge	Plugs	9% @ 24" o.c.
	EV	881	Elymus virginicus	Virginia Wild Rye	Plugs	10% @ 24" o.c.
	ED2	793	Eutrochium dubium	Joe Pye Weed	Plugs	9% @ 24" o.c.
	IP	793	Iris prismatica	Blue Flag Iris	Plugs	9% @ 24" o.c.
	OS	793	Onoclea sensibilis	Sensitive Fern	Plugs	9% @ 24" o.c.
	PP	793	Poa palustris	Fowl Bluegrass	Plugs	9% @ 24" o.c.
	PM	793	Pycnanthemum muticum	Blunt Mountainmint	Plugs	9% @ 24" o.c.
	PVM	793	Pycnanthemum virginianum	Mountain Mint	Plugs	9% @ 24" o.c.
	SLA	793	Scutellaria lateriflora	Mad-dog Skullcap	Plugs	9% @ 24" o.c.
	SN2	793	Symphyotrichum novae-angliae	New England Aster	Plugs	9% @ 24" o.c.
	TP	793	Thelypteris palustris	Eastern Marsh Fern	Plugs	9% @ 24" o.c.
		30,190 sf	ZONE 3: 3" ABOVE PERM. POOL TO 3" INUNDATION			
	AS	627	Alisma subcordatum	American Water Plantain	Plugs	8% @ 24" o.c.
	CC2	627	Carex crinita	Fringed Sedge	Plugs	8% @ 24" o.c.
	CHS	627	Carex lupulina	Hop Sedge	Plugs	8% @ 24" o.c.
	CV	627	Carex vulpinoidea	Fox Sedge	Plugs	8% @ 24" o.c.
	CG	627	Chelone glabra	White Turtlehead	Plugs	8% @ 24" o.c.
	EH2	627	Eupatorium hyssopifolium	Thoroughwort	Plugs	8% @ 24" o.c.
	EB2	627	Eupatorium perfoliatum	Common Boneset	Plugs	8% @ 24" o.c.
	HM2	627	Hibiscus moscheutos	Rose Mallow	Plugs	8% @ 24" o.c.
	IV2	706	Iris versicolor	Blue Flag	Plugs	9% @ 24" o.c.
	JE2	706	Juncus effusus	Soft Rush	Plugs	9% @ 24" o.c.
	LC	706	Lobelia cardinalis	Cardinal Flower	Plugs	9% @ 24" o.c.
	VH	706	Verbena hastata	Blue Vervain	Plugs	9% @ 24" o.c.
		4,598 sf	ZONE 4: 3-9" INUNDATION			
	AA	155	Acorus americanus	Sweet Flag	Plugs	13% @ 24" o.c.
	AI2	143	Asclepias incarnata	Swamp Milkweed	Plugs	12% @ 24" o.c.
	CL	143	Carex lurida	Lurid Sedge	Plugs	12% @ 24" o.c.
	PLV	155	Peltandra virginica	Arrow Arum	Plugs	13% @ 24" o.c.
	PC	143	Pontederia cordata	Pickerel Weed	Plugs	12% @ 24" o.c.
	ST	155	Schoenoplectus tabernaemontani	Softstem Bulrush	Plugs	13% @ 24" o.c.
	SC	143	Scirpus cyperinus	Wool Grass	Plugs	12% @ 24" o.c.
	SA	155	Sparganium americanum	Bur-reed	Plugs	13% @ 24" o.c.
		6,319 sf	SEED MIX 1: NO MOW (SEED ONLY)			



GRAPHIC SCALE

20 0 10 20 40 80

(in feet)

1 INCH = 20 FEET

Revisions

Rev.	Date	By	Appr.	Description

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A, Unit 1
Sandwich, MA 02563
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Checked By: BRK
Drawn By: EEB/AG
Designed By: EEB
Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS CONSTRUCTION DOCUMENTS NANTUCKET, MASSACHUSETTS

Plan Title: RESTORATION AREA 1B - PLANTING

Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
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Survey Provided By:
Nantucket Surveyors LLC
5 Windy Way
Nantucket, MA
Phone: (508) 228-0240
Fax: —
Dated: 12/13/23

Registration:



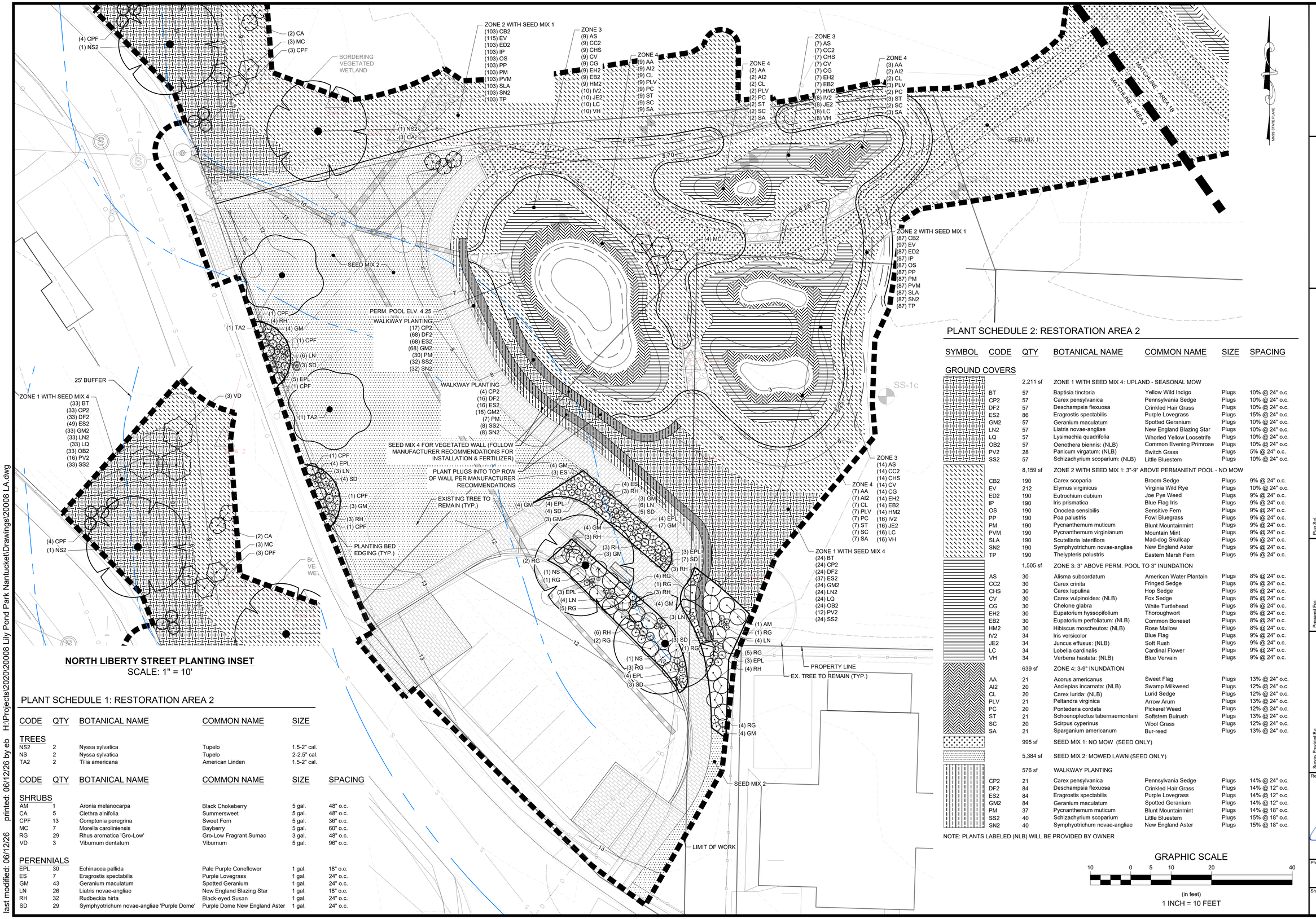
Project Number: 20008

Sheet : 20 of 24

Sheet Number: L - 3

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NORTH LIBERTY STREET PLANTING INSET
SCALE: 1" = 10'

