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CITY HALL PONDS MAINTENANCE DREDGING PROJECT

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**SECTION 01010
SUMMARY OF WORK**

PART 1 - GENERAL

1.01 INTENT OF THE WORK

- A. The Work of this Contract includes the dredging and offsite management /disposal of accumulated sediments from within City Hall Ponds, a three-lobed impoundment on the grounds of Newton City Hall, as well as clearing sediment from within the two inlet culverts to the pond. The work will also include footbridge repairs, site improvements and restoration. The Contractor is referred to the Contract Drawings, which, along with the Project Manual, define the required work.

1.02 LOCATION OF THE WORK

- A. The existing City Hall Ponds is a three-lobed impoundment located in the City of Newton, in Middlesex County, Massachusetts. The pond may be accessed from lawn areas off of City Hall Drive, as shown in the Contract Drawings. The Contractor's is directed to reference the requirements for accessing the pond, and specifically limitations on access routes/locations, as described in other Sections and on the Contract Drawings.
- B. The Contract Drawings specifically delineate the project area, including staging and lay-down areas for the Contractor, as well as areas not to be disturbed. The Contractor shall strictly comply with these boundaries. Proper environmental and housekeeping procedures by the Contractor are of highest priority, as required by the environmental permits. The site is listed on the National Register of Historic Places and as such, all work must be performed in a manner which protects the historical resources present.

1.03 GENERAL SCOPE OF THE WORK

- A. The proposed project is a maintenance dredging project designed to remove the accumulated sediment present in City Hall Ponds and upstream culverts, to repair footbridge abutments, and to restore park areas. The dredged sediment will be removed from the site by the Contractor for offsite management/disposal.
- B. During the periods of active construction, general access by the public of the site shall be controlled by the Contractor. The Contractor shall be responsible for installing and maintaining access control signage, fencing, and barriers. The Contractor shall protect structures and other property outside the limits of work; and shall restore the condition of all land and features disturbed by the work to preconstruction condition or better. The Contractor shall be restricted to areas noted on the Drawings. City Hall and its grounds will remain open during the construction period and access to City Hall via City Hall Drive must be maintained at all times, except as specifically authorized in advance by the City.

- C. The normal water level surface of City Hall Ponds will be temporarily lowered by the Contractor to facilitate the dredging process. The Contractor shall make it their duty to understand the flooding potential, both through information provided herein and any other research, analysis, and/or monitoring they feel is prudent to undertake. Water control for the purpose of construction shall be accomplished through the installation of pumps and small cofferdams or water barriers to isolate the active work areas and provide for diversion of incoming water. The Contractor shall provide water control measures as they may judge prudent provided such measures are in compliance with all applicable permits and approvals. Measures for the control of water shall ensure that surrounding roadways do not flood as a result of the Contractor's action or inaction, and that the capacity of culverts and influent/effluent watercourses/pipes/culverts are not exceeded due to pumping and diversion efforts.
- D. The Work of the Project will occur in environmentally sensitive areas within and adjacent to the pond. The pond and other associated wetland resource areas are protected by local, state, and federal environmental regulations. The Contractor shall at all times employ Best Management Practices to control sediment transport and erosion at the site and prevent potential contamination of soil or water resources. Sediment and erosion control measures shall be deployed during all phases of construction and both temporary and permanent site stabilization measures shall be used. The sediment and erosion control measures described on the Drawings and in the specifications shall be considered the minimum acceptable and shall be supplemented by the Contractor as necessary to meet the intent of the specifications and the conditions of project permits, including the EPA Construction General Permit.
- E. The Contract Drawings identify a possible staging and lay-down area for the Contractor, as well as areas not to be disturbed. The intent is that sediment shall be dewatered in place within the impoundment as identified in the Drawings and Specifications. The Contractor shall strictly comply with these boundaries. The Work required by the Contract Drawings and Specifications shall include furnishing all labor, skill, supervision, tools, construction plant, equipment and materials and performing all operations necessary for the proper completion of the contract work as shown on the Drawings and Specifications, and as required by the City. Following the Notice to Proceed, the Contractor shall submit a schedule showing when various work items are to be performed.
- F. The general project scope below summarizes many, but not all, expected work items under this contract and is not intended to be a complete listing. The following sequence is not mandatory and may be altered by the Contractor with approval from the City. The work shall generally consist of, but not be limited to, the following:
1. Develop project schedule, apply for all necessary permits, preparation of submittals prior to start of work at site. Provide documentation prior to work of planned sediment management/disposal site information in accordance with all applicable permits. No dredging or dewatering may commence until the Contractor has identified and has

confirmation for the offsite management/disposal site for the sediments in accordance with all applicable permits, and local, state and federal regulations governing the excavation, management, transport and offsite disposal of such materials. Contractor is responsible for additional sampling/testing/reporting and any licensed site professional (LSP) services needed to confirm the offsite sediment management/disposal site at no additional cost to the City.

2. Comply with all project permits throughout the duration of the work.
3. Document existing conditions as part of a preconstruction survey.
4. Mobilize all necessary equipment, personnel, tools, labor, and material necessary for performance of the work to the site. Provide all temporary facilities and controls necessary for personnel and equipment to execute the Work in a safe, lawful, and efficient manner and necessary to protect existing facilities, utilities, and designated resources.
5. Install and maintain temporary erosion and sediment controls as per the Contract Drawings and Specifications, project permits, and federal, state, and local regulations for the protection of natural resources, at the site beyond the limits of disturbance. Obtain necessary approvals from City and regulatory agencies. Erosion and sedimentation controls, including downstream turbidity curtain must be in place before earth disturbance or control of water activities commence.
6. Furnish, install and maintain traffic and pedestrian controls for the duration of work, including barriers, gates, fencing, signage, and public notifications. Clearly mark trees within the work limit to be affected and/or protected as part of the Work of the Contract and then obtain confirmation from the City. Design, make submittals and construct temporary cofferdams and water barriers and provide and maintain temporary water controls as necessary to conduct the Work of the Project but maintain discharge flows to the outlet. Overall water control shall be consistent with project permits and to allow the Work to be executed without interference from surface water and/or groundwater.
7. Following marking and review in field with the City, Engineer, and Conservation Commission and approval from City, clear and legally dispose of vegetation to be removed as part of the project and/or transplant as required. Strip groundcover and topsoil from areas indicated and stockpile topsoil. Transplant applicable plants.
8. Conduct site preparation and demolition work at the Project site.
9. Institute and maintain control of water, dewatering, and diversion practices to prepare for dredging.
10. Excavate and dewater accumulated sediments within the pond and two culverts to the limits shown on the Contract Drawings, or as otherwise directed by the Owner's Representative. Protect clay liner within ponds at all times during the Work of the

Contract. Remove and dispose of debris from within the dewatered pond basin at an offsite location in accordance with applicable rules and regulations.

11. Transport and provide offsite management/disposal of excavated sediments in accordance with the Contract Drawings, Specifications, and project permits.
 12. Clean and repair abutments on footbridges.
 13. Remove temporary cofferdams and water diversions/pumping and refill City Hall Ponds in accordance with all permits and approvals, after approval by City, Engineer, and Conservation Commission, as well as other applicable agencies/parties.
 14. Furnish and install permanent surfacing including crushed stone walking paths and edging.
 15. Remove all remaining temporary facilities and make final restorations to site.
 16. Repair or replace all existing utilities, irrigation systems, walls, roadways, walkways, fences, services, and any other structures or improvements of whatever nature, which are disturbed by the Contractor, whether shown on the Drawings or not, to pre-construction condition or better, at no additional cost to the City.
 17. Notify City, Engineer, and Conservation Commission of Final Stabilization. Schedule and conduct site walk to inspect site. Modify stabilization and restoration measures as required.
 18. Remove temporary sediment and erosion controls after final stabilization of disturbed areas and with concurrence from City and permitting agencies.
 19. De-mobilize permanently from site.
- G. The Contractor shall provide all materials, fuels, labor, and other items necessary for the protection of the Work from cold weather as necessary. This shall include, but not be limited to, snow plowing of the staging areas and accessways and snow removal from the site as needed for the work and protection of traffic and access by the City, control of ice, blankets, shelters, and heaters to provide for proper curing of cement-based materials, provision of heated water for grout and mortar mixing, and other such actions. The Contractor's specific responsibility for snow removal shall include, at minimum, all areas within the limits of work and on all roadways necessary for the Contractor and City to gain access to the site. No snow shall be dumped into water ways and all snow stockpile areas shall be approved by the City.
- H. The Contractor shall also provide all materials, fuels, labor, and other items necessary for the protection of the Work from hot or cold weather, precipitation, surface water flow, groundwater, or other potentially adverse conditions which might cause harm to completed work or work underway. The Contractor shall, at no additional cost to the City, be prepared to remove personnel, equipment, and materials from areas of potential

inundation in the event of excessive flows and be prepared to restore any damage and resume work at the site.

- I. The Massachusetts Highway Department (MHD) Standard Specifications for Highway and Bridges are referenced for materials and/or procedures only. Payments will be as specified under “Basis of Payment” of the appropriate items unless stated elsewhere in the Contract Drawings and Specifications.

1.04 SPECIAL PROVISIONS OF THE WORK

- A. The Contractor is hereby notified that the Work of this Contract involves construction within City Hall Ponds and associated footbridges. As such, a number of special provisions will be necessary for the successful completion of the Work. Such provisions shall include, but not be limited to, the following:

1. Water Control

During the Work, the Contractor shall implement, maintain, and remove water control measures for the Project. The Contractor shall provide water control provisions (cofferdams, pumping, drawdown, sequencing, etc.) which account for the potential for variable conditions in the pond, including the potential for rapid increase in flows due to hydrologic events. Some portions of the Work, such as the installation of cofferdams, may be performed “in the wet.” The Contractor’s water control plan shall be designed and implemented to allow the remaining portions of the Work to be performed in the dry. It is the Contractor’s sole responsibility for the control of water in and around the work area.

Inflow to the pond is an uncontrolled result of stormwater runoff, rainfall, and baseflow in the influent streams. The Contractor shall therefore expect a wide range of continuous flow of water to and through the pond and downstream. The Contractor is advised that the water surface levels of the pond and flows in and out can vary significantly and high flows may be caused by precipitation in the upstream watershed.

Water control is of paramount importance for the successful execution of the Work. This shall include, but not be limited to, construction of temporary cofferdams and water barriers, control of surface water, control of seepage and groundwater, maintenance of minimum outflows, etc. The Contractor shall have a contingency plan in place to deal with potential flood events.

2. Sediment and Erosion Control

Sediment and erosion control measures shall be deployed during construction as required by environmental permits.

The Contractor shall perform all work required to provide, install, maintain and remove siltation and sediment control measures necessary to protect downgradient areas from siltation, sedimentation, or siltation damage or damage from other by-products of the

Work.

Sedimentation and siltation control measures shall include, perimeter controls, inlet controls, turbidity curtains, and other items as necessary. Other measures not specifically called for on the Drawings may be required to address conditions encountered during construction. The Work shall include all work necessary to continually clean and maintain and promptly repair/replace all sedimentation and siltation measures as needed to sustain their intended function and operability.

3. Site Access Control

City Hall and the surrounding grounds are located in an area used by a number of parties, including the general public. The Work of the Contract shall include all necessary measures to exclude public traffic access (vehicles, bicyclists, pedestrians and recreational park users) from the work area. This shall include the provision of appropriate fencing, gates, barriers, signage, flagmen, and detours, as needed. Public traffic shall also be protected from construction traffic in areas when construction vehicles are entering or exiting the Site. The Contractor shall provide all necessary detour signage and traffic controls during the period of construction. Contractor shall schedule their work as to limit the potential impacts to City streets and traffic. Contractor shall be responsible for coordination and payment of fees associated with obtaining police details as may be required for traffic control required during the performance of their work.

4. Scheduling and Sequencing

The Work schedule shall be strictly adhered to by the Contractor. The final completion date shall be met. Time is of the essence and liquidated damages shall apply. The general anticipated sequence of the Work is presented herein. The Contractor may develop his or her own suggested sequence to be submitted to the City for approval. However, any proposed sequence must account for water control issues. Work shall start at the stated date in the Notice to Proceed and the Contractor shall complete all work herein (including all restoration and acceptance of vegetation and turf) within 270 days of the date stated in the Notice to Proceed.

5. Seasonal Conditions

Due to the intended timing of the Work, the Contractor shall be aware that all work needed for temporary vegetative and non-vegetative stabilization for work completed outside of the growing season, for heating and enclosure of concrete and mortar related work, for temporary cold patching with full restoration of bituminous once facilities reopen in spring, and other is considered incidental to this Work and should be included in all pricing for Bid Items. No additional payment or extension of timing of the Contract will be made for temporary work required due to seasonal conditions.

1.05 COORDINATION OF THE WORK

- A. The work performed under this contract shall be coordinated with necessary parties as required by local, state, and federal law and in accordance with these specifications.

1.06 CONTRACT DRAWINGS

- A. The location and general character of the work are shown on the Contract Drawings.
- B. The work shall be constructed in accordance with said Drawings and such further working and detail drawings as may be furnished from time to time by the City. Details shown on said Drawings are indicative of the types of structures required and are subject to revision, alteration, modification, and variation. Such revisions, alterations, modifications, or variations in said Drawings are as desirable in the opinion of the City, on account of conditions encountered or for other reasons, shall not be considered a variation of terms of this contract and the assent of the surety on the bond accompanying this contract to such revisions, alterations, modifications, or variations shall not be required.

All said Drawings, general and detail, and the specifications shall be considered together, so that any work shown on the Drawings, though not mentioned in this contract and any work mentioned in the contract, though not shown on the Drawings, shall be executed by the Contractor as part of the performance of this contract. Figured dimensions shall prevail over scaled. All things which in the opinion of the City may fairly be inferred from the Drawings shall be executed by the Contractor as part of the contract, and the City shall be the sole judge as to whether the detail Drawings conform to the general Drawings.

Drawings, calculations, estimates of quantities, and any statements made in the Information for Bidders or otherwise as to the conditions under which the work shall be performed, are not guaranteed by the City to be correct or to be a complete representation of all existing data on the conditions affecting the work, and the Contractor agrees that he has made his own examination and will make no claim for damages on account of any errors, inaccuracies, or omissions that may be found. The Contractor shall not take any advantage or have any claim for damages on account of any discrepancy, error or omission in any Drawings, calculations, estimates of quantities, or any statements made in the Information for Bidders or otherwise as to the conditions under which the work is to be performed, and he shall report such discrepancy, error, or omission to the City in writing as soon as it comes to his knowledge, and before proceeding with work relating to such discrepancy, error, or omission.

Any correction or modification of the Drawings or specifications may be made by the City when necessary for the proper fulfillment of their purpose or for their proper interpretation. When there is a conflict between the Drawings and the specifications, the City shall be the sole judge of which provision shall be controlling.

1.07 DEFINITIONS OF PARTIES REFERENCED IN SPECIFICATIONS

- A. In all cases within the Contract Documents, references to “Owner”, “City”, “Newton”, the “City of Newton”, shall mean the legal entity contracted for, the City of Newton, Massachusetts.
- B. References to the “Contractor” within the Contract Documents and Technical Specifications shall mean the entity legally contracted by the City to perform and complete the work of this Contract.
- C. References to the “Engineer” or “Owner’s Representative” or “Project Manager” within the Contract Documents and Technical Specifications shall mean the City employees or designated consulting engineer assigned to observe the work of the Contractor at the project site.
- D. References to the “Engineering Design Consultant”, the “Designer” or the “Consultant” within the Contract Documents and Technical Specifications shall mean the engineering firm contracted by the City to design the project and provide design services during construction. The Engineering Design Consultant is GZA GeoEnvironmental, Inc. of Springfield, MA.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

- A. No measurement shall be made of any work performed under this section. No separate payment shall be made for any work performed under this section. The cost of any work done or facilities provided under this section shall be included under other bid items within the Contract.

*** * * END OF SECTION * * ***

**SECTION 01041
MAINTENANCE AND PROTECTION OF TRAFFIC**

PART I-GENERAL

1.01 RELATED DOCUMENTS

- A. The drawings and general provisions of Contracts, including general and supplementary conditions and other Division 1 Specifications apply to this Section.
- B. All work under this section shall conform to the Manual On Uniform Traffic Control Devices For Streets And Highways, 2009 Edition (MUTCD), MassDOT Standards, and City of Newton applicable DPW Standards.