PLANT SCHEDULE 2: RESTORATION AREA 2

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
GROUND COVERS						
		2,211 sf	ZONE 1 WITH SEED MIX 4: UPLAND - SEASONAL MOW			
	BT	57	Baptisia tinctoria	Yellow Wild Indigo	Plugs	10% @ 24" o.c.
	CP2	57	Carex pensylvanica	Pennsylvania Sedge	Plugs	10% @ 24" o.c.
	DF2	57	Deschampsia flexuosa	Crinkled Hair Grass	Plugs	10% @ 24" o.c.
	ES2	86	Eragrostis spectabilis	Purple Lovegrass	Plugs	15% @ 24" o.c.
	GM2	57	Geranium maculatum	Spotted Geranium	Plugs	10% @ 24" o.c.
	LN2	57	Liatris novae-angliae	New England Blazing Star	Plugs	10% @ 24" o.c.
	LQ	57	Lysimachia quadrifolia	Whorled Yellow Loosetrife	Plugs	10% @ 24" o.c.
	OB2	57	Oenothera biennis: (NLB)	Common Evening Primrose	Plugs	10% @ 24" o.c.
	PV2	28	Panicum virgatum: (NLB)	Switch Grass	Plugs	5% @ 24" o.c.
	SS2	57	Schizachyrium scoparium: (NLB)	Little Bluestem	Plugs	10% @ 24" o.c.
		8,159 sf	ZONE 2 WITH SEED MIX 1: 3"-9" ABOVE PERMANENT POOL - NO MOW			
	CB2	190	Carex scoparia	Broom Sedge	Plugs	9% @ 24" o.c.
	EV	212	Elymus virginicus	Virginia Wild Rye	Plugs	10% @ 24" o.c.
	ED2	190	Eutrochium dubium	Joe Pye Weed	Plugs	9% @ 24" o.c.
	IP	190	Iris prismatica	Blue Flag Iris	Plugs	9% @ 24" o.c.
	OS	190	Onoclea sensibilis	Sensitive Fern	Plugs	9% @ 24" o.c.
	PP	190	Poa palustris	Fowl Bluegrass	Plugs	9% @ 24" o.c.
	PM	190	Pycnanthemum muticum	Blunt Mountainmint	Plugs	9% @ 24" o.c.
	PVM	190	Pycnanthemum virginianum	Mountain Mint	Plugs	9% @ 24" o.c.
	SLA	190	Scutellaria lateriflora	Mad-dog Skullcap	Plugs	9% @ 24" o.c.
	SN2	190	Symphyotrichum novae-angliae	New England Aster	Plugs	9% @ 24" o.c.
	TP	190	Thelypteris palustris	Eastern Marsh Fern	Plugs	9% @ 24" o.c.
		1,505 sf	ZONE 3: 3" ABOVE PERM. POOL TO 3" INUNDATION			
	AS	30	Alisma subcordatum	American Water Plantain	Plugs	8% @ 24" o.c.
	CC2	30	Carex crinita	Fringed Sedge	Plugs	8% @ 24" o.c.
	CHS	30	Carex lupulina	Hop Sedge	Plugs	8% @ 24" o.c.
	CV	30	Carex vulpinoidea: (NLB)	Fox Sedge	Plugs	8% @ 24" o.c.
	CG	30	Chelone glabra	White Turtlehead	Plugs	8% @ 24" o.c.
	EH2	30	Eupatorium hyssopifolium	Thoroughwort	Plugs	8% @ 24" o.c.
	EB2	30	Eupatorium perfoliatum: (NLB)	Common Boneset	Plugs	8% @ 24" o.c.
	HM2	30	Hibiscus moscheutos: (NLB)	Rose Mallow	Plugs	8% @ 24" o.c.
	IV2	34	Iris versicolor	Blue Flag	Plugs	9% @ 24" o.c.
	JE2	34	Juncus effusus: (NLB)	Soft Rush	Plugs	9% @ 24" o.c.
	LC	34	Lobelia cardinalis	Cardinal Flower	Plugs	9% @ 24" o.c.
	VH	34	Verbena hastata: (NLB)	Blue Vervain	Plugs	9% @ 24" o.c.
		639 sf	ZONE 4: 3-9" INUNDATION			
	AA	21	Acorus americanus	Sweet Flag	Plugs	13% @ 24" o.c.
	AI2	20	Asclepias incarnata: (NLB)	Swamp Milkweed	Plugs	12% @ 24" o.c.
	CL	20	Carex lurida: (NLB)	Lurid Sedge	Plugs	12% @ 24" o.c.
	PLV	21	Peltandra virginica	Arrow Arum	Plugs	13% @ 24" o.c.
	PC	20	Pontederia cordata	Pickerel Weed	Plugs	12% @ 24" o.c.
	ST	21	Schoenoplectus tabernaemontani	Softstem Bulrush	Plugs	13% @ 24" o.c.
	SC	20	Scirpus cyperinus	Wool Grass	Plugs	12% @ 24" o.c.
	SA	21	Sparganium americanum	Bur-reed	Plugs	13% @ 24" o.c.
		995 sf	SEED MIX 1: NO MOW (SEED ONLY)			
		5,384 sf	SEED MIX 2: MOWED LAWN (SEED ONLY)			
		576 sf	WALKWAY PLANTING			
	CP2	21	Carex pensylvanica	Pennsylvania Sedge	Plugs	14% @ 24" o.c.
	DF2	84	Deschampsia flexuosa	Crinkled Hair Grass	Plugs	14% @ 12" o.c.
	ES2	84	Eragrostis spectabilis	Purple Lovegrass	Plugs	14% @ 12" o.c.
	GM2	84	Geranium maculatum	Spotted Geranium	Plugs	14% @ 12" o.c.
	PM	37	Pycnanthemum muticum	Blunt Mountainmint	Plugs	14% @ 18" o.c.
	SS2	40	Schizachyrium scoparium	Little Bluestem	Plugs	15% @ 18" o.c.
	SN2	40	Symphyotrichum novae-angliae	New England Aster	Plugs	15% @ 18" o.c.

NOTE: PLANTS LABELED (NLB) WILL BE PROVIDED BY OWNER

PLANT SCHEDULE 1: RESTORATION AREA 2

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
TREES					
NS2	2	Nyssa sylvatica	Tupelo	1.5-2" cal.	
NS	2	Nyssa sylvatica	Tupelo	2-2.5" cal.	
TA2	2	Tilia americana	American Linden	1.5-2" cal.	
CODE	**QTY**	**BOTANICAL NAME**	**COMMON NAME**	**SIZE**	**SPACING**
SHRUBS					
AM	1	Aronia melanocarpa	Black Chokeberry	5 gal.	48" o.c.
CA	5	Clethra alnifolia	Summersweet	5 gal.	48" o.c.
CPF	13	Comptonia peregrina	Sweet Fern	5 gal.	36" o.c.
MC	7	Morella caroliniensis	Bayberry	5 gal.	60" o.c.
RG	29	Rhus aromatica 'Gro-Low'	Gro-Low Fragrant Sumac	3 gal.	48" o.c.
VD	3	Viburnum dentatum	Viburnum	5 gal.	96" o.c.
PERENNIALS					
EPL	30	Echinacea pallida	Pale Purple Coneflower	1 gal.	18" o.c.
ES	7	Eragrostis spectabilis	Purple Lovegrass	1 gal.	24" o.c.
GM	43	Geranium maculatum	Spotted Geranium	1 gal.	24" o.c.
LN	26	Liatris novae-angliae	New England Blazing Star	1 gal.	18" o.c.
RH	32	Rudbeckia hirta	Black-eyed Susan	1 gal.	24" o.c.
SD	29	Symphyotrichum novae-angliae 'Purple Dome'	Purple Dome New England Aster	1 gal.	24" o.c.

GRAPHIC SCALE
10 0 5 10 20 40
(in feet)
1 INCH = 10 FEET

Revisions

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Checked By: BRK
Drawn By: EEP/AG
Designed By: EEB
Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS
CONSTRUCTION DOCUMENTS
NANTUCKET, MASSACHUSETTS

Plan Title: RESTORATION AREA 2 - PLANTING

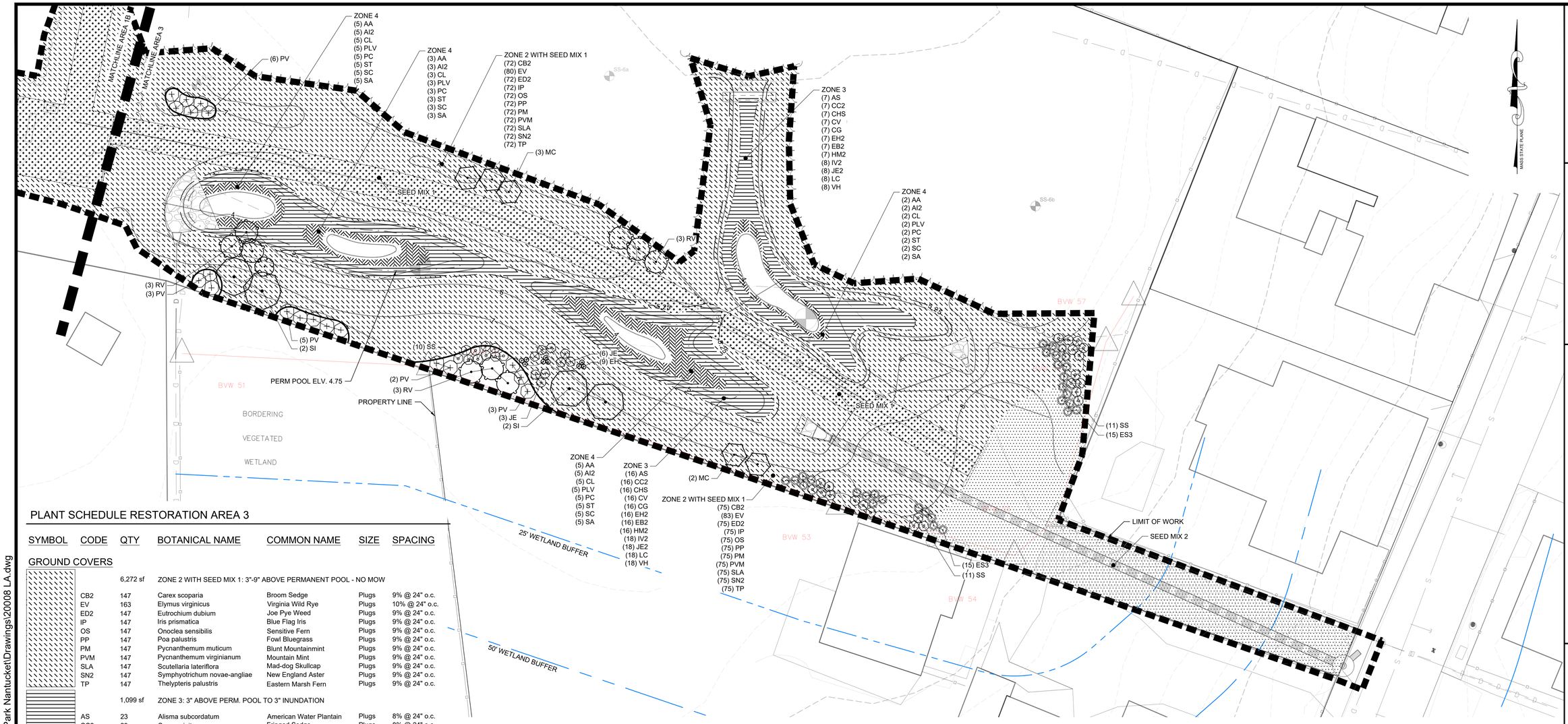
Prepared For:
The Nantucket Land Bank
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Survey Provided By:
Nantucket Surveyors LLC
5 Windy Way
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Fax: —
Dated: 12/13/23

Registration:
REGISTERED MASSACHUSETTS BRIAN R. KUCHAR NO. 1579 LICENSED LANDSCAPE ARCHITECT
6/15/26

Project Number: 20008
Sheet : 21 of 24
Sheet Number: L - 4

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PLANT SCHEDULE RESTORATION AREA 3

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
GROUND COVERS						
		6,272 sf	ZONE 2 WITH SEED MIX 1: 3"-9" ABOVE PERMANENT POOL - NO MOW			
	CB2	147	Carex scoparia	Broom Sedge	Plugs	9% @ 24" o.c.
	EV	163	Elymus virginicus	Virginia Wild Rye	Plugs	10% @ 24" o.c.
	ED2	147	Eutrochium dubium	Joe Pye Weed	Plugs	9% @ 24" o.c.
	IP	147	Iris prismatica	Blue Flag Iris	Plugs	9% @ 24" o.c.
	OS	147	Onoclea sensibilis	Sensitive Fern	Plugs	9% @ 24" o.c.
	PP	147	Poa palustris	Fowl Bluegrass	Plugs	9% @ 24" o.c.
	PM	147	Pycnanthemum muticum	Blunt Mountainmint	Plugs	9% @ 24" o.c.
	PVM	147	Pycnanthemum virginianum	Mountain Mint	Plugs	9% @ 24" o.c.
	SLA	147	Scutellaria lateriflora	Mad-dog Skullcap	Plugs	9% @ 24" o.c.
	SN2	147	Symphyotrichum novae-angliae	New England Aster	Plugs	9% @ 24" o.c.
	TP	147	Thelypteris palustris	Eastern Marsh Fern	Plugs	9% @ 24" o.c.
		1,099 sf	ZONE 3: 3" ABOVE PERM. POOL TO 3" INUNDATION			
	AS	23	Alisma subcordatum	American Water Plantain	Plugs	8% @ 24" o.c.
	CC2	23	Carex crinita	Fringed Sedge	Plugs	8% @ 24" o.c.
	CHS	23	Carex lupulina	Hop Sedge	Plugs	8% @ 24" o.c.
	CV	23	Carex vulpinoidea (NLB)	Fox Sedge	Plugs	8% @ 24" o.c.
	CG	23	Chelone glabra	White Turtlehead	Plugs	8% @ 24" o.c.
	EH2	23	Eupatorium hyssopifolium (NLB)	Thoroughwort	Plugs	8% @ 24" o.c.
	EB2	23	Eupatorium perfoliatum (NLB)	Common Boneset	Plugs	8% @ 24" o.c.
	HM2	23	Hibiscus moscheutos (NLB)	Rose Mallow	Plugs	8% @ 24" o.c.
	IV2	26	Iris versicolor	Blue Flag	Plugs	9% @ 24" o.c.
	JE2	26	Juncus effusus (NLB)	Soft Rush	Plugs	9% @ 24" o.c.
	LC	26	Lobelia cardinalis	Cardinal Flower	Plugs	9% @ 24" o.c.
	VH	26	Verbena hastata (NLB)	Blue Vervain	Plugs	9% @ 24" o.c.
		440 sf	ZONE 4: 3-9" INUNDATION			
	AA	15	Acorus americanus	Sweet Flag	Plugs	13% @ 24" o.c.
	AI2	15	Asclepias incarnata (NLB)	Swamp Milkweed	Plugs	12% @ 24" o.c.
	CL	15	Carex lurida (NLB)	Lurid Sedge	Plugs	12% @ 24" o.c.
	PLV	15	Peltandra virginica	Arrow Arum	Plugs	13% @ 24" o.c.
	PC	15	Pontederia cordata	Pickerel Weed	Plugs	12% @ 24" o.c.
	ST	15	Schoenoplectus tabernaemontani	Softstem Bulrush	Plugs	13% @ 24" o.c.
	SC	15	Scirpus cyperinus	Wool Grass	Plugs	12% @ 24" o.c.
	SA	15	Sparganium americanum	Bur-reed	Plugs	13% @ 24" o.c.
		1,118 sf	SEED MIX 1: NO MOW (SEED ONLY)			
		1,463 sf	SEED MIX 2: MOWED LAWN (SEED ONLY)			

NOTE: PLANTS LABELED (NLB) WILL BE PROVIDED BY OWNER

PLANT SCHEDULE RESTORATION AREA 3

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
SHRUBS					
CA	1	Clethra alnifolia	Summersweet	5 gal.	48" o.c.
MC	5	Morella caroliniensis	Bayberry	5 gal.	60" o.c.
RV	9	Rhododendron viscosum	Swamp Azalea	5 gal.	60" o.c.
SI	4	Sambucus nigra	Black Elderberry	7 gal.	96" o.c.
PERENNIALS					
ES3	30	Eragrostis spectabilis (NLB)	Purple Lovegrass	Plug	24" o.c.
EH	9	Eupatorium hyssopifolium (NLB)	Thoroughwort	Plug	24" o.c.
JE	9	Juncus effusus	Soft Rush	1 gal.	24" o.c.
PV	19	Panicum virgatum (NLB)	Switch Grass	Plug	36" o.c.
SS	32	Schizachyrium scoparium (NLB)	Little Bluestem	Plug	24" o.c.

GRAPHIC SCALE

10 0 5 10 20 40

(in feet)

1 INCH = 10 FEET

Revisions

Rev.	Date	By	Appr.	Description

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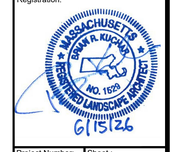
Plan Set: LILY POND PARK IMPROVEMENTS CONSTRUCTION DOCUMENTS NANTUCKET, MASSACHUSETTS

Plan Title: RESTORATION AREA 3 - PLANTING

Prepared For:
The Nantucket Land Bank
22 Broad Street
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Survey Provided By:
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Nantucket, MA
Phone: (508) 228-0240
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Dated: 12/13/23

Registration:



Project Number: 20008

Sheet : 22 of 24

Sheet Number: L - 5

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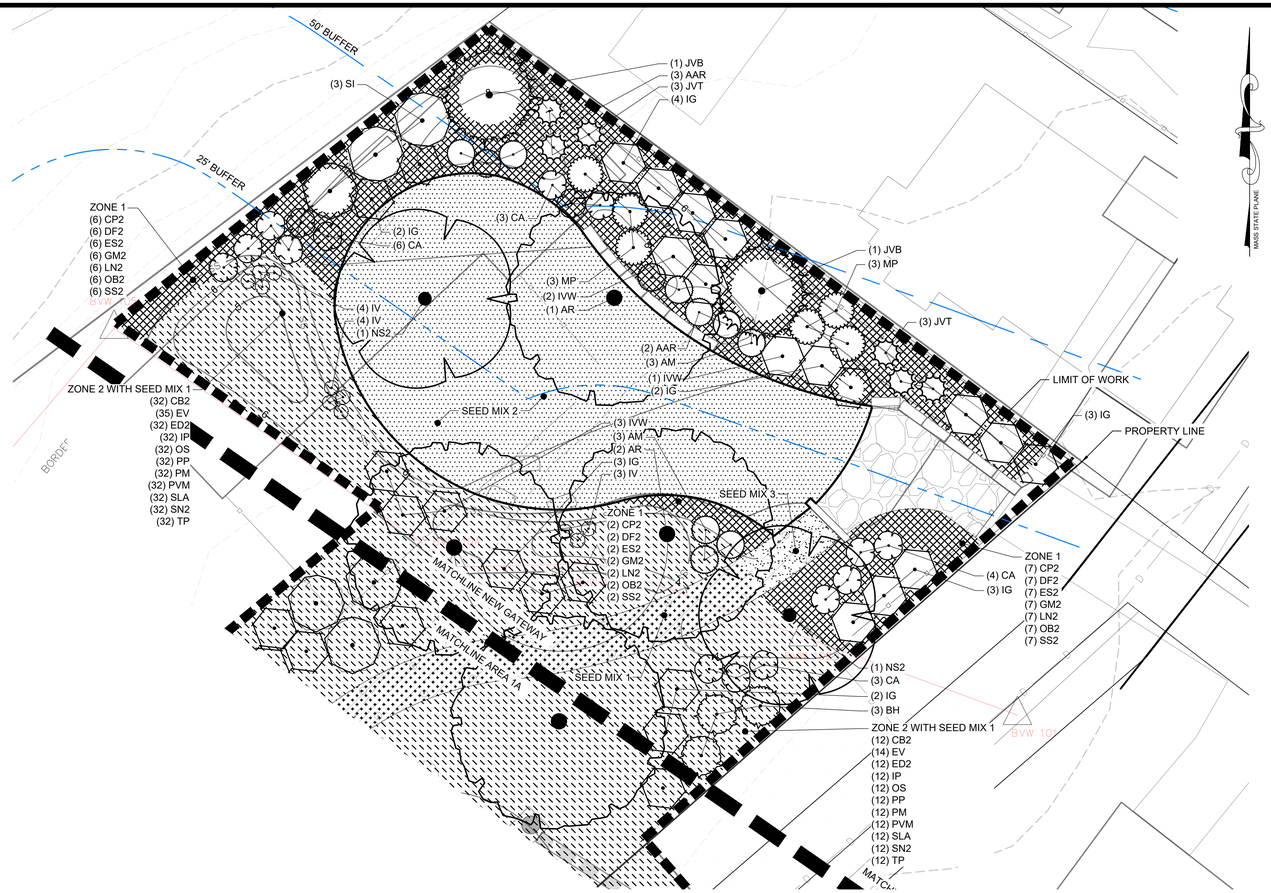
Last Modified: 06/12/2026 at 9:46AM EDT

PLANT SCHEDULE GATEWAY

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE
TREES				
AR	3	Acer rubrum	Red Maple	1.5-2" cal.
JVB	2	Juniperus virginiana 'Burkii'	Burk Eastern Redcedar	7-8` HT B&B
JVT	6	Juniperus virginiana 'Taylor'	Taylor Eastern Redcedar	7-8` HT B&B
NS2	2	Nyssa sylvatica	Tupelo	1.5-2" cal.

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
SHRUBS					
AAR	5	Aronia arbutifolia	Red Chokeberry	5 gal.	48" o.c.
AM	6	Aronia melanocarpa	Black Chokeberry	5 gal.	48" o.c.
BH	3	Baccharis halimifolia	Groundsel Bush	5 gal.	72" o.c.
CA	16	Clethra alnifolia	Summersweet	5 gal.	48" o.c.
IG	19	Ilex glabra	Inkberry Holly	7 gal.	72" o.c.
IVW	6	Ilex verticillata	Winterberry	5 gal.	72" o.c.
MP	6	Morella pensylvanica	Northern Bayberry	5 gal.	60" o.c.
SI	3	Sambucus nigra	Black Elderberry	7 gal.	96" o.c.
PERENNIALS					
IV	11	Iris versicolor	Blue Flag	1 gal.	24" o.c.