1.02 MAINTENANCE AND PROTECTION OF TRAFFIC

- A. City Hall Ponds are within a popular, active public park setting with well utilized pedestrian pathways and park amenities. The Contractor is to prohibit all pedestrian access into park areas but maintain streetside perimeter sidewalks by enclosing the site with safety fencing. Access walks into the park shall be signed as “Park Closed” at each entry. Vehicle access points to the construction site are to be barricaded and signed when not in use and/or the Contractor is not onsite. The Contractor shall be permitted to blockade and use the northern portion of City Hall Drive for access and staging and must barricade this area from public use including “Road Closed” signage, safety fence, and lighted traffic barricades as well as electronic signs on the approach indicating that City Hall Drive is closed for construction.
- B. The Contractor shall maintain traffic within the adjacent street right of ways and the City Hall grounds to the satisfaction of the City, and Fire and Police Departments. The Contractor must maintain pedestrian and two-way vehicular traffic along the adjacent streets and permit access to all residences, businesses, and intersecting streets.
- C. The Contractor shall furnish, light, and maintain such signs as may be directed, or may be necessary for the safe regulation, or convenience of traffic when working within any street right of way. Said signs shall be adequate for the regulation, safety and convenience of traffic. The Contractor shall provide, erect, and maintain suitably lighted barricades, warning lights, etc., as needed, or as directed in order to keep people, animals and vehicles from excavations, obstacles, etc.
- D. The Contractor may be required to employ special duty police and take other such reasonable means or precautions as the City may direct, or as may be needed to prevent damage or injury to persons, vehicles, or other property, and to minimize the inconvenience and danger to the public by their construction operations.
- E. The Contractor shall arrange their operations to provide access to properties along the street including temporary bridges to driveways, and provide access to fire hydrants, manholes, gate boxes, or other utilities. Whenever any trench obstructs traffic in or adjacent to any public street, private driveway, or property entrance, the Contractor

shall take such steps as required to maintain necessary traffic and access including temporary bridging if required. The Contractor shall confine his occupancy of public to traveled ways to the smallest space compatible with the efficient and safe performance of the work contemplated by the contract.

- F. The Contractor shall observe and obey all local and state laws, ordinances, regulations and permits in relation to the obstruction of streets and highways, keeping passageways open and protecting traffic where there may be danger from all construction activities.
- G. Suitable lighted barriers or barricades shall be furnished by the Contractor and put up and maintained at all times during the night or daytime, around all open ditches, trenches, excavations, or other work potentially dangerous to traffic. Such barricades shall be constructed of 2 inch by 8 inch rough lumber, securely supported and braced at least 3 feet high above the ground. Barricades shall be placed on all sides and throughout the entire length and breadth of all open ditches, trenches, excavations, or other work which must be barred to the general public. Barricades shall be properly painted to the satisfaction of the City in order to retain a high degree of visibility to vehicular and pedestrian traffic.
- H. Suitably lighted barricades shall be defined as, barricades lit by flashers in accordance with this paragraph or other lighting methods approved by the City in lieu thereof. Flashers shall be placed along the entire length of the barricades at an interval no greater than 8 feet, center to center. Flashers shall be power operated, lens directed, enclosed light units which shall provide intermittent light from 70 to 120 flashes per minute, with the period of light emittance occurring not less than 25 percent of each on-off cycle, regardless of temperature. The emitted light shall be yellow in color and less than 12 square inches. The discernible light shall be bright enough to be conspicuously visible during the hours of darkness at a minimum distance of 800 feet from the unit under one or more directions, the foregoing specifications shall apply 10 degrees or more to the side and 5 degrees or more above or below the photometric axis.
- I. The Contractor shall furnish and securely fasten flashing units to signs, barricades, and other objects in such numbers and for such lengths of time as are required for the maintenance and protection of traffic, or as the Engineer may order. The flasher shall be in operation during all hours between sunset and sunrise, and during periods of low visibility. The Contractor shall maintain, relocate and operate barricades and flashers throughout the life of the contract. No special payment will be made for barricades or flashers.
- J. Should the Contractor or his employees neglect to set out and maintain barricades or lights, as required in these specifications, the City immediately, and without notice, may furnish, install and maintain barricades or lights. In such cases, the City will deduct from money due or to become due to the Contractor all expenses connected therewith which are found to be greater than the cost to the City had the Contractor performed the specified work.

1.03 SPECIAL DUTY POLICE

- A. The Contractor shall provide such uniformed police officers (outside their regular

tour of duty) as the Chief of Police or City shall deem necessary to avoid so far as reasonably possible, danger to the safety of persons and substantial interference with the free circulation of traffic. Cost of such services is covered under an allowance. Any costs in exceedance of the allowance shall be considered incidental to the work of the Project.

1.04 SUBMITTALS

- A. Contractor must submit a Maintenance and Protection of Traffic Plan at least one week prior to the start of work for review by the City.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT FOR PAYMENT

- A. Special Duty Police: The work required under this Section and Section 01041 for Special Duty Police will be measured for payment based on the actual invoiced cost to the Contractor for Special Duty Police costs only for those officers required as directed by the City or Police Chief, up to the Allowance limit. Contractor shall pay out of pocket cost and shall not be allowed to markup costs for overhead, profit, or any other purpose.
- B. No measurement shall be made of any other work performed under this section. No separate payment shall be made for any work performed under this section. The cost of any work done or facilities provided under this section shall be included under other bid items within the Contract.

4.02 PAYMENT

- A. Special Duty Police: This work will be paid for based on the actual invoiced cost to the Contractor up to the amount of the stated Allowance. The Contractor shall be re-

imbursed for this item for their actual cash outlay to the Police Department. No overhead or other markup will be allowed for payment. The figure listed in the Bid Form is an Allowance and is not to be considered a Lump Sum bid item. The hourly rate of compensation to be paid shall be as specified by the City of Newton Police Department.

- B. No separate payment shall be made for any other work performed under this section. The cost of any work done or facilities provided under this section, which are not specifically mentioned as pay items under this section, shall be included under other bid items within the Contract.

<u>Item No.</u>	<u>Payment Item</u>	<u>Unit</u>
01041.02	Special Duty Police	Allowance (up to \$10,000)

*** * * END OF SECTION * * ***

**SECTION 01060
REGULATORY REQUIREMENTS**

PART 1 - GENERAL

1.01 PERMITS AND LICENSES

- A. No portion of the Work on the Project shall start until all necessary and required permits have been secured. Permits, licenses, and approvals which have already been secured by the City in relation to the Work are attached to this Specification. The Contractor shall be responsible adhering to the conditions stipulated in all permits. Additional permits may be forthcoming. The permits and their required conditions, including all amendments, shall be considered part of the Contract Documents. The Contractor shall be responsible for adhering to the conditions stipulated in all permits. No Work shall begin until all required permits have been secured to cover the Work.
- B. Permits, licenses, and approvals which have already been or which will be secured by the City in relation to the work at City Hall Ponds include the following:
1. Massachusetts Environmental Policy Act (MEPA) – Advisory Opinion (September 3, 2020)
 2. Order of Conditions from Newton Conservation Commission (November 20, 2020);
 3. Section 401 Water Quality Certification from MassDEP (DEP# 239-878, issued April 9, 2021) and subsequent Amendment issued September 19, 2022*;
 4. Project Notification Form with No Adverse Effect decision from Massachusetts Historical Commission (September 30, 2020); and
 5. Section 404 Dredge & Fill Individual Permit from the United States Army Corps of Engineers (Permit #NAE-2021-0356, issued June 27, 2022).
- *Note that the 401 Water Quality Certification issued for the Project was amended to reflect a change in the intended offsite sediment management/disposal. The site originally proposed for sediment reuse is no longer available and the intent is to have the Contractor take the dredged sediment to licensed receiving facility (landfill) for offsite management/disposal. The Contractor will be responsible for all testing, coordination, and approvals for material acceptance at the receiving facility of their selection as part of this Contract and for any required Licensed Site Professional (LSP) services, at no additional cost to the Owner. The Amendment and Original Certification are both attached to this Section.
- C. The Contractor shall be responsible for obtaining all other necessary permits and shall be responsible for adhering to the conditions stipulated in all permits. A temporary permit (local) may be required for field trailers (if any) or temporary electric and potable water

connections (if any) and, if so, shall be obtained by Contractor. The Contractor shall be responsible for conducting the Work in accordance with all provisions of said permits.

In particular, permit applications which are the Contractor's responsibility may include, but not be limited to, the following:

1. U.S. EPA's NPDES Construction General Permit (CGP) for Stormwater Discharges from Construction Activities. The City/Engineer has prepared a Stormwater Pollution Prevention Plan (SWPPP) for the project which the Contractor may use. A SWPPP is being provided for the Contractor's use and information and the Contractor is responsible for any changes or amendments that may be required and for gaining Conservation Commission approval if needed. The SWPPP is being provided for the Contractor's use and maintenance. No warranty or guarantee is made relative to its completeness. The Contractor shall accept responsibility for the completeness and accuracy of the SWPPP and all associated requirements and modify as needed throughout the Project duration.
 2. The SWPPP must be available for inspection at all times and shall be maintained at the project work site. The Contractor shall keep the SWPPP at the jobsite and shall maintain and update the SWPPP throughout the length of the project, as well as conduct all required inspections, monitoring, reporting, and other elements required by the permit.
 3. The Contractor and all applicable subcontractors shall file a Notice of Intent for coverage under the Construction General Permit and amend the SWPPP as needed to meet any other needed review or approvals (Conservation Commission). The Construction General Permit may require additional erosion and sedimentation controls not specifically addressed in the specifications or on the drawings, as well as inspections, monitoring, and reporting. These shall be provided, maintained, reported on, and removed by the Contractor at no additional cost to the Owner.
 4. The Contractor is responsible for all needed updates, amendments, documentation, maintenance, inspection, and recordkeeping associated with the SWPPP and CGP, including maintenance of all records for the required documentation period per the CGP.
 5. The Contractor shall also file a Notice of Termination at the end of the project once final stabilization has been achieved onsite.
- D. The Contractor shall procure any other required permits, licenses and inspections, (except for those to be obtained by the City as stated herein), pay all charges, fees and taxes and shall give all notices necessary and incidental to the due and lawful prosecution of the work under this Contract. The cost thereof shall be included in the bid prices for the various items specified herein for the work of this Contract. Copies of all required permits

and licenses shall be filed with the City prior to the beginning of the work.

1.02 ADHERENCE TO PERMIT AND LICENSE CONDITIONS AND REQUIREMENTS

- A. The Contractor shall strictly adhere to all conditions and requirements set forth in the permits and licenses issued in relation to the Work of this Contract. The Contractor shall undertake all incidental work necessary to meet the conditions and requirements of the permits and licenses and shall perform the Work of the Contract in accordance with said conditions and requirements. The cost thereof shall be included in the prices bid for the various items specified herein for the work of this Contract. The Contractor shall be solely responsible for monitoring and complying with the conditions and requirements of all permits and licenses. The Contractor shall solely be responsible for any and all penalties, sanctions, and fines that result from non-compliance with the conditions and requirements of all permits and licenses. Neither the City nor its Consultant will be held responsible for any penalties which result from Contractor violations of the conditions and requirements of permits and licenses.
- B. It is expected that conditions and requirements contained in permits that may not yet be issued will substantially conform to the requirements of the Drawings and Specifications and conditions contained in other permits. Therefore, no additional payment will be made for compliance with the conditions and requirements any unissued permits.
- C. Turtle relocation will be required, per the Order of Conditions issued for the Work. Contractor shall be responsible for providing all labor, equipment, materials, specialized personnel, and incidentals thereto to provide for turtle relocation during the Project, particularly during the dewatering phase.
- D. An Invasive Species Control and Management Plan applies to this work, which includes, but is not limited to the following actions:
 - 1. Construction mats and equipment will be thoroughly cleaned by the Contractor offsite before use on this Project and will be free of vegetation and soil before and after use. Any boats to be used onsite will be thoroughly washed offsite before and after use on the Project site.
 - 2. No cultivars, invasive species, or other unacceptable plant species will be used for restoration of bank areas. Seed mixes and vegetation will include only species native to New England per Army Corps of Engineers lists.

1.03 AIR, SOIL, AND WATER POLLUTION AND NOISE CONTROL

- A. The Contractor is hereby notified that abutting properties may be sensitive noise receptors and are located adjacent to the project site. The Contractor shall be responsible for utilizing construction practices which meet the requirements of all municipal noise ordinances with respect to the level of ambient noise generated by construction activities as heard at nearby receptors. In the event that no appropriate municipal code exists, the

standards used by the City of Boston shall govern. In any event, the Contractor shall take all reasonable precautions to reduce the disturbance of abutters by noise generated by construction activity.

- B. The Contractor shall comply with the applicable local, state, and federal regulations pertaining to Open Burning, and Dust, Odor, Construction and Demolition; and his/her attention is called to applicable Enforcement Provisions in regard to these and other pertinent and applicable regulations. The Contractor shall comply with the provisions of the Clean Air Act of 1970, 42USC, Sections 1857- 1857f.
- C. The Work of this Contract falls within the jurisdiction of the USEPA under the National Pollution Discharge Elimination System (NPDES) regulations. Coverage under the NPDES Construction General Permit is required for the Work of this Contract.

It shall be the Contractor's responsibility to obtain and read a copy of the appropriate EPA Construction General Permit, and have a Stormwater Pollution Prevention Plan (SWPPP) considering the proposed work methods of the Contractor. The Contractor shall prepare and submit a NPDES NOI at least two weeks prior to the start of construction. No construction shall begin prior to the NOI approval being active. The SWPPP shall be kept on-site and maintained at all times by the Contractor. It shall be the Contractor's responsibility to maintain the site in accordance with the SWPPP and all terms and conditions of the NPDES Construction General Permit.

Sediment and Erosion Control notes are included within the Contract Drawings. The information contained in the drawings and specifications may be used as the basis for the preparation of any sediment and erosion control plan, but shall be considered the MINIMUM acceptable measures. The final content and responsibility for implementation are the Contractor's alone.

The Contractor is informed that the Work of the Project is adjacent to and within sensitive environmental resource areas. Thus, the Contractor shall take every precaution to prevent the chemical contamination of soil, groundwater, and surface waters caused by spilling or leaking of oil, hazardous material, or other chemicals and materials used in the construction operation. The Contractor shall be especially careful not to discharge or spill any oil, grout, concrete, or other contaminants in or onto the waters adjacent to the work.

Clean-up of such spills, leaks or other contamination shall be undertaken immediately by the Contractor. The clean-up work shall be done to the satisfaction of the Engineer and the City. All spills, leaks, or other contamination shall be immediately reported to both the Engineer and City. In the event that such a spill or leak is not cleaned up by the Contractor, the City reserves the right to have the spill or leak cleaned up by its own forces or by others and the expense of such removal and disposal will be charged to the Contractor.

1.04 STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

- A. The Contractor's SWPPP shall contain a copy of the applicable EPA NPDES Construction General Permit for Stormwater Discharges from Construction Activities. The SWPPP shall be prepared in the format specified by the permit and EPA guidance and shall contain all required information, documentation, and signatures. A SWPPP is being provided by the City, but must be amended and updated by the Contractor to meet all applicable requirements throughout the Project. No guarantee or warranty is provided relative to the SWPPP provided to the Contractor.
1. The SWPPP shall, at a minimum, incorporate the requirements of all relevant sections of the Contract Documents.
 2. The SWPPP shall summarize erosion and sediment control practices, as well as maintenance and inspection procedures, used at the site.
 3. The SWPPP may also include all necessary documentation for the Contractor's spill prevention control and countermeasures plan. If the spill control plan is not incorporated into the SWPPP, then a separate spill control plan must be prepared and submitted by the Contractor.
- B. The SWPPP shall be a bound, stand-alone document containing all required documents, forms, details, and plans under one cover. A copy of the SWPPP, signed by the Contractor's authorized representative, shall be maintained on the site at all times during construction.

1.05 SPILL PREVENTION CONTROL AND COUNTERMEASURES PLAN

- A. The Contractor shall provide the City, twenty (20) working days prior to the commencement of work, a written spill prevention control and countermeasures plan / emergency action plan. This plan shall include, at a minimum, (1) a plan for containing anticipated construction materials to prevent possible spills; (2) telephone numbers of key management personnel including local and state public safety agencies; (3) an inventory of spill mitigation equipment such as sorbent booms, etc. which are to be kept on site; and (4) standard procedures for containing possible spills. The Stormwater Pollution Prevention Plan and the spill prevention control and countermeasures / emergency action plan may be combined into one document.

1.06 HEALTH AND SAFETY

- A. Health and Safety on the project site shall be the sole responsibility of the Contractor. The Contractor shall be responsible for monitoring the health and safety practices of his own personnel and those of all sub-contractors present on the site. The Contractor shall be responsible for knowledge of and compliance with all relevant OSHA regulations, as well as all other Federal, state, and local laws, ordinances, codes, and regulations pertaining to health and safety.

- B. A general and a site-specific Health and Safety Plan shall be in place prior to the Start of the Work. The Contractor shall place the utmost importance on the proper planning, execution and adherence to the safety plan and all required general safety procedures. Review of this plan by the City and/or its Consultant in no way implies acceptance of responsibility for job site safety by the City and/or its Consultant. The Contractor shall be solely responsible for job site safety.
- C. The site-specific Health and Safety Plan shall specifically address fall protection, water safety, COVID-19 health procedures, and traffic safety, as well as all other areas deemed necessary by the Contractor.
- D. Neither the professional activities of City, its Engineer, or its Design Consultant, nor the presence of the City, its Engineer, or its Design Consultant's employees and/or subcontractors will be construed by any party to imply that the City, its Resident Engineer, or its Design Consultant has any responsibility for any Contractor's methods of work performance, procedures, superintendence, sequencing of operations, or safety in, on or about the project site. With respect to site safety, the City will be responsible solely for the on-site activities of its own employees and subcontractors, and this responsibility will not be construed to relieve the Contractor from his obligations to maintain a safe project site.

1.07 SUBMITTALS

- A. The Contractor shall submit the following documents a minimum of twenty (20) days prior to the start of work:
 - 1. Stormwater Pollution Prevention Plan (SWPPP), if modified by the Contractor, with Notice of Intent and proof of filing with EPA (notice of active status also required as supplemental submittal)
 - 2. Spill Prevention Control and Countermeasures Plan
 - 3. Health and Safety Plan - Submit for record purposes only
 - 4. All applicable permit/approval applications required to perform the Work at the site.

PART 2 - PRODUCTS

Not used

PART 3 - EXECUTION

Not used

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT FOR PAYMENT

A. No measurement shall be made of any work performed under this section.

4.02 PAYMENT

A. Payment for the scope of work specified herein, including all labor, materials, equipment, and incidentals, associated with the preparation and submission of the Spill Prevention Control and Countermeasures Plan/Emergency Action Plan (SPCC/EAP), and the Contractor's Health and Safety Plan (HASP), shall be paid for at the applicable Lump Sum price for Item 01060.01 stated on the Bid Form.

<u>Item No.</u>	<u>Payment Item</u>	<u>Unit</u>
01060.01	Spill Prevention Control and Countermeasures Plan/EAP & Contractor's HASP	Lump Sum

B. No separate payment shall be made for any other work performed under this section. The cost of any work done or facilities provided under this section, which are not specifically mentioned as pay items under this section, shall be included under other bid items within the Contract.

*** * * END OF SECTION * * ***



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

Ms. Maria Rose, CFM
Environmental Engineer,
City of Newton Department of Public Works
1000 Commonwealth Avenue
Newton Centre, MA 02459

April 9, 2021

Re: **401 WATER QUALITY CERTIFICATION**
Application for BRP WW 08, Minor Dredge Project
At: City Hall Ponds, Newton
Charles River Watershed

401 WQC Transmittal No: X286092
Wetlands File No: NE 239-0878
EOEEA File No: 14708
NAE 2021-0356 - Individual Permit

Dear Ms. Rose:

The Department has reviewed your application for a Water Quality Certificate (WQC) as referenced above. In accordance with the provisions of Section 401 of the Federal Clean Water Act as amended (33 U.S.C. §1251 et seq.), MGL c.21, §§ 26-53, and 314 CMR 9.00, the Department has determined 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 waters of Charles River from South Natick Dam to Watertown Dam and Watertown Dam to BU Bridge are designated in the Massachusetts Surface Water Quality Standards as Class B, Warm Water and Warm Water CSO respectively. Such waters are designated "as a habitat for fish, other aquatic life and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation." Anti-degradation provisions of these Standards require that "existing uses and the level of water quality necessary to protect the existing uses shall be maintained and protected."

Project Background

The ponds have been dredged previously, most recently in 2013 (401 WQC Transmittal #237692, EEA #14708) and 1992 (401 WQC Transmittal #33686, EEA #8928). The maintenance dredging projects used standard dewatering and excavation methods to remove accumulated sediments and maintain open water areas in the three lobed ponds.

Project Description

The applicant requests a Minor Project Certification, to maintenance dredge 3,600 cubic yards (cy) of accumulated sediment from the 1-acre City Hall Ponds site at 1000 Commonwealth Avenue, in Newton, MA (Figure 1). It is anticipated that 3,270 cy will be dredged from the ponds and 330 cy from the Cold Spring and Hammond Brook inlet culverts. The maintenance dredging is intended to reestablish open water habitat in the ponds, restore hydraulic capacity for flood control, and improve aesthetic value.



Figure 1. City Hall Ponds, Newton Center, MA.¹

Sediment Dewatering

The normal flow into the ponds will be intercepted and pumped around the ponds to draw the ponds down. Dredged sediment will be stockpiled within the pond basin and allowed to dewater in place or on City property immediately adjacent to the at 1000 Commonwealth Avenue with authorization by the City of Newton. A detailed description of the method to be followed for drawdown and dewatering sediments is provided in Plan Notes on Sheet C-6 Pond

¹BRP WW 08 Minor Water Quality Project Certification Application: Maintenance Dredging of City Hall Ponds, 1000 Commonwealth Avenue, Newton Centre, Massachusetts 02459. Prepared by GZA GeoEnvironmental, Inc., for City of Newton Department of Public Works. Dated September 14, 2020. Transmittal No. X286092

Dewatering Methods and Sequence.² The dewatering and disposal of sediments is anticipated to continue for the 2 months required to complete construction.

Sediment Sampling Data

Seven sediment samples, dated 11/15/2019, were collected for chemical and physical property test.³ (i.e. Sample 1-Cold Spring Brook inlet culvert, Sample 2-Hammond Brook inlet culvert, Sample 3-Confluence of 1/2, Samples 4/5-mid-pond composite, Samples 7/8-pond outlet composite). Results of the gradation analysis showed 3.0% to 40.7% of particles in the sediment samples do not pass the No. 200 U.S. Standard Series Testing Sieve. Sediment description is primarily very dark gray fibrous silt and peat. In accordance with 314 CMR 9.07(2), chemical testing was conducted.⁴

The ponds are located in an urban area downstream in the watershed of past reported releases and spills of petroleum products and spills, which indicate a potential for oil and hazardous materials to be present in the sediment dredged from the ponds. Laboratory analysis indicates that all the samples tested below MCP Reportable Concentrations for Soils (RCS-1). Concentrations of Metals and PAHs that exceed natural background levels in soils were detected in Samples 1, 2, 4/5, and 6/7.^{5,6} Metals include Copper, Lead, and Zinc and PAHs include Phenanthrene and Pyrene.

- Sediment Sample 1: Phenanthrene (4.03 mg/kg), Pyrene (4.00 mg/kg)
- Sediment Sample 2: Lead (111 mg/kg), Zinc (110 mg/kg)
- Sediment Sample 4/5: Copper (59.7 mg/kg), Lead (133 mg/kg), Zinc (183 (mg/kg)
- Sediment Sample 6/7: Copper (45.2 mg/kg), Zinc (139 mg/kg).

Dredged Material Disposal or Reuse

Sediments will be removed from the City Hall Ponds using conventional excavation utilizing standard earth-moving equipment such as excavators, front-end loaders, backhoes, and/or bulldozers to remove the accumulated sediments and load the dewatered sediments onto dump trucks for transport to a City-owned reuse site at 70 Crescent Street, Newton, MA. The Natural Resources Conservation Service (NRCS) Soil Survey identifies the soils at 70 Crescent Street as Udorthents-Urban land complex and Merrimac-Urban land complex. Since laboratory analysis show all sediments from City Hall Ponds to be below MCP Reportable Concentrations for Soils (RCS-1), MassDEP approves reuse of the dredge sediments at the proposed disposal site.

² Plans entitled *City Hall Ponds Maintenance Dredging Project, Newton Centre, Massachusetts*, Sheet C-6, Erosion and Sediment Control and Control of Water Plan, dated September, 2020 and revised to March, 2021, signed and stamped by Thomas Jenkins, Jr. #36450.

³ BRP WW 08 Minor Water Quality Project Certification Application: Maintenance Dredging of City Hall Ponds, 1000 Commonwealth Avenue, Newton Centre, Massachusetts 02459. Prepared by GZA GeoEnvironmental, Inc., for City of Newton Department of Public Works. Dated September 14, 2020. Transmittal No. X286092.

⁴ Ibid: Table 1. City Hall Ponds Sediment Sample Analysis: Physical Characteristics,

⁵ Ibid: Table 2. City Hall Ponds Sediment Sample Analysis: Total Metals

⁶ Ibid: Table 3. City Hall Ponds Sediment Sample Analysis: Polycyclic Aromatic Hydrocarbons (PAHs)

Rare Species and Rare Wildlife Habitat

The Massachusetts Natural Heritage and Endangered Species Program (NHESP) Atlas, 14th Edition, effective August 1, 2017, indicates that the City Hall Ponds project is not located within designated Priority Habitats of Rare Species or Estimated Habitats of Rare Wildlife and will not require review pursuant to the Massachusetts Endangered Species Act.

Public Notice

The public notice was published in The Newton Tab, a newspaper of general circulation within the City of Newton, on Wednesday, September 23, 2020. The Department did not receive any comments during the 21-day public comment period, which ended on October 14, 2020.

Section 61 Findings:

Pursuant to M.G.L. Chapter 30, Sections 61 to 62 inclusive [the Massachusetts Environmental Policy Act (“MEPA”)], the City Hall Ponds project meets previous MEPA requirements [i.e. 1992 (EEA No. 8928) and 2013 (EEA No. 14708)] to file a Request for Advisory Opinion (301 CMR 11.01(6)) to determine if a Finding of Routine Maintenance can be issued by the MEPA Office if additional maintenance dredging is proposed. According to the MEPA Advisory Opinion,⁷ “this work meets the criteria for Routine Maintenance, as defined in the MEPA regulations. MEPA review thresholds therefore do not apply to the project and no review under MEPA is required.”

Therefore, based on information currently in the record, the Department grants a 401 Water Quality Certification for this project subject to the following conditions to maintain water quality, to minimize impact on waters and wetlands, and to ensure compliance with appropriate state law. The Department further 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. Finally, the Department has determined that upon satisfying the conditions and mitigation requirements of this approval, the project provides a level of water quality necessary to protect existing uses and accordingly finds that the project to be implemented satisfies the Surface Water Quality Standards at 314 CMR 4.00.

Conditions

1. The Contractor shall take all steps necessary to assure that the proposed activities will be conducted in a manner that will avoid violations of the anti-degradation provisions of the Massachusetts Surface Water Quality Standards that protect all waters, including wetlands.
2. Prior to the start of work or any portion of the work thereafter, the Department shall be notified of any change(s) in the proposed project or plans that may affect waters or

⁷ MEPA Advisory Opinion Letter, dated September 3, 2020 to Jennifer Burke for City Hall Pond Maintenance Dredge Project, Newton, MA.

wetlands. The Department will determine whether the change(s) require a revision to this Certification.

3. Dredging in accordance with this Certification may begin following the 21-day appeal period, once all other permits have been received.
4. All work shall be performed in accordance with the following documents and plans:
 - Application for the 401 WQC, Transmittal Form # X286092, dated September, 2020.
 - 401 WQC Approved Plans - City Hall Ponds Maintenance Dredging Project, Newton Centre, Massachusetts, dated September, 2020 and revised to March, 2021, signed and stamped by Thomas E. Jenkins Jr. No. 36450, 03/23/2021. Nine Sheets including:
 - Cover Sheet
 - Sheet C-1: Existing Conditions, scale 1"=30'
 - Sheet C-2: Existing Pond Bottom Contours and Sediment Sampling Locations, scale 1"=30'
 - Sheet C-3: Estimated Bottom of Sediment Contours, scale 1"=30'
 - Sheet C-4: Representative Pond Cross Sections, scale 1"=30'
 - Sheet C-5: Pond Profiles, scale 1"=30'
 - Sheet C-6: Erosion & Sediment Control and Control of Water Plan, scale 1"=40'
 - Sheet C-7: Pond Restoration, scale 1"=30'
 - Sheet C-8: Culvert Cleaning Plan and Details
 - Order of Conditions issued pursuant to the Massachusetts Wetlands Protection Act (M.G.L. Chapter 131, § 40) by City of Newton, MA Conservation Commission for MassDEP File Number NE 239-0878, dated 11/20/2020.
5. The Department shall be notified, attention Alice Smith (Alice.Smith@mass.gov), one week prior to the start of in-water work so that Department staff may inspect the work for compliance with the terms and conditions of this Certification.
6. The applicant and its contractor shall allow agents of the Department to enter the project sites to verify compliance with the conditions of this Certification.
7. The 401 Water Quality Certification Transmittal №: X286092, City Hall Ponds, Newton, 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.
8. The applicant may request an extension of the 401 dredging permit in accordance with 314 CMR 9.09(3) providing that the annual dredging activities summary report is submitted to the Department.
9. Best Management Practices (BMPs) such as coffer dams or a silt curtain shall be deployed surrounding the dredge area to minimize turbidity. At a minimum, the Proposed Pond Dewatering Methods and Sequence Plan Notes on Sheet C-6, Erosion and Sediment Control and Control of Water Plan, of the Approved Plans shall be followed.

10. No later than 21 days prior to commencement of dredging activity, the name and contact information for the project site manager designated by the applicant and contractor responsible for installation, monitoring, inspection, and correction of erosion control measures shall be provided to MassDEP.
11. A Dredged Material Tracking Form (DMTF) or Material Shipping Record (MSR) shall be used to track the dredged material to the licensed upland facility. A fully executed copy of the DMTF or MSR shall be provided to the Department within 30 days of final shipment to the reused location or facility.
12. Best Management Practices (BMPs) shall be implemented during transportation of the dredged material to the reuse receiving site. At a minimum, when transported upon public roadways, all dredged material shall have no free liquid as determined by the Paint Filter Test or other suitably analogous methodology acceptable to the Department, and a tarpaulin or other means shall be used to cover the dredged material during transport.
13. Within 30 days of the completion of the initial dredging and any future maintenance dredging to be conducted, a bathymetric survey of the site, depicting post-dredge conditions shall be conducted. At a minimum, the survey shall include an overlay of the dredge footprint (i.e. top of slope) with sufficient coordinates in the Massachusetts State Plane (e.g. longitude and latitude) to clearly delineate the dredge footprint. The survey shall be sent within five working days after its completion to the Department and a copy shall be sent to the Massachusetts Coastal Zone Management office, attention: Robert Boeri.
14. Within 30 days of completion of the construction of the project, the applicant shall provide a set of construction photographs depicting completed project to the Wetlands and Waterways Program in the Boston Office, attn: Alice Smith. The photographs shall be marked or labeled with the WQC transmittal number and wetlands file number of the project.
15. The Applicant shall utilize stabilized construction entrances, vehicle wash down pads, perimeter erosion controls, and re-vegetation of disturbed areas with native plantings and seed mixes to minimize potential water quality impact resulting from construction activities.
16. Storing, servicing or cleaning of equipment, including but not limited to fueling, changing, adding or applying lubricants or hydraulic fluids, or washing/rinsing of trucks or equipment, shall be performed outside wetland resource areas.
17. During the project period, there shall be no discharge or spillage of fuel, oil or other pollutants into any part of City Hall Ponds. The applicant shall take all reasonable precautions to prevent the release of pollutants by ignorance, accident or vandalism.

18. The Applicant shall utilize construction-related BMPs in accordance with the MassDEP's Stormwater Policy to minimize stormwater runoff and erosion from impacting wetland resources.
19. In case of a storm event, the site shall be secured beforehand in such a way as to protect City Hall Ponds and downstream waters, including covering of stockpiles of soil; installation of erosion control mats over-areas of exposed soil; and removal of any debris, equipment, materials, etc. that could potentially enter the Ponds.
20. The applicant, or its contractor, shall make every effort to complete the project within the permitted timeframe. Should the applicant, or their contractor, fail to complete the project and wish to request an amendment to the Certification, a written request shall be received by the Department. The following information shall be included in the request:
 - a. project location and transmittal number,
 - b. the date on which dredging started,
 - c. the number of days and hours per day the dredge operated,
 - d. expected daily average production rate and the actual daily average production rate,
 - e. an explanation of why the project failed to remain on schedule,
 - f. an account of efforts made to get the project back on schedule,
 - g. a plan depicting the areas that remain to be dredged,
 - h. the number of cubic yards that remain to be dredged,
 - i. an accurate estimate of the number of days required to complete the project,
 - j. an evaluation of the impact of continued dredging on the species of concern,
 - k. a description of any efforts that will be made to minimize the impacts of the project on the species of concern.

The Department will share the information with other resource agencies and a decision to grant or deny the amendment shall be made by February 1. Requests for amendment received after January 15 will be considered at the Department's discretion.

21. No later than four weeks after issuance of this water quality certification, the applicant shall submit a notification procedure outlining the reporting process to MassDEP for incidents relating to dredging activities that impact surrounding resource areas and habitats including, but not limited to, observed dead or distressed fish or other aquatic organisms, observed oily sheen on the surface of the water, a sediment spill, a turbidity plume beyond the deployed BMPs, and a barge or equipment accident/spill. If at any time during implementation of the project such an incident occurs, the applicant shall immediately notify MassDEP and all site related activities impacting the water shall cease until the source of the problem is identified and adequate mitigating measures are deployed to the satisfaction of MassDEP.