SYMBOL	CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	SPACING
GROUND COVERS						
		1,098 sf	ZONE 1: NO SEED MIX			
	CP2	40	Carex pensylvanica	Pennsylvania Sedge	Plugs	14% @ 24" o.c.
	DF2	40	Deschampsia flexuosa	Crinkled Hair Grass	Plugs	14% @ 24" o.c.
	ES2	40	Eragrostis spectabilis	Purple Lovegrass	Plugs	14% @ 24" o.c.
	GM2	40	Geranium maculatum	Spotted Geranium	Plugs	14% @ 24" o.c.
	LN2	40	Liatris novae-angliae	New England Blazing Star	Plugs	14% @ 24" o.c.
	OB2	40	Oenothera biennis	Common Evening Primrose	Plugs	14% @ 24" o.c.
	SS2	40	Schizachyrium scoparium	Little Bluestem	Plugs	14% @ 24" o.c.
		1,878 sf	ZONE 2 WITH SEED MIX 1: 3"-9" ABOVE PERMANENT POOL - NO MOW			
	CB2	44	Carex scoparia	Broom Sedge	Plugs	9% @ 24" o.c.
	EV	49	Elymus virginicus	Virginia Wild Rye	Plugs	10% @ 24" o.c.
	ED2	44	Eutrochium dubium	Joe Pye Weed	Plugs	9% @ 24" o.c.
	IP	44	Iris prismatica	Blue Flag Iris	Plugs	9% @ 24" o.c.
	OS	44	Onoclea sensibilis	Sensitive Fern	Plugs	9% @ 24" o.c.
	PP	44	Poa palustris	Fowl Bluegrass	Plugs	9% @ 24" o.c.
	PM	44	Pycnanthemum muticum	Blunt Mountainmint	Plugs	9% @ 24" o.c.
	PVM	44	Pycnanthemum virginianum	Mountain Mint	Plugs	9% @ 24" o.c.
	SLA	44	Scutellaria lateriflora	Mad-dog Skullcap	Plugs	9% @ 24" o.c.
	SN2	44	Symphyotrichum novae-angliae	New England Aster	Plugs	9% @ 24" o.c.
	TP	44	Thelypteris palustris	Eastern Marsh Fern	Plugs	9% @ 24" o.c.
		208 sf	SEED MIX 1: NO MOW (SEED ONLY)			
		2,167 sf	SEED MIX 2: MOWED LAWN (SEED ONLY)			
		79 sf	SEED MIX 3 : SEASONAL MOW (SEED ONLY)			



GRAPHIC SCALE

10 0 5 10 20 40

(in feet)

1 INCH = 10 FEET

Revisions

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Designed By: EEB
Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS CONSTRUCTION DOCUMENTS NANTUCKET, MASSACHUSETTS

Plan Title: NEW GATEWAY - PLANTING

Prepared For: The Nantucket Land Bank, 22 Broad Street, Nantucket, MA, Phone: (508) 228-7240, Fax: ----

Survey Provided By: Nantucket Surveyors LLC, 5 Windy Way, Nantucket, MA, Phone: (508) 228-0240, Fax: ----, Dated: 12/13/23

Registration:



Project Number: 20008

Sheet : 23 of 24

Sheet Number: L - 6

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Last Modified: 06/12/2026 at 9:48AM EDT

GENERAL PLANTING NOTES:

1. THE FOLLOWING NOTES ARE PROVIDED AS GENERAL PLANTING GUIDELINES ONLY. THOROUGHLY REVIEW THE PROJECT SPECIFICATIONS FOR ALL LANDSCAPE REQUIREMENTS PRIOR TO THE COMMENCEMENT OF ANY LANDSCAPE WORK. SUBMIT IN WRITING TO THE LANDSCAPE ARCHITECT ANY QUESTIONS OR CLARIFICATIONS REQUIRED AT A MINIMUM OF 30 DAYS PRIOR TO ORDERING ANY MATERIALS OR BEGINNING ANY LANDSCAPE CONSTRUCTION.
2. SUBMIT TO THE LANDSCAPE ARCHITECT FOR REVIEW AND APPROVAL ALL REQUIRED LANDSCAPE SUBMITTALS AS DESCRIBED IN THE SPECIFICATIONS INCLUDING A PLANT LIST WITH PLANT SIZE AND QUANTITIES TO BE ORDERED PRIOR TO DELIVERY TO THE PROJECT SITE.
3. FURNISH AND INSTALL ALL PLANTS AS SHOWN ON THE DRAWINGS AND IN THE SIZE AND QUANTITIES SPECIFIED ON THE PLANTING SCHEDULE. PLANT SUBSTITUTION SELECTION MUST BE APPROVED BY LANDSCAPE ARCHITECT PRIOR TO INSTALLATION.
4. ALL PLANTS TO COMPLY WITH APPLICABLE REQUIREMENTS OF ANSI Z60.1 "AMERICAN STANDARD FOR NURSERY STOCK." LATEST EDITION, PUBLISHED BY THE AMERICAN NURSERY AND LANDSCAPE ASSOCIATION INC.
5. PLANTS TO BE GROWN UNDER CLIMATIC CONDITIONS SIMILAR TO THOSE IN THE LOCALITY OF THE PROJECT FOR AT LEAST TWO (2) YEARS. USE HEALTHY NURSERY GROWN PLANTS THAT HAVE A WELL DEVELOPED ROOT SYSTEM. PLANTS MUST BE FREE OF DISEASE, INSECTS, EGGS OR LARVAE.
6. INSTALL PLANTS WITHIN ONE (1) WEEK OF PURCHASE. IF PLANTS ARE TO BE STORED AT THE SITE PRIOR TO PLANTING, IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THEY ARE PROPERLY MAINTAINED, WATERED, AND REMAIN HEALTHY.
7. PROCEED WITH PLANTING ONLY WHEN EXISTING AND FORECASTED WEATHER CONDITIONS PERMIT. SUBMIT TO THE LANDSCAPE ARCHITECT IN WRITING THE PROPOSED PLANTING SCHEDULE. OBTAIN APPROVAL OF PLANTING SCHEDULE FROM THE LANDSCAPE ARCHITECT PRIOR TO PERFORMING ANY WORK.
8. SEASONS FOR PLANTING:

SPRING:	DECIDUOUS:	APRIL 1 TO JUNE 15
	EVERGREEN:	APRIL 1 TO JUNE 15
	PERENNIALS:	APRIL 15 TO JUNE 1
	GROUNDCOVERS:	APRIL 15 TO JUNE 1
FALL:	DECIDUOUS:	SEPTEMBER 15 TO NOVEMBER 15
	EVERGREEN:	SEPTEMBER 15 TO NOVEMBER 15
	PERENNIALS:	SEPTEMBER 15 TO NOVEMBER 15
	GROUNDCOVERS:	SEPTEMBER 15 TO NOVEMBER 15

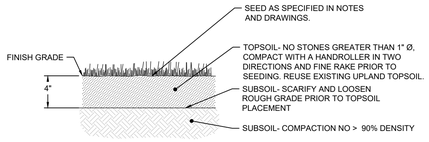
9. PLANTING UNDER FROZEN CONDITIONS WILL NOT BE PERMITTED. PLANTING BEFORE OR AFTER THE ABOVE REFERENCED PLANTING DATES WILL INCREASE THE LIKELIHOOD OF PLANT ESTABLISHMENT FAILURE. ANY DEVIATION FROM THE ABOVE REFERENCED PLANTING DATES IS UNDERTAKEN AT SOLE RISK OF THE CONTRACTOR AND IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO PROVIDE ANY ADDITIONAL MAINTENANCE AND WATERING WHICH MAY BE REQUIRED TO ENSURE SATISFACTORY PLANT ESTABLISHMENT.
10. FURNISH 16-MONTH MANUFACTURER WARRANTY FOR TREES, PLANTS, AND GROUND COVER AGAINST DEFECTS INCLUDING DEATH AND UNSATISFACTORY GROWTH. EXCEPTIONS ARE DEFECTS RESULTING FROM ABNORMAL WEATHER CONDITIONS UNUSUAL FOR WARRANTY PERIOD. THE DATE OF FINAL ACCEPTANCE OF ALL COMPLETED PLANTING WORK ESTABLISHES THE END OF INSTALLATION AND INITIAL MAINTENANCE PERIOD AND THE COMMENCEMENT OF THE WARRANTY AND TWO YEAR MAINTENANCE PERIOD.
11. ALL TREES WITHIN 5'-0" OF WALKWAYS AND SIDEWALKS TO HAVE A 6'-8" STANDARD BRANCHING HEIGHT.
12. INSPECT ALL AREAS TO BE PLANTED OR SEEDED PRIOR TO STARTING ANY LANDSCAPE WORK. REPORT ANY DEFECTS SUCH AS INCORRECT GRADING, INCORRECT SUBGRADE ELEVATIONS OR DRAINAGE PROBLEMS, ETC. TO THE LANDSCAPE ARCHITECT AND ENGINEER PRIOR TO BEGINNING WORK. COMMENCEMENT OF WORK INDICATES ACCEPTANCE OF SUBGRADE AREAS TO BE PLANTED, AND THE LANDSCAPE CONTRACTOR ASSUMES RESPONSIBILITY FOR ALL LANDSCAPE WORK.
13. PROVIDE PROPER PREPARATION OF ALL PROPOSED PLANTED AND SEEDED AREAS PER THE NOTES AND SPECIFICATIONS.
14. ALL PLANT LAYOUT AND ACTUAL PLANTING LOCATIONS ARE TO BE FIELD VERIFIED BY LANDSCAPE ARCHITECT PRIOR TO PLANTING. NOTIFY THE LANDSCAPE ARCHITECT AT A MINIMUM OF 48 HOURS IN ADVANCE PRIOR TO SCHEDULING ANY FIELD INSPECTIONS.
15. BALL AND BURLAP: REMOVE BURLAP AND WIRE BASKETS FROM TOPS OF BALLS AND FROM TOP TWO-THIRDS OF ROOTBALL AS INDICATED ON DRAWINGS. REMOVE PALLETS, IF ANY, BEFORE SETTING.
16. POTTED PLANTS: REMOVE THE PLANT FROM THE POT AND LOOSEN OR SCORE THE ROOTS BEFORE PLANTING TO PROMOTE OUTWARDS ROOT GROWTH INTO THE SOIL.
17. PLUGS: PLANT UPRIGHT AND NOT AT AN ANGLE. DIG PLANTING HOLES LARGE ENOUGH AND DEEP ENOUGH TO ACCOMMODATE THE ENTIRE ROOT MASS. PLANT PLUGS WITH NO TWISTED OR BALLED ROOTS AND WITH NO ROOTS EXPOSED ABOVE THE GRADE LINE. HAND PACK THE SOIL AROUND THE ENTIRE PLUG ROOT MASS.
18. DIG THE THE PLANTING HOLE TO THE SAME DEPTH AS THE ROOT BALL AND TWO TO THREE TIMES WIDER. SCORE ALL SIDES OF THE HOLE, PLACE THE PLANT IN THE HOLE SO THE TOP OF ROOT BALL IS EVEN WITH SOIL SURFACE. FILL THE HOLE HALFWAY AND THEN ADD WATER ALLOWING IT TO SEEP INTO BACK FILLED MATERIAL. BE SURE TO REMOVE ALL AIR POCKETS FROM BACK FILLED SOIL. DO NOT SPREAD SOIL ON TOP OF THE ROOTBALL. IF SOIL IS EXTREMELY POOR, REPLACE BACK FILL WITH GOOD QUALITY TOP SOIL. AMEND THE SOIL, AS NECESSARY.
19. CREATE A 2" TO 4" BERM AROUND THE EDGE OF PLANTING HOLE WITH REMAINING SOIL TO RETAIN WATER.
20. REMOVE ALL PLANT TAGS AND FLAGS FROM THE PLANTS.
21. MULCH ALL PLANTING BEDS AS INDICATED ON DRAWINGS. UNLESS NOTED OTHERWISE, ALL PLANTS TO RECEIVE 2-3 INCHES OF MULCH. DO NOT PILE OR MOUND MULCH AROUND THE PLANT STEMS OR TRUNK. DO NOT MULCH BIORETENTION OR CONSTRUCTED WETLAND AREAS.
22. TRIM BROKEN AND DEAD BRANCHES FROM TREES AND SHRUBS AFTER PLANTING. NEVER CUT A LEADER.
23. DO NOT USE NITROGEN CONTAINING FERTILIZERS, PESTICIDES OR CHEMICALS DURING PLANTING AND MAINTENANCE OF THE LANDSCAPING OR LAWN AREAS.