This certification does not relieve the applicant of the obligation to comply with other applicable state or federal statutes or regulations. Any changes made to the project as described in the previously submitted Notice of Intent, 401 Water Quality Certification application, or supplemental documents will require further notification to the Department.

NOTICE OF APPEAL RIGHTS

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;
- c. 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: 401 Water Quality Certification Transmittal №: X286092, City of Newton, MA.

Case Administrator
Department of Environmental Protection
One Winter Street, 2nd Floor
Boston, MA 02108.

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
One Winter Street, 5th Floor
Boston, MA 02108.

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 314 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;
- 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.

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:

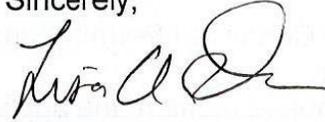
Commonwealth of Massachusetts
Department of Environmental Protection
Commonwealth Master Lockbox
P.O. Box 4062
Boston, MA 02211

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, 314 CMR 9.00, MGL c. 21A §16, 310 CMR 5.00, or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

If you have questions about this decision, please contact Alice Smith at (617) 292-5854.

Sincerely,



Lisa Rhodes
Wetlands Program Chief

enclosure: Communication for Non-English Speaking Parties - 310 CMR 1.03(5)(a)
Material Shipment Record (MSR)

cc:

Jennifer Steele, Conservation Agent, Newton Conservation Commission, Planning and Development Department, 1000 Commonwealth Avenue, Newton, MA 02459

Jill Provencal and Phil DiPietro, MassDEP NERO, 205B Lowell Street, Wilmington, MA 01887

Jennifer R.M. Burke, GZA GeoEnvironmental, Inc., 1350 Main Street, Suite 1400, Springfield, MA 01103

Edward Reiner, US EPA, 5 Post Office Square, Suite 100, Boston, MA 02109

Robert Boeri, MA CZM, 251 Causeway Street, Suite 800, Boston, MA 02114

Amy Hoenig and Melany Cheeseman, Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife, 1 Rabbit Hill Road, Westborough, MA 01581



Massachusetts Department of Environmental Protection
One Winter Street, Boston MA 02108 • Phone: 617-292-5751
Communication For Non-English Speaking Parties - 310 CMR
1.03(5)(a)



1 English:

This document is important and should be translated immediately. If you need this document translated, please contact MassDEP's Diversity Director at the telephone numbers listed below.



2 Español (Spanish):

Este documento es importante y debe ser traducido inmediatamente. Si necesita este documento traducido, por favor póngase en contacto con el Director de Diversidad MassDEP a los números de teléfono que aparecen más abajo.



3 Português (Portuguese):

Este documento é importante e deve ser traduzida imediatamente. Se você precisa deste documento traduzido, por favor, entre em contato com Diretor de Diversidade da MassDEP para os números de telefone listados abaixo.



4(a) 中國（傳統） (Chinese (Traditional)): 本文件非常重要，應立即翻譯。

如果您需要翻譯這份文件，請用下面列出的電話號碼與MassDEP的多樣性總監聯繫。



4(b) 中国（简体中文） (Chinese (Simplified)):

本文件非常重要，应立即翻译。如果您需要翻译这份文件，请用下面列出的电话号码与MassDEP的多样性总监联系。



5 Ayisyen (franse kreyòl) (Haitian) (French Creole):

Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradui imedyatman. Si ou bezwen dokiman sa a tradui, tanpri kontakte Divèsite Direktè MassDEP a nan nimewo telefòn ki nan lis pi ba a.



6 Việt (Vietnamese):

Tài liệu này là rất quan trọng và cần được dịch ngay lập tức. Nếu bạn cần dịch tài liệu này, xin vui lòng liên hệ với Giám đốc MassDEP đa dạng tại các số điện thoại được liệt kê dưới đây.



7 ប្រទេសកម្ពុជា (Kmer (Cambodian)):

ឯកសារនេះគឺមានសារៈសំខាន់និងគួរត្រូវបានបកប្រែភ្លាម។ ប្រសិនបើអ្នកត្រូវបានបកប្រែឯកសារនេះសូមទំនាក់ទំនងឆ្នោតជាសាយក MassDEP នៅលេខទូរស័ព្ទដែលបានរាយខាងក្រោម។



8 Kriolu Kabuverdianu (Cape Verdean):

Es documento é importante e deve ser traduzido imidiatamente. Se bo precisa des documento traduzido, por favor contacta Director de Diversidade na MassDEP's pa es numero indicode li d'boche.



9 Русский язык (Russian):

Этот документ является важным и должно быть переведено сразу. Если вам нужен этот документ переведенный, пожалуйста, свяжитесь с директором разнообразия MassDEP по адресу телефонных номеров, указанных ниже.



10 العربية (Arabic):

هذه الوثيقة الهامة وينبغي أن تترجم على الفور. اذا كنت بحاجة الى هذه الوثيقة المترجمة، يرجى الاتصال مدير التنوع في PMassDE على أرقام الهواتف المدرجة أدناه.



11 한국어 (Korean):

이 문서는 중요하고 즉시 번역해야 합니다. 당신이 번역이 문서가 필요하다면 아래의 전화 번호로 MassDEP의 다양성 감독에 문의하시기 바랍니다



12 հայերեն (Armenian):

Այս փաստաթուղթը շատ կարևոր է եւ պետք է թարգմանել անմիջապես. Եթե Ձեզ անհրաժեշտ է այս փաստաթուղթը թարգմանվել դիմել MassDEP բազմազանությունը տնօրեն է հեռախոսահամարների թվարկված են ստորև.



13 فارسی (Farsi (Persian):

این سند مهم است و باید فوراً ترجمه شده است. اگر شما نیاز به این سند ترجمه شده، لطفاً با ما تماس تنوع مدير PMassDE در شماره تلفن های ذکر شده در زیر.



14 Français (French):

Ce document est important et devrait être traduit immédiatement. Si vous avez besoin de ce document traduit, s'il vous plaît communiquer avec le directeur de la diversité MassDEP aux numéros de téléphone indiqués ci-dessous.



15 Deutsch (German):

Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Wenn Sie dieses Dokument übersetzt benötigen, wenden Sie sich bitte Diversity Director MassDEP die in den unten aufgeführten Telefonnummern.



16 Ελληνική (Greek):

Το έγγραφο αυτό είναι σημαντικό και θα πρέπει να μεταφραστούν αμέσως. Αν χρειάζεστε αυτό το έγγραφο μεταφράζεται, παρακαλούμε επικοινωνήστε Diversity Director MassDEP κατά τους αριθμούς τηλεφώνου που αναγράφεται πιο κάτω.



17 Italiano (Italian):

Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, si prega di contattare la diversità Direttore di MassDEP ai numeri di telefono elencati di seguito.



18 Język Polski (Polish):

Dokument ten jest ważny i powinien być natychmiast przetłumaczony. Jeśli potrzebujesz tego dokumentu tłumaczone, prosimy o kontakt z Dyrektorem MassDEP w różnorodności na numery telefonów wymienionych poniżej.



19 हिन्दी (Hindi):

यह दस्तावेज़ महत्वपूर्ण है और तुरंत अनुवाद किया जाना चाहिए. आप अनुवाद इस दस्तावेज़ की जरूरत है, नीचे सूचीबद्ध फोन नंबरों पर MassDEP की विविधता निदेशक से संपर्क करें.



Massachusetts Department of Environmental Protection
Bureau of Air & Waste

Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials not subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

Tracking Number _____

A. Location Information

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



1. Provide the following information on the location where the waste was generated:

Release name (optional) _____

Street _____

Location aid _____

City/Town _____

State _____

Zip code _____

2. Date/Period of generation: _____

From _____

To _____

3. U.S. EPA ID number: _____

4. 21E release: _____

Yes

No

5. List additional tracking documents associated with this document:

Important: This form is not to be used for the shipment of remediation wastes subject to management under section 310 CMR 40.0035 of the Massachusetts Contingency Plan nor is it to be used in lieu of a hazardous waste manifest for hazardous waste or recyclable materials subject to the Massachusetts Hazardous Waste Regulations 310 CMR 30.000.

B. Generator Information

1. Provide the following generator information:

Name of organization _____

Contact name _____

Title _____

Street address _____

City/Town _____

State _____

Zip code _____

Telephone number(including extension) _____

C. Owner and/or Operator Information

1. If the owner and/or operator is different from the generator as indicated in Section B, provide the following information:

Check applicable: owner operator

Name of organization _____

Contact name _____

Title _____

Street address _____

City/Town _____

State _____

Zip code _____

Telephone number _____

Ext. _____



Massachusetts Department of Environmental Protection
Bureau of Air & Waste

Material Shipping Record & Log

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Tracking Number _____

D. Transporter/Common Carrier Information

1. Provide the following information:

Transporter/Common carrier name _____

Hazardous waste license number (if applicable) _____

Licensing state (if applicable) _____

Contact person _____

Title _____

Street _____

City/Town _____

State _____

Zip code _____

Telephone number _____

Ext. _____

E. Receiving Facility Information

1. Provide the following information on the receiving facility:

Operator/Facility name _____

Contact person _____

Title _____

Street _____

City/Town _____

State _____

Zip code _____

Telephone number _____

Ext. _____

2. Type of facility:

asphalt batch/cold mix

asphalt batch/hot mix

landfill/disposal

landfill/ daily cover

thermal processing

landfill/structural fill

other(specify): _____

3. Permit number: _____



Massachusetts Department of Environmental Protection
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Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials not subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

Tracking Number _____

F. Description of Material

Check all that apply:

1. a. soil dredge material fill

b. Description: _____

c. Classification: MIT USDA USAEC ASEE

2. Other(describe): _____

3. Type of contamination:

a. gasoline diesel fuel #2 oil #4 oil
 #6 oil waste oil kerosene jet fuel

b. Debris:

demolition vegetative inorganic

c. Other(describe): _____

4. Constituents of concern (check all that apply):

<input type="checkbox"/> As	<input type="checkbox"/> HVOCs
<input type="checkbox"/> Cd	<input type="checkbox"/> PATH
<input type="checkbox"/> Cr	<input type="checkbox"/> VOCs
<input type="checkbox"/> Pb	<input type="checkbox"/> PAHs
<input type="checkbox"/> Hg	<input type="checkbox"/> BNAs
<input type="checkbox"/> Na	<input type="checkbox"/> TPH
<input type="checkbox"/> PCBs	<input type="checkbox"/> Other(describe): _____

5. Analyses performed (check all that apply):

<input type="checkbox"/> As	<input type="checkbox"/> PATH
<input type="checkbox"/> Cd	<input type="checkbox"/> VOCs
<input type="checkbox"/> Cr	<input type="checkbox"/> PAHs
<input type="checkbox"/> Pb	<input type="checkbox"/> BNAs
<input type="checkbox"/> Hg	<input type="checkbox"/> TPH
<input type="checkbox"/> Na	<input type="checkbox"/> TCLP (inorganic)
<input type="checkbox"/> PCBs	<input type="checkbox"/> TCLP (organic)
<input type="checkbox"/> HVOCs	<input type="checkbox"/> Other(describe): _____

6. Screening performed:

Type

Instrument used

Constituents



Massachusetts Department of Environmental Protection
Bureau of Air & Waste

Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials not subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

Tracking Number _____

F. Description of Material (cont.)

7. Estimated volume of materials:

_____ Cubic yards _____ Tons _____ Other(specify units)

8. Contaminant source (check one):

- transportation accident
- dust
- other(describe): _____

9. Indicate which waste characterization support documentation is attached:

- site history information
- sampling and analytical methods/procedure
- laboratory data
- field screening data

If supporting documentation is not appended, provide an attachment stating the date and in connection with what document such information was previously submitted to the facility.

G. Qualified Environmental Professional Opinion

"I have personally examined and am familiar with the information contained on and submitted with this form. Based on this information, it is my opinion that the testing and assessment actions undertaken were adequate to characterize the waste, and that the facility or location can accept wastes with the characteristics described in this submittal. I am aware that significant penalties including, but not limited to, possible fines and imprisonment may result if I willfully submit information which I know to be false, inaccurate, or materially incomplete."

Name of Organization

Name of Professional

Title

Telephone number _____ Ext.

Signature

Date (MM/DD/YYYY)

License Number¹

Seal²:

¹A license number is required for all Qualified Environmental Professional completing this form. A Qualified Environmental Professional is licensed or certified in a discipline related to environmental assessment (i.e., engineering, geology, soil science, or environmental science) by a state or recognized professional organization.

²A seal is **not** required for a **Licensed Site Professional** as defined in M.G.L. 21A, s. 19, holding a valid license issued by the Board of Registration of Hazardous Waste Site Cleanup Professionals pursuant to M.G.L. c. 21A, § 19 through 19J. A seal is required for all other Qualified Environmental Professionals as defined in 1 above.



Massachusetts Department of Environmental Protection
Bureau of Air & Waste

Material Shipping Record & Log

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Tracking Number _____

H. Certification of Generator

"I certify under penalties of law that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this certification, and that, based on my inquiry of those individuals immediately responsible for obtaining the information contained herein is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information."

Signature

Date (MM/DD/YYYY)

Name (Print)

I. Acknowledgment of Receipt by Receiving Facility

Receiving Facility

Representative (Print)

Title

Signature

Date (MM/DD/YYYY)



**Massachusetts Department of Environmental Protection
Bureau of Air & Waste**

Material Shipping Record & Log

For the shipment of contaminated soil, urban fill, and dredge materials not subject to management under section 310 CMR 40.0035 nor manifesting under 310 CMR 30.000

Tracking Number _____

J. Load Information

Note:
Make additional copies of this page as necessary.

Load#: _____

Signature of transporter _____

Receiving facility _____

Date received _____

Time received _____

Date of shipment _____

Time of shipment _____

Truck/Tractor registration _____

Trailer registration _____

Load size (cubic yards/tons) _____

Load#: _____

Signature of transporter _____

Receiving facility _____

Date received _____

Time received _____

Date of shipment _____

Time of shipment _____

Truck/Tractor registration _____

Trailer registration _____

Load size (cubic yards/tons) _____

Load#: _____

Signature of transporter _____

Receiving facility _____

Date received _____

Time received _____

Date of shipment _____

Time of shipment _____

Truck/Tractor registration _____

Trailer registration _____

Load size (cubic yards/tons) _____

K. Log Sheet Volume Information

Total volume this page (cubic yards/tons) _____

Total carried forward (cubic yards/tons) _____

Total carried forward and this page (cubic yards/tons) _____

Page _____ of _____



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T: 413-726-2100
F: 413-732-1249
www.gza.com

April 15, 2021
GZA File No. 15.0166758.00

Massachusetts Department of Environmental Protection
Bureau of Resource Protection – Wetlands and Waterways
One Winter Street
Boston, Massachusetts 02108

Attn: Ms. Alice Smith

Re: 401 Water Quality Certification Transmittal No. **X286092**
City Hall Ponds Maintenance Dredging Project, Newton
Incident Notification Procedure

Dear Ms. Smith:

On behalf of the City of Newton, in accordance with condition 21 of the 401 Water Quality Certification for the City Hall Ponds Maintenance Dredging Project, Newton, GZA GeoEnvironmental, Inc. (GZA) hereby presents the notification procedure to outline the reporting process to the Massachusetts Department of Environmental Protection (MassDEP) for potential incidents relating to the dredging activities that, were they to occur, could impact surrounding resource areas and habitats.

Should the following incidents occur related to dredging activities that impact surrounding resource areas and habitats, MassDEP shall be notified by the Permittee in accordance with the Notification Procedure outlined below:

- Observed dead or distressed fish, or other aquatic organisms,
- Observed oily sheen on the surface of the water,
- A sediment spill,
- A turbidity plume beyond the deployed best management practices (BMPs), and
- A barging or equipment accident/spill (note that barges are not part of this work).

This list of potential incidents is not all-inclusive, and any other incidents which are not included on this list, but which could adversely impact the surrounding resource areas and habitats during implementation of the project shall also be reported to MassDEP. Should any of these incidents occur, all site activities impacting the water shall cease until the source of the problem is identified and corrected and adequate mitigating measures are employed to the satisfaction of MassDEP.

Notification Procedure

Upon occurrence of any incident as described above, the site contractor shall telephone Maria Rose, Environmental Engineer for the City of Newton, the Proponent/Permittee, at 617-796-1661 (office) and 617-799-5182 (cell), to report the incident, including date, time, and details, as well as the current status (i.e., has the source of the problem been identified and corrected, have site activities been suspended, what mitigating measures have been employed). If Ms.



Rose is not available, Ted Jerdee, Director of Utilities, Water and Sewer Division, Newton Department of Public Works, will be contacted at 617-796-1623 (office) and 617-799-5185 (cell).

If any emergencies arise when Ms. Rose or Mr. Jerdee cannot be immediately reached, the Contractor will be contractually obligated to contact Doug Valovcin, Deputy Director of Utilities for the City of Newton, at 617-796-1627 (office) and 617-631-0044 (cell).

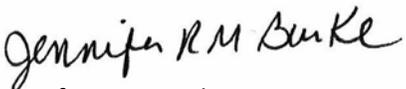
The information shall then be relayed via telephone call by Ms. Rose (or other City of Newton personnel in her absence, as noted above) to Mr. David Wong at the MassDEP 401 Water Quality Certification Program at 617-292-5893.

Following incident resolution, Ms. Rose will again contact Mr. Wong to inform him of progress and outcome.

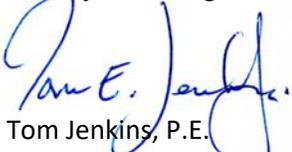
If you require further information or have any questions, please do not hesitate to call any of the undersigned at 413-726-2100.

Very truly yours,

GZA GEOENVIRONMENTAL, INC.


Jennifer R.M. Burke, P.E.
Sr. Project Manager


Stephen Lecco, AICP, CEP
Consultant/Reviewer


Tom Jenkins, P.E.
Principal-in-Charge

cc: Maria Rose, City of Newton



Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

One Winter Street Boston, MA 02108 • 617-292-5500

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Kathleen A. Theoharides
Secretary

Martin Suuberg
Commissioner

September 19, 2022

Ms. Maria Rose, CFM
Environmental Engineer
City of Newton Department of Public Works
1000 Commonwealth Avenue
Newton Centre, MA 02459

TRANSMITTAL #: X286092
DEP File #: 239-0878
EOEEA #: 14708
USACE: NAE 2021-0356

Re: **BRP WW 09 – Amendment to 401 Water Quality Certification for Dredging**
Record Number WW09-0000009

At: City Hall Ponds, Newton, MA
North Coastal Drainage Area

Dear Ms. Rose:

The Department has reviewed your application for an amendment to the 401 Water Quality Certification to dredge City Hall Ponds in Newton, MA as previously issued and as referenced above. The proposed change to the existing 401 Certification is limited to a change in the disposal location for dredged materials. The previously-approved disposal site is no longer available within the necessary timeframe to complete the proposed project. The newly proposed disposal location is an upland licensed facility accepting dredged material for disposal or reuse. The 401 WQC specifies that all the sediment samples for the project tested below MCP Reportable Concentrations for Soils (RCS-1) and as such are suitable for disposal at an upland licensed facility.

This amendment is necessary to authorize the requested change in sediment disposal location for the maintenance dredging of City Hall Ponds at 1000 Commonwealth Avenue, Newton. No modification to the original conditions is required.

All Conditions included in the original permit for this project shall remain in force. Failure to comply with this certification is grounds for enforcement, including civil and criminal penalties, under MGL c.21 §42, 314 CMR 9.00 or other possible actions/penalties as authorized by the General Laws of the Commonwealth.

If you have questions on this decision, please contact Alice Smith at
Alice.Smith@mass.gov .

Sincerely,



David Wong
MassDEP 401 WQC Unit

enclosure: Communication For Non-English Speaking Parties - 310 CMR 1.03(5)(a)

cc:

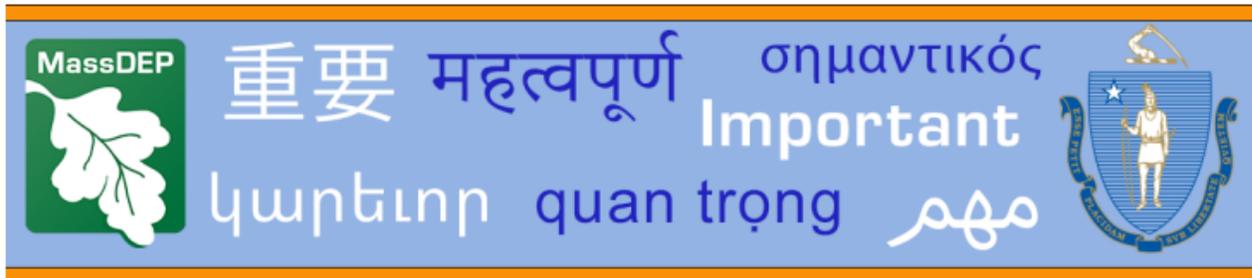
Adrienne Dunk 1350 Main Street, suite 1400, Springfield, MA 01103

Jennifer Steele, Conservation Agent, Newton Conservation Commission,
Planning and Development Department, 1000 Commonwealth Avenue, Newton,
MA 02459

Jill Provencal MassDEP NERO, 205B Lowell Street, Wilmington, MA 01887

Jennifer R.M. Burke, GZA GeoEnvironmental, Inc., 1350 Main Street, Suite 1400,
Springfield, MA 01103

Amy Hoenig and Melany Cheeseman, Natural Heritage & Endangered Species
Program, Massachusetts Division of Fisheries & Wildlife, 1 Rabbit Hill Road,
Westborough, MA 01581



Communication for Non-English-Speaking Parties

English

This document is important and should be translated immediately.
If you need this document translated, please contact MassDEP's Diversity Director at the telephone number listed below.

Español Spanish

Este documento es importante y debe ser traducido de inmediato. Si necesita este documento traducido, comuníquese con la Directora de Diversidad de MassDEP al número de teléfono que aparece más abajo.

Português Portuguese

Este é um documento importante e deve ser traduzido imediatamente. Se precisar de uma tradução deste documento, entre em contato com o Diretor de Diversidade da MassDEP nos números de telefone listados abaixo.

繁體中文 Chinese Traditional

本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼聯絡 MassDEP 多元化負責人。

簡體中文 Chinese Simplified

本文件非常重要，應立即翻譯。如果您需要翻譯這份文件，請用下面列出的電話號碼與 MassDEP 的多元化主任聯繫。

Ayisyen Kreyòl Haitian Creole

Dokiman sa-a se yon bagay enpòtan epi yo ta dwe tradwi l imedyatman. Si ou bezwen dokiman sa a tradwi, tanpri kontakte Direktè Divèsite MassDEP la nan nimewo telefòn endike anba.

Việt Vietnamese

Tài liệu này rất quan trọng và cần được dịch ngay lập tức. Nếu quý vị cần dịch tài liệu này, xin liên lạc với Giám đốc Đa dạng của MassDEP theo các số điện thoại ghi dưới đây.

ប្រទេសកម្ពុជា Khmer/Cambodian

ឯកសារនេះគឺសំខាន់ហើយត្រូវបានបកប្រែភ្លាមៗ។ ប្រសិនបើអ្នកត្រូវការឱ្យគេបកប្រែឯកសារនេះ

សូមទាក់ទងមកនាយកផ្នែកពិពិធកម្មរបស់ MassDEP តាមលេខទូរស័ព្ទខាងក្រោម។

Kriolu Kabuverdianu Cape Verdean

Kel dokumentu li é impurtáti y debe ser traduzidu imidiatamenti. Se bu meste di kel dokumentu traduzidu, pur favor kontakta Diretor di Diversidádi di MassDEP na numeru abaxu indikadu.

Contact **Glynis L. Bugg, Acting Diversity Director/Civil Rights 857-262-0606**
Massachusetts Department of Environmental Protection
One Winter Street, Boston MA 02108

TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>
(Version revised 7.22.2022) 310 CMR 1.03(5)(a)

Русский Russian

Это важный документ, и он должен быть безотлагательно переведен. Если вам нужен перевод данного документа, пожалуйста, свяжитесь с директором по вопросам многообразия (Diversity Director) компании MassDEP по указанному ниже телефону.

العربية Arabic

هذه الوثيقة مهمة ويجب ترجمتها على الفور. إذا كنت بحاجة إلى هذه الوثيقة مترجمة، يرجى الاتصال بمدير التنوع PMassDE على أرقام الهواتف المدرجة أدناه.

한국어 Korean

이 문서는 중요하고 즉시 번역해야 합니다. 이 문서의 번역이 필요하시다면, 아래의 전화 번호로 MassDEP의 다양성 담당 이사에 문의하시기 바랍니다.

հայերեն Armenian

Այս փաստաթուղթը կարևոր է և պետք է անմիջապես թարգմանվի:
Եթե Ձեզ անհրաժեշտ է այս փաստաթուղթը թարգմանել, դիմեք MassDEP-ի բազմազանության տնօրենին ստորև նշված հեռախոսահամարով:

فارسی Farsi Persian

این سند مهم است و باید فوراً ترجمه شود.
اگر به ترجمه این سند نیاز دارید، لطفاً با مدیر بخش تنوع نژادی MassDEP به شماره تلفن ذکر شده در زیر تماس بگیرید.

Français French

Ce document est important et devrait être traduit immédiatement. Si vous avez besoin de ce document traduit, veuillez communiquer avec le directeur de la diversité MassDEP aux numéros de téléphone indiqués ci-dessous.

Deutsch German

Dieses Dokument ist wichtig und sollte sofort übersetzt werden. Sofern Sie eine Übersetzung dieses Dokuments benötigen, wenden Sie sich bitte an den Diversity Director MassDEP unter der unten aufgeführten Telefonnummer.

Ελληνική Greek

Το παρόν έγγραφο είναι σημαντικό και θα πρέπει να μεταφραστεί αμέσως. Αν χρειάζεστε μετάφραση του παρόντος εγγράφου, παρακαλούμε επικοινωνήστε με τον Διευθυντή Διαφορετικότητας του MassDEP στους αριθμούς τηλεφώνου που αναγράφονται παρακάτω.

Italiano Italian

Comunicazione per parti che non parlano inglese. Questo documento è importante e dovrebbe essere tradotto immediatamente. Se avete bisogno di questo documento tradotto, potete contattare il Direttore di Diversità di MassDEP al numero di telefono elencato di seguito.

Język Polski Polish

Dokument ten jest ważny i powinien zostać natychmiast przetłumaczony. Jeśli potrzebujesz przetłumaczonej wersji dokumentu, prosimy o kontakt z dyrektorem ds. różnorodności MassDEP pod jednym z numerów telefonu wymienionych poniżej.

हिन्दी Hindi

यह दस्तावेज़ महत्वपूर्ण है और इसका तुरंत अनुवाद किया जाना चाहिए. यदि आपको इस दस्तावेज़ का अनुवाद करने की आवश्यकता है, तो कृपया नीचे सूचीबद्ध टेलीफोन नंबरों पर मासडेप्स डाइवर्सिटी के निदेशक से संपर्क करें.

Contact Glynnis L. Bugg, Acting Diversity Director/Civil Rights 857-262-0606

Massachusetts Department of Environmental Protection

One Winter Street, Boston MA 02108

TTY# MassRelay Service 1-800-439-2370 • <https://www.mass.gov/environmental-justice>

(Version revised 7.22.2022) 310 CMR 1.03(5)(a)



The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Kathleen A. Theoharides
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1181
<http://www.mass.gov/eea>

September 3, 2020

Jennifer Burke
Senior Project Manager
GZA GeoEnvironmental, Inc.
1350 Main Street, Suite 1400
Springfield, MA 01103

E-mail: jennifer.burke@gza.com

Re: Request for Advisory Opinion – City Hall Pond Maintenance Dredge Project, Newton

Dear Ms. Burke:

On behalf of Secretary Theoharides, I write to respond to your letter of June 29, 2020, in which you requested an advisory opinion on behalf of the City of Newton, as to whether review under the Massachusetts Environmental Policy Act (MEPA) is required for the project referenced above.

As described in your letter, the project entails maintenance dredging of approximately 3,600 cubic yards (cy) of sediment within an approximately 0.9-acre area of the City Hall Ponds (a three-lobed, impounded waterbody). Previous maintenance dredging activities were performed on the ponds in 1980, 1992, and 2013. The 1992 and 2013 dredging activities were reviewed in 1992 and 2011 as EEA Nos. 8928 and 14708 (respectively) and no EIR was required for these previous activities. The MEPA Certificate issued in March 2011 for EEA No. 14708 stated “...*should additional maintenance dredging activities be proposed within these ponds in the future, I encourage the City to file a Request for Advisory Opinion (301 CMR 11.01(6)) to determine if a Finding of Routine Maintenance can be issued by the MEPA Office.*”

Your letter indicates the project will temporarily alter Land Under Water (0.9 acres) and Bank (45 linear feet). Temporary impacts to water quality will be minimized by pumping and bypassing stream flow around the work area during construction and through the use of erosion and sedimentation control measures. Following construction, all disturbed areas will be restored in-kind. The proposed dredging activities will be conducted in the same general manner as the project last reviewed in 2011 under EEA No. 14708 and thus exceeds the same MEPA review threshold as the prior project (301

CMR 11.03(3)(b)(1)(f) – *Alteration of one half or more acres of any other wetlands*). It does not exceed any additional thresholds. Minor changes to work activities (compared to the 2013 dredge project, reviewed as EEA# 14708) include the use of pumps in-lieu of the outlet control structure (which has been fixed in place and can no longer open) to facilitate the drawdown of the ponds, minor concrete repairs to the underside of the pedestrian footbridges, and potential beneficial reuse of the sediment in an upland area in-lieu of disposal at a landfill. Your letter affirms that the upland reuse will be consistent with all applicable regulatory requirements and will not exceed any MEPA thresholds.

According to your letter, the maintenance dredging will require a 401 Water Quality Certification (WQC) from the Massachusetts Department of Environmental Protection (MassDEP) and authorization from the U.S. Army Corps of Engineers (ACOE) under the General Permits for Massachusetts in accordance with Section 404 of the Federal Clean Water Act. It also requires an Order of Conditions from the Newton Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions from MassDEP).

Your letter requested that I find that the project qualifies as “Routine Maintenance.” The MEPA regulations at 301 CMR 11.02 define Routine Maintenance as “(a)ny maintenance work or activity carried out on a regular or periodic basis in a manner that has no potential for Damage to the Environment or for which performance standards have been developed that avoid, minimize, or mitigate potential environmental impacts to the maximum extent practicable.” Because your letter requested a finding of Routine Maintenance, it was noticed in the August 10, 2020 issue of the *Environmental Monitor* for a 20-day comment period in accordance with the MEPA regulations at 301 CMR 11.01(6)(c). No comment letters were received.

Based on the information you provided and comments submitted by MassDEP, this work appears to be maintenance activity conducted on a regular or periodic basis and is not materially different from prior activities for which performance standards have been effectively established through multiple MEPA reviews. Accordingly, I find that this work meets the criteria for Routine Maintenance, as defined in the MEPA regulations. MEPA review thresholds therefore do not apply to the project and no review under MEPA is required.

If you have any questions regarding this matter, please contact Page Czepiga, Assistant Director, at page.czepiga@mass.gov.

Sincerely,

Tori T. Kim

Tori T. Kim

Assistant Secretary

Cc: David Wong (MassDEP) (via email)

RECEIVED

SEP 28 2020

MASS. HIST. COMM

RC. 5670

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A
MASSACHUSETTS HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

PROJECT NOTIFICATION FORM

After review of the MHC's files and the materials you submitted, the MHC has determined that the proposed project will have "no adverse effect" on significant historic or archaeological properties.

Project Name: City Hall Ponds Maintenance Dredging Project

Location / Address: 1000 Commonwealth Avenue

City / Town: Newton

Brona Simon 9/30/20

Project Proponent

Brona Simon
Executive Director
State Historic Preservation Officer
Massachusetts Historical Commission
Date

Name: City of Newton Department of Public Works

Address: 1000 Commonwealth Ave.

City/Town/Zip/Telephone: Newton Centre, MA 02459

City Contact: Maria Rose 617-796-1661

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

Agency Name

MassDEP
USACE
EPA
Conservation Commission/MassDEP

Type of License or funding (specify)

Section 401 Water Quality Certification
Section 404 Permit (for dredging)
NPDES Construction General Permit
NOI/Order of Conditions for Wetlands Protection Act

Project Description (narrative):

The project is maintenance dredging of a small 3-lobed pond adjacent to City Hall to remove accumulated sediment. Prior dredging occurred in 1992, 2013. Work will include dewatering and control of water, conventional dredging with offsite reuse of dredged sediment and minor vegetation removal for access. All impacts will be replaced in-kind. Project will restore open water areas. Minor concrete repairs along the underside of two onsite footbridges that cross the pond are also being considered since the ponds will be drawdown which would provide ideal conditions for repairs. There is deterioration along the concrete abutments at the waterline, which would be addressed by removal of limited areas of damaged concrete and replacement with new concrete to the same dimensions and extent. No work on the outer face of the bridges is proposed.

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.

No.

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.

The Project does not include rehabilitation of buildings, but potentially includes minor concrete repairs to the abutments of two existing footbridges onsite.

Does the project include new construction? If so, describe (attach plans and elevations if necessary).

No

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A (continued)

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify.

Yes, the site is within the City Hall and War Memorial Property, which is National Register listed.

What is the total acreage of the project area?

Woodland	_____	acres	Productive Resources:	
Wetland	0.9	acres	Agriculture	_____ acres
Floodplain	_____	acres	Forestry	_____ acres
Open space	3.5	acres	Mining/Extraction	_____ acres
Developed	_____	acres	Total Project Acreage	4.4 acres

What is the acreage of the proposed new construction? 0 acres

What is the present land use of the project area?