GENERAL SEEDING NOTES:

1. SEND A REPRESENTATIVE SAMPLE OF THE TOPSOIL TO A TESTING LABORATORY FOR STANDARD SOIL ANALYSIS AS DESCRIBED IN THE SPECIFICATIONS. SUBMIT TO THE LANDSCAPE ARCHITECT AND ENGINEER TEST RESULTS WITH RECOMMENDED SOIL TREATMENTS TO PROMOTE PLANT AND GRASS GROWTH. CORRECT DEFICIENCIES IN THE LOAM AND STOCKPILED TOPSOIL AS DIRECTED BY THE TESTING AGENCY.
2. ALL AREAS THAT ARE DISTURBED AND/OR GRADED DURING CONSTRUCTION THAT ARE OUTSIDE OF THE WETLAND RESOURCE ARE TO BE BROUGHT TO FINISHED GRADE WITH AT LEAST 4" MINIMUM DEPTH OF GOOD QUALITY LOAM AND SEEDED WITH A QUICK GERMINATING GRASS SEED SUCH AS NEW ENGLAND EROSION CONTROL RESTORATION MIX OR AS SPECIFIED ON THE PLANS.
3. PRIOR TO THE PLACEMENT OF TOP SOIL, LOOSEN THE SUBGRADE OF ALL PROPOSED SEEDED AREAS TO A DEPTH OF 6" AND RAKE TO REMOVE STONES LARGER THAN 1 INCH, STICKS, ROOTS, RUBBISH AND OTHER EXTRANEOUS MATTER AND LEGALLY DISPOSE TO AN OFF SITE LOCATION.
4. DO NOT SPREAD TOPSOIL IF THE SUBGRADE IS FROZEN, EXCESSIVELY WET, COMPACTED OR NOT PROPERLY PREPARED PER THE NOTES AND SPECIFICATIONS.
5. SEE SPECIFICATIONS FOR SEASONAL REQUIREMENTS FOR SEEDING.

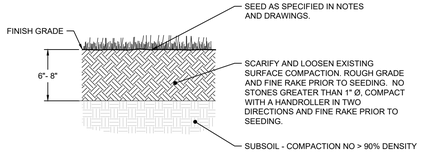
WATERING NOTES:

1. PROVIDE PROPER PLANT CARE, MAINTENANCE AND WATERING ON SITE UNTIL SUCH TIME AS THE LANDSCAPING IS ACCEPTED BY THE PROPERTY OWNER AS SATISFACTORY PER THE SPECIFICATIONS OR AS DETERMINED BY ANY WRITTEN AGREEMENTS BETWEEN THE CONTRACTOR AND PROPERTY OWNER.
2. ESTABLISH AN APPROPRIATE WATERING SCHEDULE FOR ALL PLANT MATERIAL BASED UPON PLANT SPECIES REQUIREMENTS AND SITE CONDITIONS. PROVIDE SCHEDULE IN WRITING TO THE LANDSCAPE ARCHITECT AND OWNER FOR REVIEW AND APPROVAL. ADHERE TO THE APPROVED SCHEDULE UNTIL PLANTS ARE FULLY ESTABLISHED.
3. AT A MINIMUM THE NEWLY SEEDED AND/OR HYDROSEEDED LAWNS SHOULD BE WATERED DAILY. SPECIAL CARE SHOULD BE TAKEN TO ENSURE THAT THE LAWN IS NOT SATURATED DURING WATERING. AN IRRIGATION SYSTEM IS NOT PROVIDED, USE A TEMPORARY IRRIGATION SYSTEM OR HANDHELD GARDEN HOSE FOR WATERING SEEDED AREAS. THE AREA MUST BE MAINTAINED CONSISTENTLY MOIST FOR THE BEST GERMINATION RESULTS. ADDITIONAL WATERING MAY BE REQUIRED IF PLANTING AND SEEDING OCCUR OUTSIDE OF THE RECOMMENDED PLANTING SEASONS.



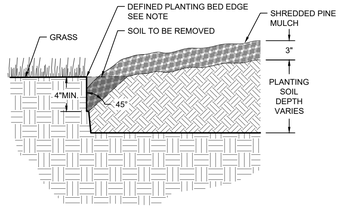
NOTES:
1. SEE LANDSCAPE GRADING SPECIFICATIONS FOR TOPSOIL REQUIREMENTS.
2. CONFIRM SUBGRADES ARE CORRECT AND POSITIVE DRAINAGE IS MAINTAINED PRIOR TO PLACEMENT OF TOPSOIL.
3. NOTIFY ENGINEER/LANDSCAPE ARCHITECT FOR REVIEW OF SUBGRADE PRIOR TO PLACEMENT OF THE TOPSOIL
4. TO BE USED FOR SEED MIX 2.

LOAM AND SEED (MOW)
NOT TO SCALE



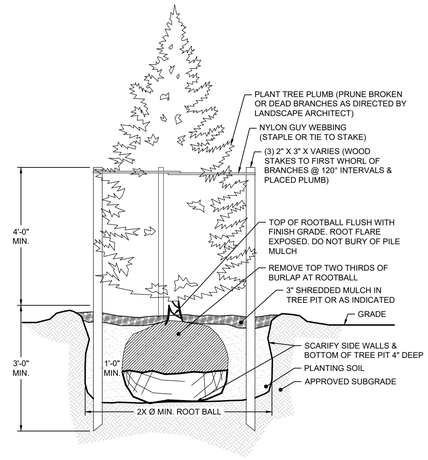
NOTES:
1. NOTIFY ENGINEER/LANDSCAPE ARCHITECT FOR TOPSOIL PLACEMENT AND GRADING REVIEW PRIOR TO SEEDING.
2. USE FOR SEED MIXES 1, 3, & 4.

LOAM AND SEED (NO MOW & SEASONAL MOW)
NOT TO SCALE

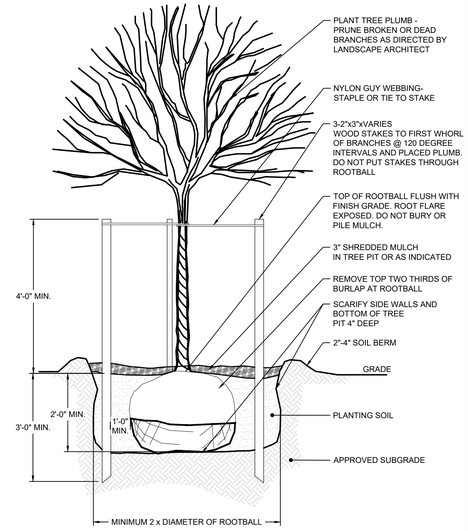


NOTES:
1. PLANTING BED TO BE STAKED OUT AS SHOWN ON THE PLANS AND CLEARLY DEFINED WITH A HALF MOON EDGER OR SQUARE BOTTOM SPADE TO THE DEPTH SHOWN IN THE DETAIL TO KEEP MULCH WITHIN BED BORDERS.

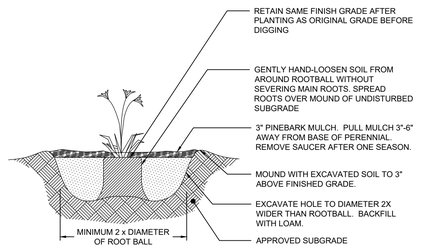
PLANTING BED EDGING
NOT TO SCALE



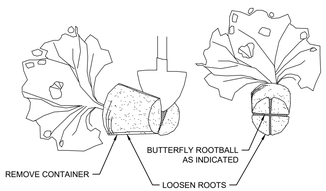
EVERGREEN TREE PLANTING
NOT TO SCALE



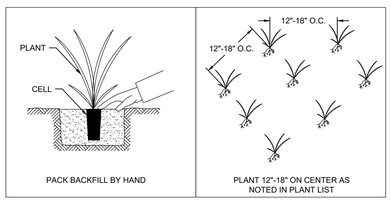
DECIDUOUS TREE PLANTING
NOT TO SCALE



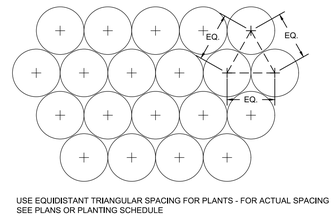
PERENNIAL CONTAINER PLANTING
NOT TO SCALE



CONTAINER PLANT ROOTBALL TREATMENT
NOT TO SCALE

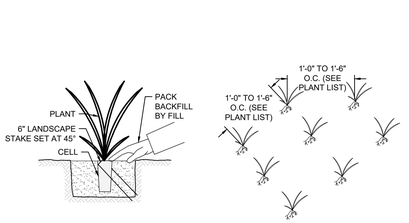


ZONE 2 PERENNIAL PLUG PLANTING
NOT TO SCALE

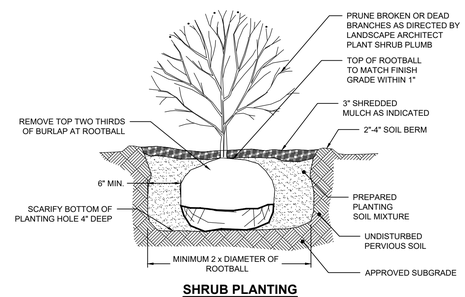


USE EQUIDISTANT TRIANGULAR SPACING FOR PLANTS - FOR ACTUAL SPACING SEE PLANS OR PLANTING SCHEDULE

PLANTING SPACING
NOT TO SCALE



ZONE 3 & 4 PERENNIAL PLUG PLANTING
NOT TO SCALE



SHRUB PLANTING
NOT TO SCALE

Revisions

Rev.	Date	By	Appr.	Description

Horsley Witten Group, Inc.
Sustainable Environmental Solutions
www.horsleywitten.com
90 Route 6A, Unit 1
Sandwich, MA 02563
Phone: (508) 833-6600
Fax: (508) 833-3150

Checked By: BRK
Drawn By: EEB/JMP
Designed By: EEB/JMP
Date: JUNE 2026

Plan Set: LILY POND PARK IMPROVEMENTS CONSTRUCTION DOCUMENTS NANTUCKET, MASSACHUSETTS

Plan Title: PLANTING DETAILS

Prepared For:
The Nantucket Land Bank
22 Broad Street
Nantucket, MA
Phone: (508) 228-7240
Fax: —