The overall property is currently Newton's City Hall and the surrounding grounds and parkland, which includes City Hall Ponds, which are the subject of the proposed project. Land use will not change as a result of the project, which is a waterbody restoration project.

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.

See Figure 1 - attached for a USGS Map with the Project site marked and Figure 2 - Aerial photo showing the Project site and Project limits in more detail. Project site photos are also included.

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of Person submitting this form: Jennifer R M Burke Date: 9/23/20

Name: Jennifer Burke, P.E.

Address: GZA GeoEnvironmental, Inc., 1350 Main St., Suite 1400

City/Town/Zip: Springfield, MA 01103

Telephone: 413-726-2117

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.



DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NEW ENGLAND DISTRICT
696 VIRGINIA ROAD
CONCORD MA 01742-2751

June 27, 2022

Regulatory Division
File Number: **NAE-2021-0356**

Maria Rose, Environmental Engineer
City of Newton Department of Public Works
1000 Commonwealth Avenue
Newton, Massachusetts 02459
mrose@newtonma.gov

Dear Ms. Rose:

This regards your Department of the Army (DA) permit for the discharge of fill material into waters of the U.S. associated with the City of Newton – City Hall Pond(s) – Sediment Removal Project within waters of the United States, including jurisdictional wetlands. As you are aware, we have assigned the file number provided above to this project. Please continue to refer to this number in all communication concerning this matter.

Enclosed is a copy of the validated standard permit for the proposed work and all referenced attachments. The required Work Start Notification Form must be submitted at least two weeks before the anticipated work start date. The Compliance Certification Form must be submitted within one month following the completion of the authorized work.

This permit is a limited authorization containing a specific set of conditions. Please read the permit thoroughly to familiarize yourself with those conditions, including any conditions contained on the enclosed state water quality certification. If a contractor performs the work for you, both you and the contractor are responsible for ensuring that the work is performed in compliance with the permit's terms and conditions, as any violations could result in civil or criminal penalties.

This authorization does not obviate the need to obtain other Federal, state, or local authorizations required by law. We continually strive to improve our customer service. In order for us to better serve you, we would appreciate your completing our Customer Service Survey located at http://corpsmapu.usace.army.mil/cm_apex/f?p=regulatory_survey.

If you have any questions regarding this correspondence, please contact Paul Sneeringer at 978-318-8491 or paul.j.sneeringer@usace.army.mil.

Sincerely,

Paul Maniccia

Paul M. Maniccia
Chief, Permits and Enforcement Branch
Regulatory Division

Enclosures

Copies Furnished:

Laura Teracino, U.S. Environmental Protection Agency Region 1,

Teracino.Laura@epa.gov

Ed Reiner, U.S. Environmental Protection Agency Region 1, reiner.ed@epa.gov

Rachel Croy, U.S. Environmental Protection Agency Region 1, croy.rachel@epa.gov

Alice Smith, Massachusetts DEP – Boston Central Office – Water Quality Certificate,
1 Winter Street, Boston, Massachusetts 02108, ASmith@mass.gov
(Transmittal #286092)

Philip DiPietro, Massachusetts DEP – NERO, 205B Lowell Street, Wilmington,
Massachusetts 01887, Philip.DiPietro@mass.gov

Brona Simon, Massachusetts State Historical Preservation Officer, Massachusetts
Historical Commission, 220 Morrissey Boulevard, Boston, Massachusetts 02125

Daniel Green, Newton Conservation Commission, 1000 Commonwealth Avenue,
Newton, Massachusetts 02459, jsteel@newtonma.gov

Jennifer Burke, GZA, 1350 Main Street, Suite 1400, Springfield, Massachusetts 01103,
Jennifer.burke@gza.com

DEPARTMENT OF THE ARMY PERMIT

Permittee City of Newton DPW; Attn: Maria Rose, 1000 Commonwealth Avenue, Newton, Massachusetts, 02459

Permit No. NAE-2021-0356

Issuing Office New England District

NOTE: The term "you" and its derivatives, as used in this permit, means the permittee or any future transferee. The term "this office" refers to the appropriate district or division office of the Corps of Engineers having jurisdiction over the permitted activity or the appropriate official of that office acting under the authority of the commanding officer.

You are authorized to perform work in accordance with the terms and conditions specified below.

Project Description:

This permit authorizes grading and the discharge of dredged and/or fill material into approximately **1.0** acres of the City Hall Pond, Cold Springs Brook and Hammond Brook as part of the City Hall Pond Sediment Removal Project. City Hall Pond is an in-river impoundment located upstream of Laundry Brook. The purpose for this project is to remove 4 to 6 feet of accumulated sediment from the pond to re-establish the pond capacity and to maintain aesthetic and passive recreational values of the pond.

The City of Newton proposes to dewater the pond using bypass pumps so that the sediment removal operations can be done "in the dry". Standard earth-moving equipment, such as excavators and bulldozers, will be used to remove the accumulated sediments, to stockpile materials for further dewatering, and/or to load materials onto dump trucks. The City will utilize three 15-foot-wide construction accessways into City Hall Pond, utilizing temporary construction mats, where necessary. The City estimates that it will remove approximately **3,270** cubic yards of accumulated sediment from the City Hall Pond and an additional **330** cubic yards from the upgradient Cold Springs and Hammond Brook culverts. All removed sediment will be permanently disposed at an off-site upland area.

The work is shown on the enclosed plans entitled "City Halls Ponds Maintenance Dredging Project, Newton Centre, Massachusetts," on a total of nine sheets, and dated "September 2020" and revised "12/20".

Project Location:

This project is proposed within City Hall Pond(s), Cold Springs Brook and Hammond Brook (upgradient tributaries) at 1000 Commonwealth Avenue, Newton Centre, Massachusetts. The site coordinates are centered at: Latitude 42.33730° N, Longitude -71.20746° W.

Permit Conditions:

General Conditions:

1. The time limit for completing the work authorized ends on **May 31, 2032**. If you find that you need more time to complete the authorized activity, submit your request for a time extension to this office for consideration at least one month before the above date is reached.
2. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition 4 below. Should you wish to cease to maintain the authorized activity, or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
3. If you discover any previously unknown historic or archeological remains while accomplishing the activity authorized by this permit, you must immediately notify this office of what you have found. We will initiate the Federal and State coordination

required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

4. If you sell the property associated with this permit, you must obtain the signature of the new owner in the space provided and forward a copy of the permit to this office to validate the transfer of this authorization.

5. If a conditioned water quality certification has been issued for your project, you must comply with the conditions specified in the certification as special conditions to this permit. For your convenience, a copy of the certification is attached if it contains such conditions.

6. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished in accordance with the terms and conditions of your permit.

Special Conditions:

1. The permittee shall ensure that a copy of this permit is at the work site (and the project office) authorized by this permit whenever work is being performed, and that all personnel with operational control of the site ensure that all appropriate personnel performing work are fully aware of its terms and conditions. The entire permit shall be made a part of any and all contracts and sub-contracts for work that affects areas of Corps jurisdiction at the site of the work authorized by this permit. This shall be achieved by including the entire permit in the specifications for work. The term "entire permit" means this permit (including its drawings, plans, appendices, and other attachments) and also includes permit modifications.

If the permit is issued after the construction specifications, but before receipt of bids or quotes, the entire permit shall be included as an addendum to the specifications. If the permit is issued after receipt of bids or quotes, the entire permit shall be included in the contract or sub-contract. Although the permittee may assign various aspects of the work to different contractors or sub-contractors, all contractors and sub-contractors shall be obligated by contract to comply with all environmental protection provisions contained within the entire permit, and no contract or sub-contract shall require or allow unauthorized work in areas of Corps jurisdiction.

(Special Conditions continue on page 4)

Further Information:

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:

- Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
- Section 14 of the Rivers and Harbors Act of 1899 (33 U.S.C. 408).
- Section 404 of the Clean Water Act (33 U.S.C. 1344).
- Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).

2. Limits of this authorization.

- a. This permit does not obviate the need to obtain other Federal, State, or local authorizations required by law.
- b. This permit does not grant any property rights or exclusive privileges.
- c. This permit does not authorize any injury to the property or rights of others.
- d. This permit does not authorize interference with any existing or proposed Federal project.

3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:

- a. Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from Natural causes.
- b. Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
- c. Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
- d. Design or construction deficiencies associated with the permitted work.

e. Damage claims associated with any future modification, suspension, or revocation of this permit.

4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.

5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:

a. You fail to comply with the terms and conditions of this permit.

b. The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).

c. Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 325.7 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measures ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. Extensions. General Condition 1 establishes a time limit for the completion of the activity authorized by this permit. Unless there are circumstances requiring either a prompt completion of the authorized activity or a reevaluation of the public interested decision, the Corps will normally give favorable consideration to a request for an extension of this time limit.

Your signature below, as permittee, indicates that you accept and agree to comply with the terms and conditions of this permit.

James McGonagle

Digitally signed by James McGonagle
Date: 2022.06.22 08:52:15 -04'00'

(Permittee)

(Date)

This permit becomes effective when the Federal official, designated to act for the Secretary of the Army, has signed below.

Paul Maniccia

6/27/2022

(District Engineer)

(Date)

When the structures or work authorized by this permit are still in existence at the time the property is transferred, the terms and conditions of this permit will continue to be binding on the new owner(s) of the property. To validate the transfer of this permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.

(Transferee)

(Date)

DEPARTMENT OF THE ARMY PERMIT

Special conditions continued from page 2:

2. The City of Newton (the permittee) must complete and return the enclosed Work Start Notification Form at least two weeks prior to commencing the authorized work.
3. All construction shall be completed in accordance with the limits of construction and construction sequences detailed on the attached plan drawings, entitled "City Halls Ponds Maintenance Dredging Project, Newton Centre, Massachusetts," on a total of nine sheets, and dated "September 2020" and revised "12/20". If you change the plans or construction methods for work within or adjacent to City Hall Pond(s), Cold Springs Brook, and/or Hammond Brook, please contact us immediately to discuss modification of this authorization. The Corps must approve any changes before you undertake them.
4. This Corps permit does not authorize you to "take" a federally listed endangered or threatened species in particular the northern long-eared bat (*Myotis septentrionalis*). See 16 USC 1532(13) and 16 USC 1532(19) for definitions of take, which include harass and harm. See 50 CFR 17.3 which further define harassment and harm.
5. The permittee and/or their contractor shall not conduct any tree clearing operations during the time period between June 1st and July 31st of any year, in order to minimize potential impacts to northern long eared bat pup roosting habitat.
6. Dredge material shall be dewatered in place or in stockpiles immediately adjacent to the pond(s) with erosion and sediment controls. This will allow the suspended sediment to settle and the filtered water to evaporate, percolate into the ground, or flow back to City Hall Pond(s), Cold Springs Brook, and/or Hammond Brook. The scheduling of dredging and dewatering shall be such that the capacity of the dewatering area is not exceeded under any circumstances.
7. Prior to transporting any sediment off-site for permanent disposal/beneficial re-use, the City of Newton will coordinate with the Corps the location(s) of the upland facilities where excavated material will be permanently disposed/beneficially re-used.
8. Appropriate measures must be taken to maintain normal downriver flows and to minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must be placed in a manner that will not be eroded by expected high flows.
9. Temporary construction access and dewatering fill shall be removed as soon as it is no longer needed, disposed of at an upland site, and suitably contained to prevent subsequent erosion into waters of the U.S., including wetlands.
10. All non-biodegradable sedimentation/erosion controls shall be removed promptly after the construction phase of this project.

11. The introduction, spread, or the increased risk of invasion of non-native invasive plant or animal species on the project site, into new or disturbed areas, or areas adjacent to the project site caused by the site work is prohibited and shall be appropriately managed by the permittee. The Corps may require the City to develop a DRAFT invasive species control plan (ISCP) if this becomes an issue. The DRAFT ISCP would need to be coordinated with the Corps for our approval prior to implementing it.

12. Prior to being onsite, the contractor shall thoroughly inspect and remove seeds, plant material, soil, mud, insects, and other invertebrates on all equipment, including construction mats, to be used on the project site to prohibit introduction of invasive organisms. At a minimum, the following shall be inspected and cleaned on terrestrial vehicles where applicable:

Rubber Tired Vehicles - Crevices in upper surface and panels, tires, rims, and fender wells, spare tire mounting area, bumpers, front and rear quarter panels, around and behind grills, bottom of radiator vent openings, brake mechanisms, transmission, stabilizer bar, shock absorbers, front and rear axles, beds, suspension units, exhaust systems, light casings, and mirrors.

Tracked Land Vehicles - Crevices in upper surface and panels, top of axles and tensioners, support rollers, between rubber or gridded areas, beneath fenders, hatches, under casings, and grills.

Interiors of All Vehicles - Beneath seats, beneath floor mats, upholstery, beneath foot pedals, inside folds of gear shift cover.

13. Periodic sediment removal operations to the area and depth limits described herein is authorized for ten years from the date of issuance of this permit, provided the sediment removal operations comply with the plans of record and disposal of the dredged material/beneficial reuse is at an upland site. However, the permittee must notify this office, in writing, 60 days before the intended date of any such sediment removal operations and shall not begin such operations until written authorization has been obtained. This 60-day notification is not required for the initial sediment removal operations authorized by this permit.

14. Except where stated otherwise, reports, drawings, correspondence and any other submittals required by this permit shall be marked with the words "Permit # **NAE-2021-0356**" and submitted via: a) MAIL: PATS Branch - Regulatory Division, Corps of Engineers, New England District, 696 Virginia Road, Concord, MA 01742-2751; b) EMAIL: paul.j.sneeringer@usace.army.mil and cenae-r@usace.army.mil; or c) FAX: (978) 318-8303. Documents which are not marked and addressed in this manner may not reach their intended destination and do not comply with the requirements of this permit. Requirements for immediate notification to the Corps shall be done by telephone to (978) 318-8338.

15. The permittee shall complete and return the enclosed Compliance Certification Form to this office at least within one month following the completion of the authorized work.

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: June 15, 2021

B. NAME AND ADDRESS OF PERSON REQUESTING PJD: Maria Rose, Environmental Engineer, City of Newton Department of Public Works, 1000 Commonwealth Avenue, Newton Massachusetts 02459

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: New England District, City of Newton – City Hall Pond(s) – Sediment Removal Project – NAE-2021-0356

**D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
(USE THE TABLE BELOW TO DOCUMENT MULTIPLE AQUATIC RESOURCES AND/OR AQUATIC RESOURCES AT DIFFERENT SITES)**

State: Massachusetts County/parish/borough: Middlesex City: Newton

Center coordinates of site (lat/long in degree decimal format):

Lat.: 42.33730 N Long.: -71.20746 W

Universal Transverse Mercator:

Name of nearest waterbody: Laundry Brook

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

Office (Desk) Determination. Date: 06/08/2021

Field Determination. Date(s): 03/23/2022

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH “MAY BE” SUBJECT TO REGULATORY JURISDICTION.

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource “may be” subject (i.e., Section 404 or Section 10/404)
City Hall Pond(s)	42.33730 N	-71.20746 W	1.0 acre	non-wetland waters	404

- 1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.
- 2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that: (1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources; (2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions; (3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331. If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable. This PJD finds that there "*may be*" waters of the U.S. and/or that there "*may be*" navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

- Maps, plans, plots or plat submitted by or on behalf of the PJD requestor:
Map: “City Hall Ponds Maintenance Dredging Project, Newton Centre, Massachusetts,” on a total of nine sheets, and dated “October 2020” and revised “12/20”.
- Data sheets prepared/submitted by or on behalf of the PJD requestor.
 - Office concurs with data sheets/delineation report.
 - Office does not concur with data sheets/delineation report. Rationale: _____.
- Data sheets prepared by the Corps: _____.
- Corps navigable waters’ study: _____.
- U.S. Geological Survey Hydrologic Atlas: _____.
 - USGS NHD data.
 - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite scale & quad name: Boston 1903 (1905 Edition) – 1:62500; Newton 1944 – 1:24000; Newton 2018 – 1:24000.
- Natural Resources Conservation Service Soil Survey. Citation: _____.
- National wetlands inventory map(s). Cite name: _____.
- State/local wetland inventory map(s): _____.
- FEMA/FIRM maps: _____.
- 100-year Floodplain Elevation is: _____. (National Geodetic Vertical Datum of 1929)
- Photographs:
 - Aerial (Name & Date): various.
 - Other (Name & Date): various.
- Previous determination(s). File no. and date of response letter: _____.
- Other information (please specify): _____.

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

Paul Snoring May 11, 2022
Signature and date of
Regulatory staff member
completing PJD

James
McGonagle  Digitally signed by James
McGonagle
Date: 2022.06.22 08:53:15 -04'00'
Signature and date of
person requesting PJD
(REQUIRED, unless obtaining
the signature is impracticable)¹

¹ Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.

CITY HALL PONDS MAINTENANCE DREDGING PROJECT

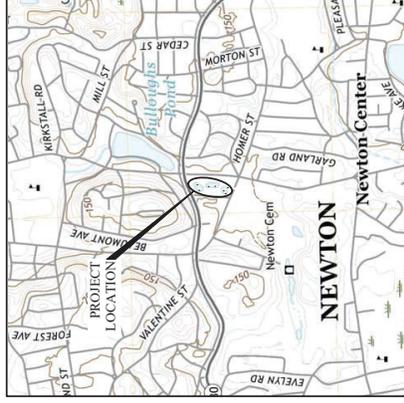
NEWTON CENTRE, MASSACHUSETTS

December, 2020

SECTION 404 DRAWING SET

DRAWING LIST:

- COVER SHEET
- C-1 EXISTING CONDITIONS
- C-2 EXISTING POND BOTTOM CONTOURS AND SEDIMENT SAMPLING LOCATIONS
- C-3 ESTIMATED BOTTOM OF SEDIMENT CONTOURS
- C-4 REPRESENTATIVE POND CROSS SECTIONS
- C-5 POND PROFILES
- C-6 EROSION AND SEDIMENT CONTROL & CONTROL OF WATER PLAN
- C-7 POND RESTORATION
- C-8 CULVERT CLEANING PLAN AND DETAILS



LOCUS PLAN
CITY HALL PONDS
NEWTON, MASSACHUSETTS
U.S.G.S. Newton Quad
1" = 2000'

CITY OF NEWTON
DEPARTMENT OF PUBLIC WORKS

RUTHANNE FULLER, MAYOR
JAMES MCGONAGLE, COMMISSIONER OF PUBLIC WORKS



**PRELIMINARY
NOT FOR CONSTRUCTION**

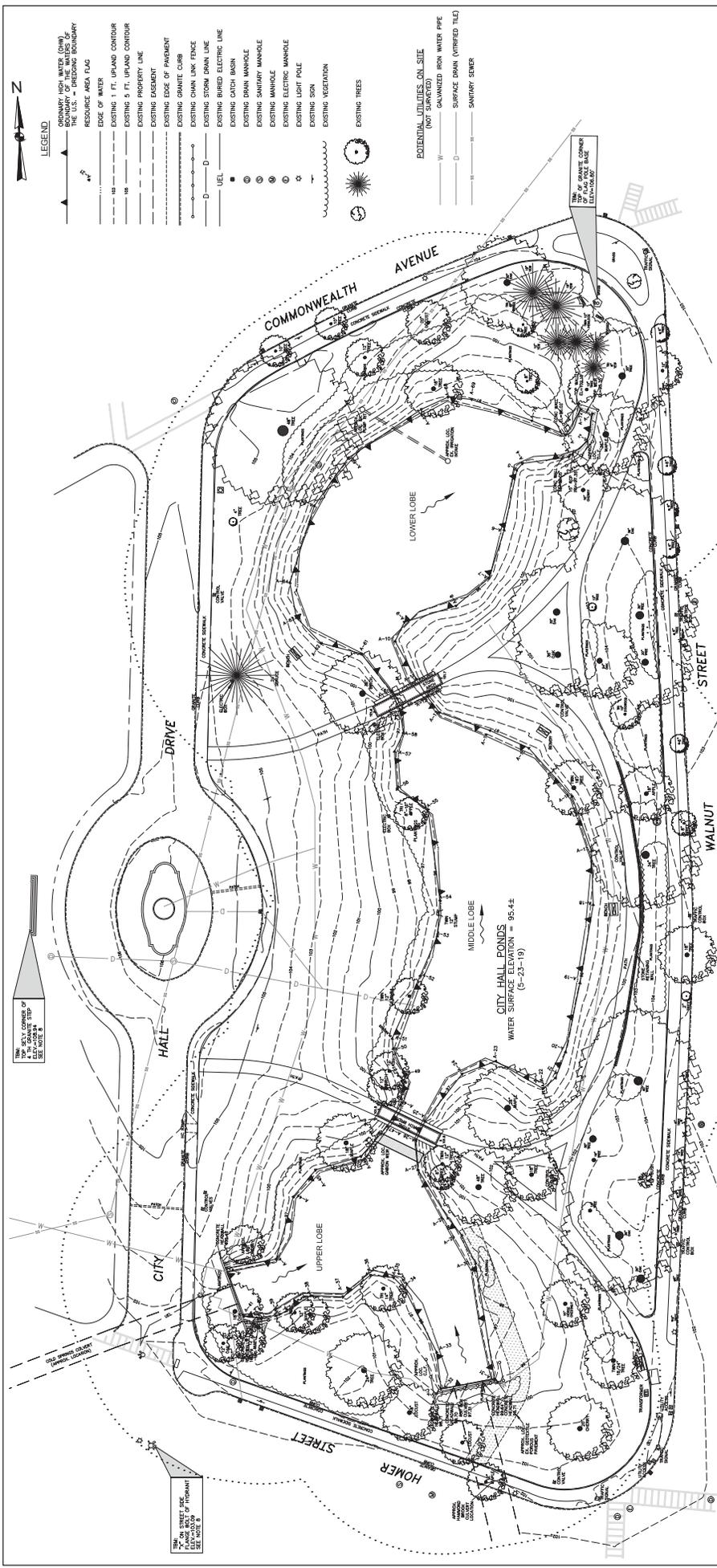
PREPARED FOR:
City of Newton Dept. of Public Works
1000 Commonwealth Avenue
Newton Centre, MA 02459

DESIGNER:

GZA GeoEnvironmental, Inc.
Engineers and Scientists
ONE FINANCIAL PLAZA
1350 Main Street, Suite 1400
Springfield, MA 01103
413-726-2100



THIS DRAWING SET HAS BEEN PREPARED TO SUPPORT THE PROJECT'S PRE-CONSTRUCTION NOTIFICATION UNDER THE MASSACHUSETTS GENERAL PERMIT FOR PROJECT AUTHORIZATION BY THE U.S. ARMY CORPS OF ENGINEERS-NEW ENGLAND DIVISION.



LEGEND

- PRIMARY HIGH WATER (CHW) BOUNDARY OF THE WATERS OF THE COMMONWEALTH
- RESOURCE AREA FLAG
- EDGE OF WATER
- EXISTING 1 FT. UPRAND CONTOUR
- EXISTING 5 FT. UPRAND CONTOUR
- EXISTING PROPERTY LINE
- EXISTING EASEMENT
- EXISTING EDGE OF PAVEMENT
- EXISTING GRANITE CURB
- EXISTING CHAIN LINK FENCE
- EXISTING STORM DRAIN LINE
- EXISTING BURIED ELECTRIC LINE
- EXISTING CATCH BASIN
- EXISTING DRAIN MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING MANHOLE
- EXISTING ELECTRIC MANHOLE
- EXISTING LIGHT POLE
- EXISTING SIGN
- EXISTING VEGETATION
- EXISTING TREES

POTENTIAL UTILITIES, ON SITE (NOT SURVEYED)

- ADVANCED IRON WATER PIPE
- SURFACE DRAIN (HATCHED TILE)
- SANITARY SEWER

GRAPHIC SCALE
0 10 20 30 40 50 60 70 80 90 100
SCALE IN FEET

NO.	ISSUE FOR REMEDIATION	DATE
1	ISSUE FOR REMEDIATION	12/22
2	ISSUE FOR REMEDIATION	01/22

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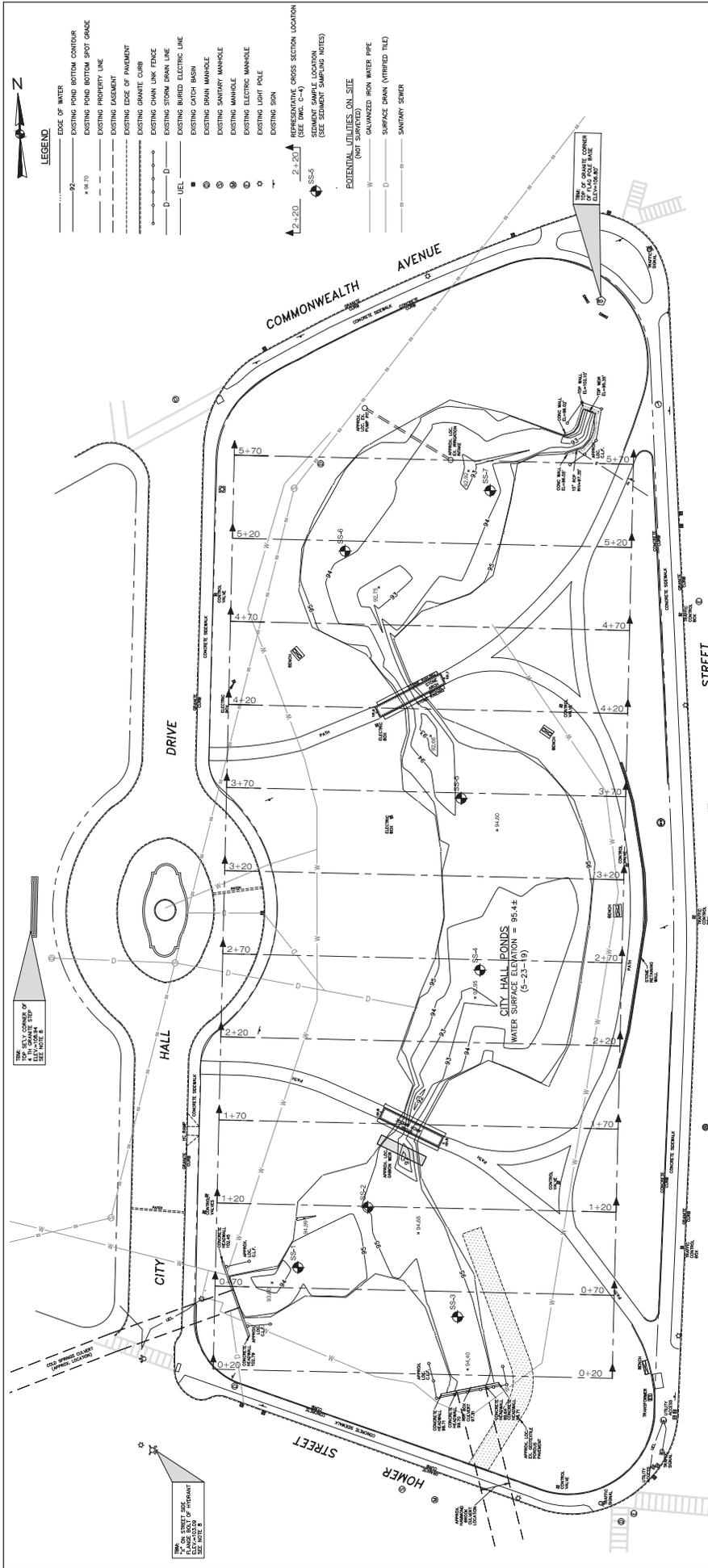
CITY HALL PONDS MAINTENANCE DREDGING PROJECT
NEWTON CENTRE, MASSACHUSETTS

EXISTING CONDITIONS

PREPARED BY: GZA Geotechnical, Inc. Engineers and Scientists www.gza.com 100 COMMONWEALTH AVENUE NEWTON CENTRE, MA 02459	CITY OF NEWTON DEPARTMENT OF PUBLIC WORKS 100 COMMONWEALTH AVENUE NEWTON CENTRE, MA 02459
DESIGNED BY: JTB DRAWN BY: JTB DATE: OCTOBER, 2020	CHECKED BY: JTB SCALE: 1"=40' PROJECT NO.: 15-01697-06-00 REVISION NO.: 0

PRELIMINARY NOT FOR CONSTRUCTION

- GENERAL NOTES:**
- TOPOGRAPHIC AND PLAINMETRIC INFORMATION TAKEN FROM PLANS ENTITLED "CITY HALL POND MAINTENANCE DREDGING PROJECT" PREPARED BY HERITAGE SURVEYS, INC., SOUTHAMPTON, MA, REVISED, JANUARY 22, 2020 (2 SHEETS).
 - BENCHMARK FOR SITE IS TOP OF GRANITE CORNER OF FLAG POLE BASE, AS SHOWN ON PLAN.
 - BATHYMETRIC SURVEY OF POND BOTTOM COMPLETED BY GZA GEOTECHNICAL, INC. (GZA) MAY 2019. PROBLEMS USED TO ESTIMATE DEPTH TO BOTTOM OF SEDIMENT FROM SURVEY COMPLETED DECEMBER 2010 BY GZA.
 - METLAND RESOURCE DELINEATION CONDUCTED BY GZA ON DECEMBER 10, 2019.
 - ESTIMATED IRRIGATION INTAKE PUMP PIT, GABION, CULVERT AND GEORGD LOCATIONS INCLUDING BULLDOGS FROM THE RESTORATION OF LANDS IN BROOKFIELD, MASSACHUSETTS BY BROOK CULVERTS BY BEC, INC. DATED JANUARY 1992 (AVAILABLE UPON REQUEST).
 - POTENTIAL SEWER, STORM AND IRRIGATION SYSTEM LOCATIONS (NOT VERIFIED) TAKEN FROM PLAN ENTITLED "CITY OF NEWTON, MASSACHUSETTS", DATED OCTOBER 14, 1992, BY CLARSTED BROTHERS LANDSCAPE ARCHITECTS, BROOKLINE, MA (AVAILABLE UPON REQUEST).
 - SITE LOCATION: 1000 COMMONWEALTH AVE. MBLF: 64001 001.
 - THE CITY SURVEYOR HAS INDICATED THAT TBM ELEVATION OF 106.80 IS EQUIVALENT TO ELEVATION 106.06 ON NEWTON CITY BASE.
 - HORIZONTAL DATUM IS NAD83 MASSACHUSETTS STATE PLANE MASS MANLAND COORDINATE SYSTEM.



LEGEND

- EDGE OF WATER
- - - EXISTING POND BOTTOM CONTOUR
- - - EXISTING POND BOTTOM SPOT GRADE
- - - EXISTING PROPERTY LINE
- - - EXISTING EASEMENT
- - - EXISTING EDGE OF PAVEMENT
- - - EXISTING GRANITE CURB
- - - EXISTING CHAIN LINK FENCE
- - - EXISTING STORM DRAIN LINE
- - - EXISTING BURIED ELECTRIC LINE
- - - EXISTING CATCH BASIN
- - - EXISTING DRAIN MANHOLE
- - - EXISTING SANITARY MANHOLE
- - - EXISTING MANHOLE
- - - EXISTING ELECTRIC MANHOLE
- - - EXISTING LIGHT POLE
- - - EXISTING SIGN
- ▲ REPRESENTATIVE CROSS SECTION LOCATION (SEE DWG. C-4)
- SEDIMENT SAMPLE LOCATION (SEE SEDIMENT SAMPLING NOTES)

POTENTIAL UTILITIES ON-SITE

- (NOT SHOWN) POTENTIAL SANITARY SEWER
- ADVANCED IRON WATER PIPE
- SURFACE DRAIN (UNTYPED TILE)
- SANITARY SEWER



NO.	REVISION	DATE
1	ISSUE FOR PERMITTING	12/20
2	ISSUE FOR CONSTRUCTION	01/20

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA. NO PART OF THIS DRAWING IS TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN CONSENT OF GZA. ANY USE OF THIS DRAWING FOR ANY OTHER PURPOSE WITHOUT THE WRITTEN CONSENT OF GZA, ANY REPRODUCTION OR TRANSMISSION OF THIS DRAWING, OR ANY PART THEREOF, WITHOUT THE WRITTEN CONSENT OF GZA, WILL BE AT THE USER'S SOLE RISK AND WITHOUT ANY RISK OF LIABILITY TO GZA.