Survey Provided By:
Nantucket Surveyors LLC
5 Windy Way
Nantucket, MA
Phone: (508) 228-0240
Fax: —
Dated: 12/13/23

Registration:
COMMONWEALTH OF MASSACHUSETTS ROGER R. KUCHAR NO. 1626 REGISTERED LANDSCAPE ARCHITECT
6/15/26

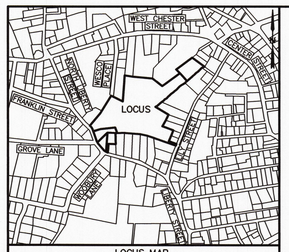
Project Number: 20008
Sheet : 24 of 24
Sheet Number: L - 7

Last Modified: 06/12/2026 at 8:40AM EDT
last modified: 06/12/26 printed: 06/12/26 by eb H:\Projects\2020\20008 Lily Pond Park Nantucket\Drawings\20008 LA DE.dwg

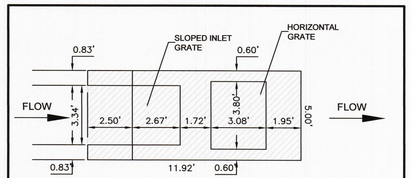
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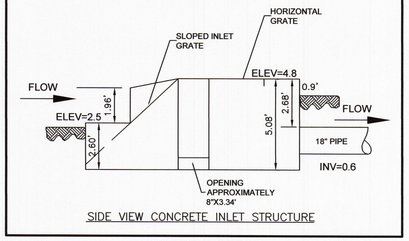
APPENDIX G –Existing Conditions Plot Plan "Lily Pond" #8 Wesco Place / #36 Lily Street in Nantucket, Massachusetts Prepared by Nantucket Surveyors LLC, December 13, 2023



LOCUS MAP
SCALE: 1"=600'±



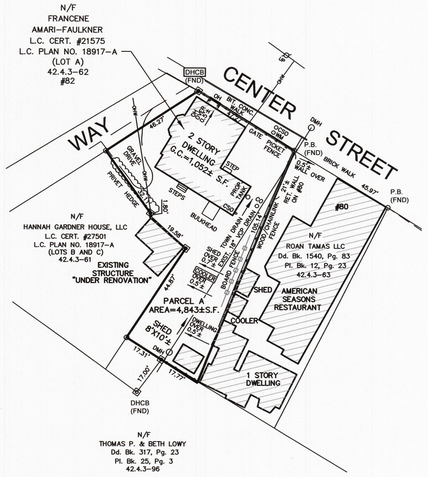
TOP VIEW CONCRETE INLET STRUCTURE



SIDE VIEW CONCRETE INLET STRUCTURE

STRUCTURE DETAIL

82 CENTER STREET DETAIL
1"=30'



NOTES:

1. TOPO IS FROM THE 2018 NANTUCKET TOWN GIS AND IS ON THE NAVD88 DATUM.

2. ALL WATER ELEVATIONS WERE TAKEN ON 3/25/19 AND 10/17/23 UNLESS OTHERWISE NOTED.

3. THE WETLAND DELINEATION SHOWN HEREON WAS CONDUCTED BY THE HORSLEY WITTEN GROUP, INC. ON 5/20/2022.

FOR PROPERTY LINE DETERMINATION THIS PLOT PLAN RELIES ON CURRENT DEEDS AND PLANS OF RECORD, VERIFIED BY FIELD MEASUREMENTS AS SHOWN HEREON. THIS PLAN IS NOT REPRESENTED TO BE A TITLE EXAMINATION OR A RECORDABLE SURVEY.
N.B.


WEST CHESTER STREET
CHESTER STREET
CENTER STREET
GULF ISLAND LANE
WAY
LILY STREET
NORTH LIBERTY STREET
GROVE LANE
WOODBURY LANE
WESCO PLACE
N/F
SIN DAC PROPERTIES NO. 2 LLC
Dd. Bk. 1052, Pg. 44
PLAN FILE NO. 31-A
42.4.3-53
N/F
32 WEST CHESTER STREET NOMINEE TRUST
Dd. Bk. 881, Pg. 238
PLAN FILE NO. 2018-18
(LOT B)
42.4.3-91.1
N/F
MAGGIE WESTCHESTER TRUST
Dd. Bk. 1462, Pg. 305
PLAN FILE NO. 2018-45
(LOT 1)
42.4.3-119.1
N/F
MELDRICH-NO-RUDDY QUALIFIED PERSONAL RESIDENCE TRUST
L.C. CERT. #7335
L.C. PLAN NO. 10451-B
(LOT 1)
42.4.3-59
N/F
HALLIGAN'S RUDDY HOMINEE TRUST
L.C. CERT. #7861
L.C. PLAN NO. 10451-A
(LOT 2)
42.4.3-58.1
N/F
THE MAGGIE WESTCHESTER II TRUST
Dd. Bk. 1653, Pg. 74
PLAN FILE NO. 2018-42
(LOT 1)
42.4.3-58
N/F
HANNAH GARDNER HOUSE, LLC
L.C. CERT. #27501
L.C. PLAN NO. 18917-A
(LOTS B & C)
42.4.3-61
N/F
NEGATTA-NH PARTNERS II, LLC
Dd. Bk. 1721, Pg. 184
Pl. Bk. 14, Pg. 13
42.4.3-63
N/F
NANTUCKET ISLANDS LAND BANK
Dd. Bk. 1802, Pg. 74
PLAN FILE NO. 2020-07
(LOT A)
42.4.3-92
N/F
ELIZABETH M. LENCYK & LINDSEY M. HOFFMAN
L.C. CERT. #23245
L.C. PLAN NO. 19220-B
(LOT B)
42.4.3-105
N/F
PAUL A. ZEMAN
Dd. Bk. 946, Pg. 73
PLAN FILE NO. 15-A
42.4.3-57
N/F
2 WESCO PLACE NOMINEE TRUST
Dd. Bk. 1653, Pg. 198
42.4.3-55
N/F
RICHARD A. & DANA L. CHESLEY
Dd. Bk. 991/Pg. 169
Pl. Bk. 5, Pg. 50
42.4.3-54
N/F
WESCO PROP CO. LLC
NO. 1 LLC
Dd. Bk. 1703, Pg. 202
PLAN FILE NO. 2018-16
(LOT C)
42.4.3-51.2
N/F
BLUEBERRY PROPERTIES LLC
Dd. Bk. 1657, Pg. 196
Pcl. A 3-56
N/F
RICHARD A. & DANA L. CHESLEY
Dd. Bk. 991/Pg. 169
Pl. Bk. 5, Pg. 50
42.4.3-54
N/F
THE LAMSON NOMINEE TRUST
Dd. Bk. 1670, Pg. 125
PLAN FILE NO. 17-A
42.4.3-49
N/F
KARLI HAGEDORN
Dd. Bk. 1750, Pg. 92
PLAN FILE NO. 15-J
41-39
N/F
JEFFREY KASCHULUK
Dd. Bk. 1848, Pg. 183
PLAN BOOK 79 PG 36 (LOT 1)
42.4.3-53
N/F
HANTUCKET ISLANDS LAND BANK
Dd. Bk. 242, Pg. 43
PLAN FILE NO. 31-I
42.4.3-47
N/F
NANTUCKET ISLANDS LAND BANK
Dd. Bk. 1320, Pg. 204
PLAN BOOK 13 PAGE 87
(LOT B) 42.3.4-1.87
N/F
NANTUCKET ISLANDS LAND BANK
Dd. Bk. 1320, Pg. 001
PLAN BOOK 32 PAGE 34
42.4.3-48
N/F
NANTUCKET ISLANDS LAND BANK
Dd. Bk. 1320, Pg. 240
42.3.4-2.1
N/F
BENJAMIN W. WEBER (AKA BENJAMIN WEBER)
Dd. Bk. 1676, Pg. 203
PLAN NO. 2017-36
(LOT 2)
42.3.4-2
#5
N/F
NORTH LIBERTY STREET LLC
Dd. Bk. 1676, Pg. 198
PLAN NO. 2017-36
(LOT 1)
42.3.4-1
#13
N/F
ROBERTA REKES
Dd. Bk. 1442/Pg. 93
PLAN NO. 13 PAGE 140
(LOT 2)
42.3.4-1.2
N/F
SCIB 2 SPAR-SHED
Dd. Bk. 1300, Pg. 23
PLAN BOOK 19 PAGE 142
(LOT 3)
42.3.4-3
N/F
SPAR SHED NOMINEE TRUST
Dd. Bk. 1179, Pg. 202
PLAN NO. 2012-142
(LOT 3)
42.3.4-5
N/F
VALERIE M. ROGERS FAMILY TRUST
Dd. Bk. 1448, Pg. 166
PLAN FILE 2001-5-59
(PARCEL 7)
42.3.4-7
N/F
LILY STREET, LLC
Dd. Bk. 1104, Pg. 34
PLAN NO. 05-18
42.3.4-8
N/F
MATTHEW A. OSBORN, TRUSTEE
Dd. Bk. 882, Pg. 346
42.3.4-45
N/F
JOHN H. & MARY ANN KASCHULUK
Dd. Bk. 275, Pg. 323
Pl. Bk. 21, Pg. 55
(LOT 1)
42.4.3-90.1
N/F
BARBARA C. JAMES, JOHN C. & ANNE E. MARCKS, TRUSTEES
Dd. Bk. 595, Pg. 47
Pl. Bk. 31, Pg. 28
(LOT 2)
42.4.3-90.2
N/F
16 LILY STREET LLC
Dd. Bk. 1344, Pg. 50
42.4.3-46
N/F
16 LILY STREET LLC
Dd. Bk. 1344, Pg. 46
42.4.3-45
N/F
MARCKS FAMILY REVOCABLE TRUST
42.4.3-44
N/F
35 LILY STREET LLC
L.C. CERT. #23563
L.C. PLAN NO. 10451-A
42.4.3-90
N/F
ANNE E. MARCKS
Dd. Bk. 440, Pg. 99
42.4.3-40
N/F
DOUGLAS LESLIE BENNETT
Dd. Bk. 1626, Pg. 250
42.4.3-91
N/F
HANTUCKET ISLANDS LAND BANK
Dd. Bk. 242, Pg. 43
PLAN FILE NO. 31-I
42.4.3-47
N/F
JOHN H. & MARY ANN KASCHULUK
Dd. Bk. 275, Pg. 323
Pl. Bk. 21, Pg. 55
(LOT 1)
42.4.3-90.1
N/F
BARBARA C. JAMES, JOHN C. & ANNE E. MARCKS, TRUSTEES
Dd. Bk. 595, Pg. 47
Pl. Bk. 31, Pg. 28
(LOT 2)
42.4.3-90.2
N/F
16 LILY STREET LLC
Dd. Bk. 1344, Pg. 50
42.4.3-46
N/F
16 LILY STREET LLC
Dd. Bk. 1344, Pg. 46
42.4.3-45
N/F
MARCKS FAMILY REVOCABLE TRUST
42.4.3-44
N/F
35 LILY STREET LLC
L.C. CERT. #23563
L.C. PLAN NO. 10451-A
42.4.3-90
N/F
ANNE E. MARCKS
Dd. Bk. 440, Pg. 99
42.4.3-40
N/F
DOUGLAS LESLIE BENNETT
Dd. Bk. 1626, Pg. 250
42.4.3-91
N/F
N

Last Modified: 05/12/2026 at 8:46AM EDT

NORTH LIBERTY STREET

GROVE LANE

WOODBURY LANE

LILY STREET

BROCK'S COURT

BENCHMARK:
MAG NAIL IN BOARD
ELEV = 4.38 NAVD88

MAG ELEV.=4.38
WATER ELEV. 3.8 (3/25/19)
WATER ELEV.=4.2 (6/6/19
WATER ELEV. 4.1 (10/17/23)

N/F
JEFFREY KASCHULUK
Dd. Bk. 1649 Pg. 183
PLAN BOOK/19 PG 36 (LOT 1)
41-453

N/F
NANTUCKET ISLANDS
LAND BANK
42.4.3-45

N/F
NANTUCKET ISLANDS
LAND BANK
Dd. Bk. 242, Pg. 43
PLAN FILE NO. 31-1
42.4.3-47

N/F
JOHN H. &
MARY ANN KAISER
Dd. Bk. 275, Pg. 323
PL. Bk. 21, Pg. 26
(LOT 1)
42.4.3-90.1

N/F
BARBARA C., JAMES L.,
JOHN C., & ANNE R.
WARECK, TRUSTEES
Dd. Bk. 665, Pg. 47
PL. Bk. 21, Pg. 26
(LOT 2)
42.4.3-90.2

N/F
16 LILY STREET LLC
Dd. Bk. 1344, Pg. 50
42.4.3-46

N/F
14 LILY STREET LLC
Dd. Bk. 1344, Pg. 48
42.4.3-45

N/F
KAREN, GEORGE,
KEVIN DOTY & KAREN LYNN
DOTY CLEMENS
Dd. Bk. 944, Pg. 143
42.4.3-44

N/F
VALERIE M. ROGERS
FAMILY TRUST
Dd. Bk. 1448, Pg. 169
PLAN FILE #2013-55
(PARCEL 7)
42.3.4-7

N/F
LILY STREET, LLC
Dd. Bk. 1104, Pg. 34
PLAN NO. 101-18
42.3.4-8

N/F
WHITNEY A. GIFFORD, TRUSTEE
Dd. Bk. 682, Pg. 344
42.3.4-45

42.3.4-44

N/F
BENJAMIN R. WEBER &
ANA FRANCES WEBER
Dd. Bk. 1475, Pg. 265
PLAN NO. 2012-36
(LOT 2)
42.3.4-2
#15

N/F
NORTH LIBERTY
STREET LLC
Dd. Bk. 1599, Pg. 186
PLAN NO. 2017-75
42.3.4-3
#13

N/F
ROBERTA REYES
Dd. Bk. 242, Pg. 6
PLAN NO. 18 PAGE 142
(LOT 1)
42.3.4-41
#11

N/F
SETH D. STIER &
JENNIFER L. STIER
Dd. Bk. 1360, Pg. 23
PLAN NO. 18 PAGE 142
(LOT 2)
42.3.4-5
#9

N/F
SPAR SHED
NOMINEE TRUST
Dd. Bk. 1179, Pg. 202
Pl. Bk. 18, Pg. 142
(LOT 3)
42.3.4-6

N/F
NANTUCKET ISLANDS
LAND BANK
42.3.4-1

N/F
NANTUCKET ISLANDS
LAND BANK
42.3.4-2.1

APPROX. EDGE OF BRUSH

BORDERING VEGETATED WETLAND

BROKEN CLAY DRAINAGE PIPE

BOARDWALK

LAND BANK WATER LEVEL STAKE "B" TOP STAKE=6.48
WATER ELEV. 4.1 (10/17/23)
HWM ELEV. 4.3

EDGE OF LAWN

EDGE OF BRUSH

MEADOW

DRAINAGE PIPE

OUTLET INV=5.25

OUTLET INV=5.73

WATER ELEV=5.36

12" CLAY INV.=6.02

BVW 1 through BVW 57

TP #1

TP #2

TP #3

TP #4

CB RIM ELEV.=12.82 INV.=10.65

CB RIM ELEV.=4.05

FES ELEV.=1.66

18" RCP

DMH RIM ELEV.=4.04 INACCESSIBLE

SMH RIM ELEV.=13.25 INV.=8.97

DMH RIM ELEV.=13.08 INV.(IN)(E)=10.45 INV.(IN)(NW)=10.57 INV.(OUT)=9.38

CB RIM ELEV.=12.80 (6" CLAY) INV.=10.02

BENCHMARK: UP 35-10 BENCHTIE ELEV. 14.35

CB RIM ELEV.=16.09 INV.=14.83

CB (PAVED OVER)

SMH RIM=13.28 INV.=9.28

CB RIM ELEV.=16.63 INV.(IN)(N)=14.01 INV.(IN)(W)=14.73 INV.(IN)(S)=13.80 INV.(OUT)=12.71

CB RIM ELEV.=13.89 INV.=11.11

CB RIM ELEV.=13.26 INV.(IN)=10.70 INV.(IN)(WY)=10.26 INV.(OUT)=10.22

CB RIM ELEV.=11.62 INV.=8.42

DMH RIM=13.81 (12")INV.(IN)=8.26(L.B.) (18")INV.(IN)=8.11 2-(12")INV.(IN)=8.61 INV.(OUT)=7.01

CB RIM ELEV.=12.48 INV.=8.73

DMH RIM ELEV.=11.43 (12")INV.(IN)=8.43 (18")INV.(IN)=6.02 (18")INV.(OUT)=4.67 SUMP ELEV.=4.13

CB RIM ELEV.=16.70 INV.=14.04

CB RIM (LEACHING) ELEV.=16.76 INV.(IN)=14.04 INV. (OUT)=14.04

DMH RIM ELEV.=16.86 INV.(IN)=15.28 INV.(OUT)=15.14

CB RIM ELEV.=17.32 INV.(IN)(E)=15.80 INV.(IN)(S)=15.67 INV.(OUT)=15.57

CB RIM ELEV.=17.42 INV.(IN)=15.95 INV.(OUT)=15.69

CB RIM ELEV.=17.33

CB RIM=15.35 INV (IN)(S)=12.90 INV (IN)(SE)=12.90 INV (OUT)=11.16 INV (OUT)(NEW)=12.96

SMH RIM=13.80

SMH RIM=13.12 INV=9.82

CB RIM ELEV.=14.27 INV.=11.52

CB RIM ELEV.=14.17 INV.(IN)=11.42 INV.(OUT)=11.32

UP 35-10

UP 35-9

UP 52-9 W/ UG CONDUIT

WATER METER

WATER METER D/EHH

PROP. VENT

BRICK APRON

ASPHALT APRON

SPEED BUMP

BRICK

WOOD FENCE

LAND BANK SIGN

STREET SIGN

PRIVATE WAY NO PARKING SIGN

16' TOP LIGHT POLE

FIRE HYD.

HC SIGN

FLUSH CURB

SPLIT RAIL FENCE

GRANITE CURB

BRICK WALK

GRAVEL PARKING AREA

BRICK PARKING AREA

TIMBER RET. WALL

8" PVC SLEEVE

10" HDPE SLEEVE

12" HDPE (NEW)

STUB

APPROX. LOC. OF DRAIN PIPE & 8" HDPE SLEEVE

EXIST. CULVERT

18" CONC

18" CLAY

12" PVC

8" PVC

6" PVC

2" CAST

6" CAST

12" D.I.

3-WG'S

2-WG'S

8" & 10" TREES

21" TREE

13" TREE

16" TREE

"GOLDBERG" MEMORIAL BENCH

SHRUB

CO

WG

W

VGC

ASPHALT APRON

CSO

SCALE: 1"=30'

COMMONWEALTH OF MASSACHUSETTS
PAUL J. SANTOS
No. 36124
REGISTERED PROFESSIONAL ENGINEER
12/13/23

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APPENDIX H – Previous Invasive Treatment Plans

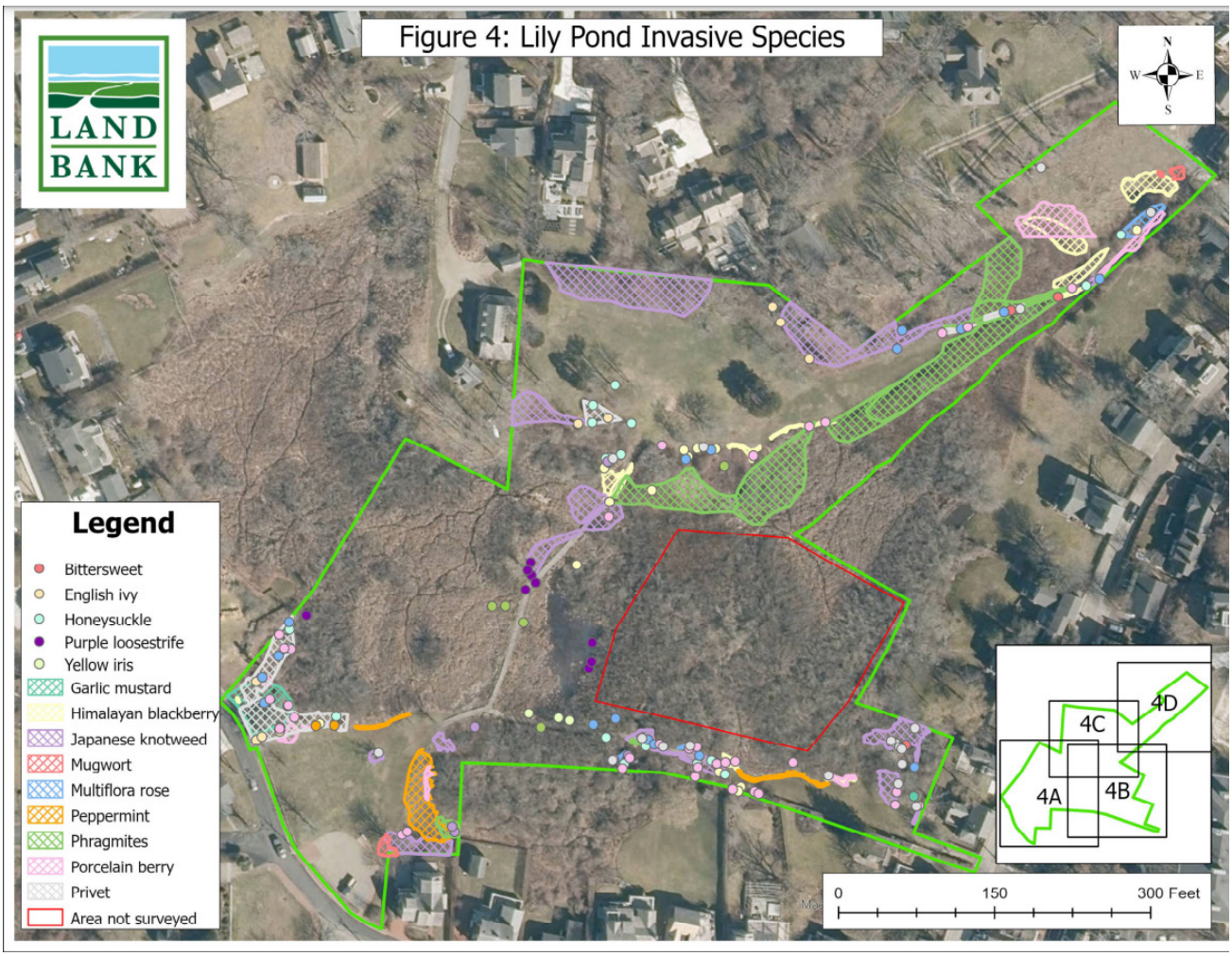
PARTERRE ECOLOGICAL

December 18, 2024

END OF YEAR REPORT FOR LILY POND PARK

Background: The Nantucket Land Bank contacted with SumCo Eco Contracting and Parterre Ecological in the summer of 2024 to begin invasive species management at Lily Pond Park in Nantucket, MA. Lily Pond Park is a 6.4 acre park located just west of downtown. The park consists of mostly wetlands which capture stormwater runoff from 90 acres of the surrounding residential neighborhoods. The invasive species management detailed in this report is the first phase of a larger wetland restoration project at the park. The goals of this wetland restoration are to repair clogged drainage infrastructure, better manage stormwater, and improve the ecological services and recreational value of the park. Prior to management, 14 different invasive plant species were mapped within the park. The total square footage of invasive plants was approximately 46,000sf, with the most abundant invasive species being Japanese knotweed (Reynoutria japonica) and common reed (Phragmites australis) covering 14,600sf and 14,750sf, respectively.

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Map of Invasive Species Presence at Lily Pond Park Prior to Management

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PICTURES OF LILY POND PARK PRIOR TO INVASIVE SPECIES MANAGEMENT- AUGUST 2024



Himalayan blackberry with common reed in the background in the northeast corner of the park



Border privet and forsythia in the northwest section of the park



A large stand of knotweed on the left and common reed on the right



Porcelainberry growing over border privet



A stand of knotweed along the boardwalk



Porcelain berry growing over fruiting Himalayan blackberry

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INVASIVE SPECIES MANAGEMENT- SEPTEMBER 2024

In September of 2024, invasive species management began at Lily Pond Park. Border privet (Ligustrum spp) and shrub honeysuckle (Lonicera morrowii) were cut and treated with RoundUp Custom, a glyphosate-based herbicide. Non-native forsythia was cut and removed from areas in which it was growing among the honeysuckle and privet, but was not treated and is expected to stump sprout. Asiatic bittersweet (Celastrus orbiculatus), purple loosestrife (Lythrum salicaria), garlic mustard (Alliaria petiolate), Himalayan blackberry (Rubus armeniacus), Japanese knotweed (Reynoutria japonica), vine honeysuckle (Lonicera japonica), mugwort (Artemisia vulgaris), multiflora rose (Rosa multiflora), peppermint (Mentha x piperita), and porcelain berry (Ampelopsis glandulosa) were sprayed with a 2-5% glyphosate solution, depending on the species. Climbing English ivy (Hedera helix), Asiatic bittersweet, and porcelain berry were cut as high as possible, treated with glyphosate via a cut and dab technique, and left to decompose.

Common reed (Phragmites australis) was cut to a height safe for treatment and treated with glyphosate. Treatment of yellow iris (Iris psuedacorous) was delayed until the spring when it is flowering, to ensure the yellow iris is treated while the native blue iris (Iris versicolor) is preserved.

HERBICIDE LOG- SEPTEMBER 2024

Date of Application	Brand Name of Herbicide	Amount Used	Use Notes (concentration, etc)
9/10/2024	RoundUp Custom	151.45 oz	5%, 2%
9/11/2024	RoundUp Custom	146.2 oz	4%, 5%
9/12/2024	RoundUp Custom	85.74 oz	4%, 5%
9/13/2024	RoundUp Custom	81.9 oz	5%
9/16/2024	RoundUp Custom	106.5 oz	4%, 5%
9/17/2024	RoundUp Custom	65.22 oz	4%, 5%
9/18/2024	RoundUp Custom	96 oz	2%, 4%, 5%

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INVASIVE SPECIES REMOVAL SEPTEMBER 2024- DURING AND AFTER PHOTOS



Willows remain after invasive species were removed



Japanese knotweed yellowing due to herbicide treatment

INVASIVE SPECIES REMOVAL SEPTEMBER 2024- DURING AND AFTER PHOTOS CONTINUED



After removal of border privet and shrub honeysuckle



Willow and native eastern baccharis were left in the restoration area



After cutting border privet and forsythia



Common reed after being cut and treated



Knotweed along boardwalk showing signs of herbicide treatment



Area of concentrated peppermint after herbicide treatment

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INVASIVE SPECIES MANAGEMENT- NOVEMBER 2024

In November of 2024, invasive species that had been sprayed with herbicide in September, most notably Himalayan blackberry (Rubus armeniacus) and common reed (phragmites australis), were mowed to the ground. All debris was removed from the site. No herbicide application occurred during this visit.

MOWING NOVEMBER 2024 - AFTER PHOTOS



Mowed mugwort and Himalayan blackberry



Mowed Himalayan blackberry



Mowed Himalayan blackberry



Mowed Himalayan blackberry

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INVASIVE PLANT SPECIES REMAINING

The following chart presents an approximation of the square footage of invasive plant species remaining by species in Lily Pond Park after the 2024 treatments. Calculations were based on the following assumptions: Of species that were managed using cut and dab, 90% control can be expected. There will be a small amount of resprout during the next growing season. For species that were treated using a combination of cut and dab and spray herbicide, or just sprayed herbicide, 70% control can be expected. Spraying usually requires some follow-up for maximum impact, which will occur during the growing season of 2025. Common reed was sprayed as well, but control has been approximated at 50%, due to the fact that it was very mature at the time of treatment. To maximize effectiveness, it should be cut short early in the season. Yellow iris was not treated this year. It will be treated during flower in 2025 so there is no chance of removing native iris.

Based on these calculations, of the 46,415 square feet of invasive species at the start of the management program in 2024, there are likely around 16,700 square feet remaining. This means that on average, 36% of the invasives are remaining. This percentage will continue to drop after the invasive species management planned for the 2025 season.

INVASIVE SHRUBS

BOTANICAL NAME	COMMON NAME	INITIAL COVER IN SF	APPROX % CONTROLLED	REMAINING COVER IN SF
Ligustrum spp	Border privet	4,500	90	450
Rubus armeniacus	Himalayan blackberry	3,300	70	990
Lonicera morrowii	Shrub Honeysuckle	55	90	5.5
Rosa multiflora	Multiflora Rose	800	70	240

INVASIVE HERBACEOUS PLANTS

BOTANICAL NAME	COMMON NAME	INITIAL COVER IN SF	APPROX % CONTROLLED	REMAINING COVER IN SF
Artemisia vulgaris	Mugwort	360	70	108
Phragmites australis	Common reed	14,750	50	7375
Lythrum salicaria	Purple loosestrife	750	70	225
Alliaria petiolate	Garlic mustard	2,000	70	600
Mentha x piperita	Peppermint	2,300	70	1610
Iris psuedacorous	Yellow iris	20	0	20
Reynoutria japonica	Japanese knotweed	14,600	70	4380

INVASIVE VINES

BOTANICAL NAME	COMMON NAME	INITIAL COVER IN SF	APPROX % CONTROLLED	REMAINING COVER IN SF
Hedera helix	English ivy	45	90	4.5
Celastrus orbiculatus	Asiatic bittersweet	20	90	2
Lonicera japonica	Vine honeysuckle	15	70	4.5
Ampelopsis glandulosa	Porcelain berry	2,900	70	870

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RECOMMENDED MANAGEMENT 2025

Common Name	Latin Name	Recommended Management and Month of Treatment
Ligustrum spp	Border privet	Cut and dab herbicide on resprouting stumps, September
Rubus armeniacus	Himalayan blackberry	Cut and dab herbicide on resprouting growth when possible. Spray herbicide solution on plant leaves when cut and dab is not possible, September. Mow in November.
Lonicera morrowii	Shrub Honeysuckle	Cut and dab herbicide on resprouting stumps, September
Rosa multiflora	Multiflora Rose	Cut and dab herbicide on resprouting growth when possible. Spray herbicide solution on plant leaves when cut and dab is not possible, September.
Artemisia vulgaris	Mugwort	Spray with herbicide, September.
Phragmites australis	Common reed	Mow in June/July. Herbicide spray or cut and drip stems in September.
Lythrum salicaria	Purple loosestrife	Hand pull or spray with herbicide, September.
Alliaria petiolate	Garlic mustard	Hand pull or spray with herbicide, September.
Mentha x piperita	Peppermint	Spray with herbicide, September.
Iris psuedacorous	Yellow iris	Dig out plants if feasible. If not feasible, wipe with herbicide solution. June/ July
Reynoutria japonica	Japanese knotweed	Mow in June/July. Herbicide spray or cut and drip stems in September.
Hedera helix	English ivy	Cut and dab herbicide on resprouting growth, September
Celastrus orbiculatus	Asiatic bittersweet	Cut and dab herbicide on resprouting growth, September
Lonicera japonica	Vine honeysuckle	Cut and dab herbicide on resprouting growth when possible. Spray herbicide solution on plant leaves when cut and dab is not possible, September
Ampelopsis glandulosa	Porcelain berry	Cut and dab herbicide on resprouting growth when possible. Spray herbicide solution on plant leaves when cut and dab is not possible, September

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Please Note: **We strongly recommend adding a cut of Phragmites australis in June or July of 2025 to the work scope**. This would increase the effectiveness of the herbicide treatment in September dramatically by forcing the plants to produce new, tender growth from the plant's base. This new, shorter growth will be an appropriate height for safe herbicide spray application.

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