CITY HALL PONDS MAINTENANCE DREDGING PROJECT
NEWTON CENTRE, MASSACHUSETTS

EXISTING POND BOTTOM CONTOURS AND SEDIMENT SAMPLING LOCATIONS

PREPARED BY: CITY OF NEWTON
DEPARTMENT OF PUBLIC WORKS
1000 COMMONWEALTH AVENUE
NEWTON CENTRE, MA 02459

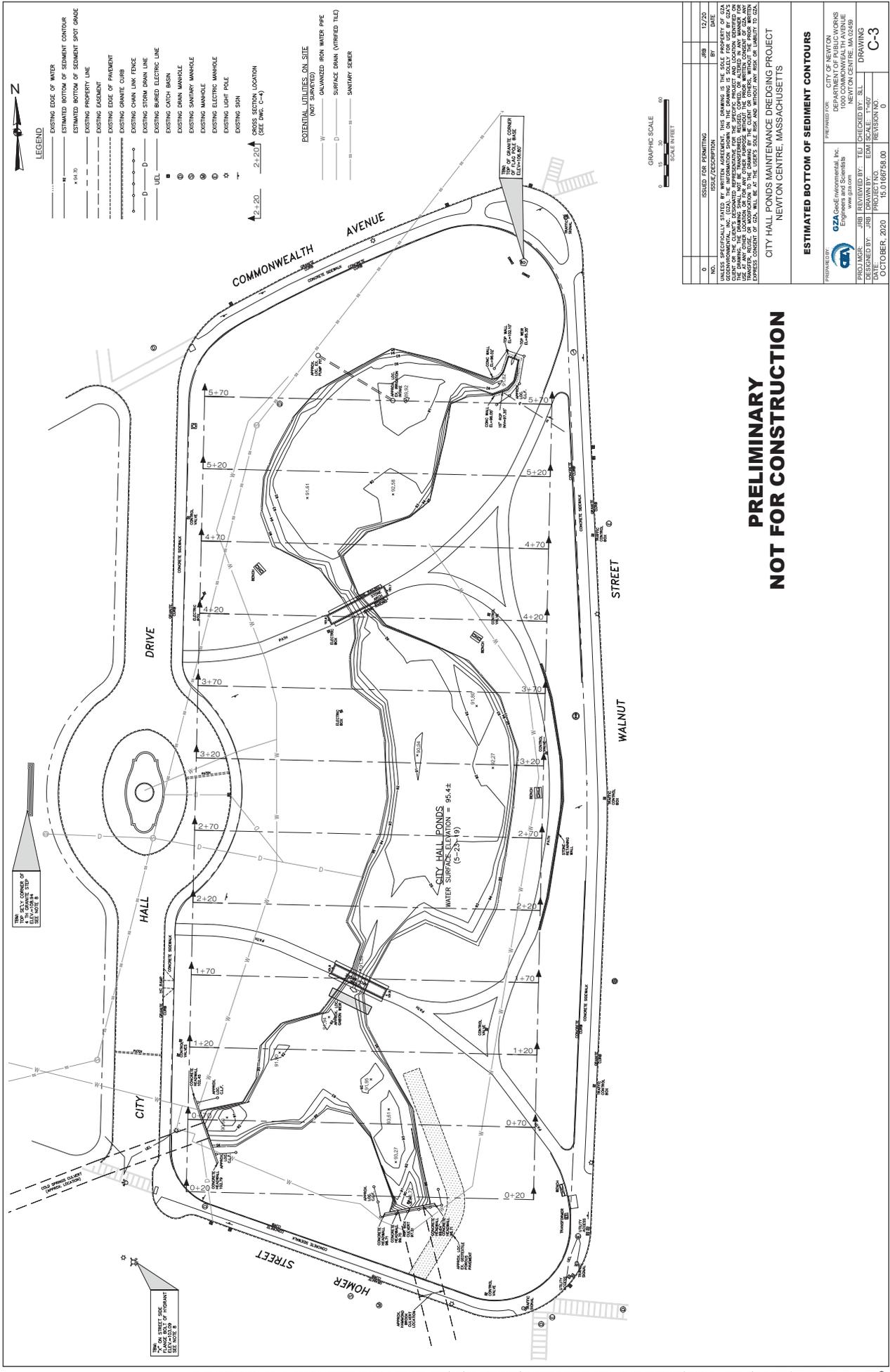
DESIGNED BY: JIBI DEWANEY, P.E.
CHECKED BY: JIBI DEWANEY, P.E.
SCALE: 1"=40'

DATE: OCTOBER, 2020
PROJECT NO.: 15-0166758-00
REVISION NO.: 0

DRAWING: **C-2**

**PRELIMINARY
NOT FOR CONSTRUCTION**

- SEDIMENT SAMPLING NOTES:**
1. SEDIMENT SAMPLES SS-1 THROUGH SS-7 COLLECTED BY GZA GEOTECHNICAL, INC. ON NOVEMBER 15, 2019.
 2. SEDIMENT SAMPLES SS-4 AND SS-5 WERE COMPOSITED INTO SAMPLE SS-4/5. SEDIMENT SAMPLES SS-6 AND SS-7 WERE COMPOSITED INTO SAMPLE SS-6/7.



LEGEND

- EXISTING EDGE OF WATER
- ESTIMATED BOTTOM OF SEDIMENT CONTOUR
- ESTIMATED BOTTOM OF SEDIMENT SPOT GRADE
- EXISTING PROPERTY LINE
- EXISTING EASEMENT
- EXISTING EDGE OF PARADENT
- EXISTING GRANITE CURB
- EXISTING CHAIN LINK FENCE
- EXISTING STORM DRAIN LINE
- EXISTING BARRIED ELECTRIC LINE
- UEL
- EXISTING DRAIN MANHOLE
- EXISTING SANITARY MANHOLE
- EXISTING MANHOLE
- EXISTING ELECTRIC MANHOLE
- EXISTING LIGHT POLE
- EXISTING SIGN
- CROSS SECTION LOCATION (SEE DRG. C-4)

- POTENTIAL LIQUIDES ON SITE**
(NOT SCHEDULED)
- GALVANIZED IRON WATER PIPE
 - SURFACE DRAIN (KIMFIED TILE)
 - SANITARY SEWER



NO.	SCALE FOR EXISTING	1/2" = 20'
NO.	SCALE DESCRIPTION	1" = 10'

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PREPARED BY:	JOB:	DESIGNED BY:	PROJECT NO.:	DATE:
DESIGNED BY:	JOB:	DESIGNED BY:	PROJECT NO.:	DATE:
DATE:	PROJECT NO.:	REVISION NO.:	REVISION NO.:	REVISION NO.:
OCTOBER, 2020	15.0166758.00	0	0	0

CITY HALL PONDS MAINTENANCE DREDGING PROJECT
NEWTON CENTRE, MASSACHUSETTS

ESTIMATED BOTTOM OF SEDIMENT CONTOURS

PREPARED BY: CITY OF NEWTON
DEPARTMENT OF PUBLIC WORKS
1000 COMMONWEALTH AVENUE
NEWTON CENTRE, MA 02459

DESIGNED BY: JIB
DRAWN BY: JIB
SCALE: 1" = 10'

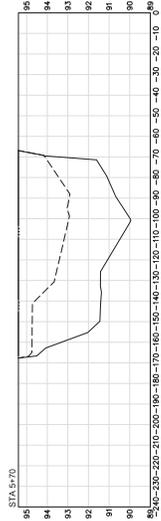
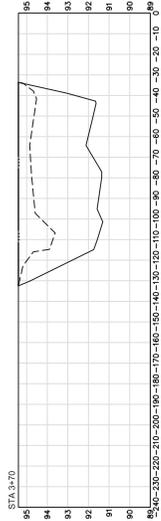
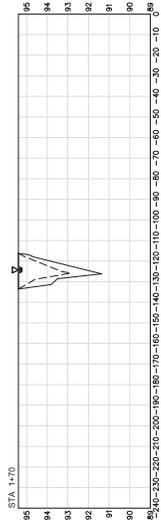
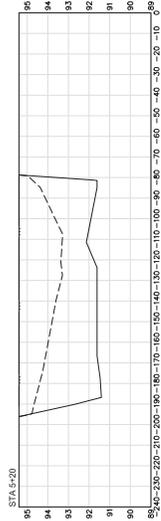
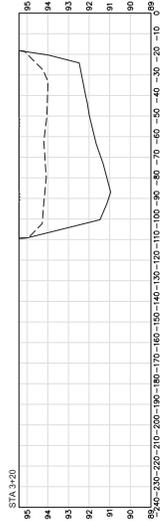
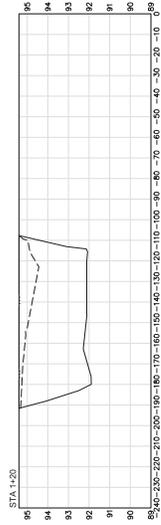
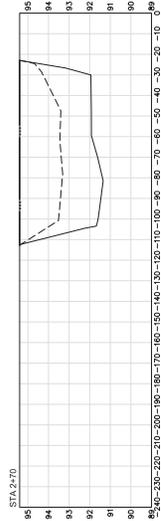
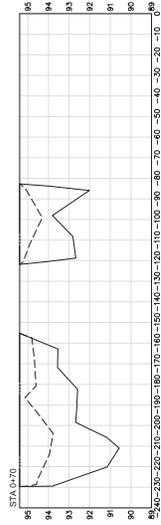
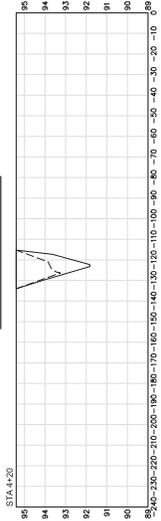
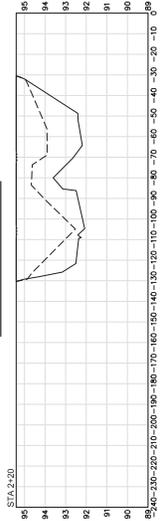
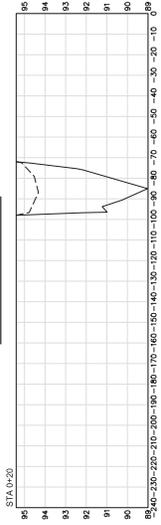
DRAWING: C-3
REVISION NO.: 0

**PRELIMINARY
NOT FOR CONSTRUCTION**

UPPER LOBE

MIDDLE LOBE

LOWER LOBE



APPROXIMATE SEDIMENT VOLUMES: 800 CY

1,370 CY

1,100 CY

APPROXIMATE TOTAL SEDIMENT VOLUME: 3,600 CY
(INCLUDING 330 CY IN INLET CULVERTS)

**PRELIMINARY
NOT FOR CONSTRUCTION**

LEGEND

 W.S.E. = 98.41 WATER SURFACE ELEVATION (6/25/19)
 EXISTING POND BOTTOM (5/2019)
 PROPOSED/ORIG. POND BOTTOM (12/2019)



NO.	ISSUED FOR	DATE
0	ISSUE FOR PERMITTING	12/22
	DATE	

NO.	ISSUE/DESCRIPTION	DATE
0	ISSUE/DESCRIPTION	12/22
	DATE	

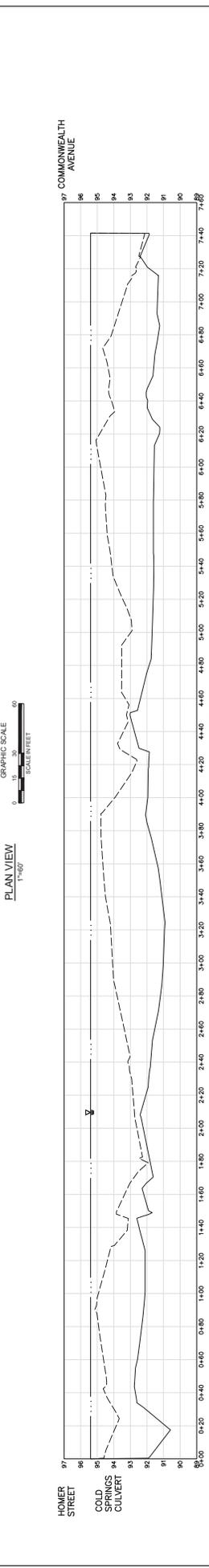
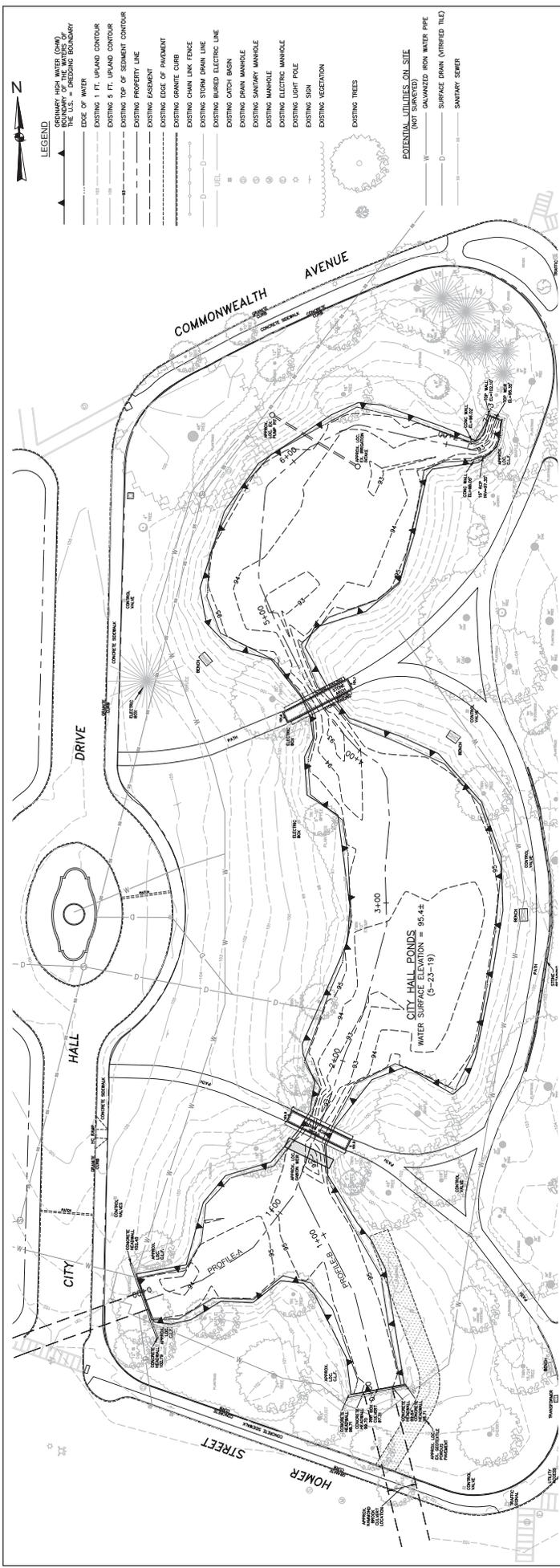
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CITY HALL PONDS MAINTENANCE DREDGING PROJECT
 NEWTON CENTRE, MASSACHUSETTS

REPRESENTATIVE POND CROSS SECTIONS

PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists www.gza.com 100 COMMONWEALTH AVENUE NEWTON CENTRE, MA 02459	CITY OF NEWTON DEPARTMENT OF PUBLIC WORKS 100 COMMONWEALTH AVENUE NEWTON CENTRE, MA 02459
DESIGNED BY: JEB DRAWN BY: EDM DATE: OCTOBER, 2020	SHEET NO.: 1-467 PROJECT NO.: 15-0166758-00 REVISION NO.: 0

C-4



NOTE:
 1. BATHYMETRIC SURVEY OF POND BOTTOM COMPLETED BY GZA GEOSCIENCE, INC. (GZA) MAY 2019. PROFILES USED TO ESTIMATE DEPTH TO BOTTOM OF SEDIMENT FROM SURVEY COMPLETED DECEMBER 2010 BY GZA.

LEGEND:
 ▽ W.S.E.=95.4± (5-23-19) WATER SURFACE ELEVATION
 - - - - - TOP OF SEDIMENT
 _____ BOTTOM OF SEDIMENT

LEGEND:
 PRIMARY HIGH WATER (CHW) - - - - -
 SECONDARY HIGH WATER (SHW) - - - - -
 THE U.S. PARTING BOUNDARY - - - - -
 EDGE OF WATER - - - - -
 EXISTING 1 FT. UPWARD CONTOUR - - - - -
 EXISTING 5 FT. UPWARD CONTOUR - - - - -
 EXISTING TOP OF SEDIMENT CONTOUR - - - - -
 EXISTING PROPERTY LINE - - - - -
 EXISTING EASEMENT - - - - -
 EXISTING EDGE OF PARAPET - - - - -
 EXISTING GRANITE CURB - - - - -
 EXISTING CHAIN LINK FENCE - - - - -
 EXISTING STORM DRAIN LINE - - - - -
 EXISTING BURIED ELECTRIC LINE - - - - -
 EXISTING CATCH BASIN - - - - -
 EXISTING DRAIN MANHOLE - - - - -
 EXISTING SANITARY MANHOLE - - - - -
 EXISTING MANHOLE - - - - -
 EXISTING ELECTRIC MANHOLE - - - - -
 EXISTING LIGHT POLE - - - - -
 EXISTING SIGN - - - - -
 EXISTING VEGETATION - - - - -
 EXISTING TREES - - - - -

POTENTIAL UTILITIES ON SITE (NOT SHOWN):
 GALVANIZED IRON WATER PIPE - - - - -
 SURFACE DRAIN (IMPURED TILE) - - - - -
 SANITARY SEWER - - - - -

NO.	ISSUE FOR COMMENT	DATE
0	ISSUE FOR COMMENT	10/20
1	ISSUE FOR COMMENT	10/20

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POND PROFILES
 CITY HALL PONDS MAINTENANCE DREDGING PROJECT
 NEWTON CENTRE, MASSACHUSETTS

PREPARED BY: GZA Geoscientific, Inc.
 ENGINEERS AND SURVEYORS
 1000 COMMONWEALTH AVENUE
 NEWTON CENTRE, MA 02459

DESIGNED BY: JIB
 DRAWN BY: JEM
 DATE: OCTOBER, 2020
 PROJECT NO.: 15-01067186-00
 REVISION NO.: 0

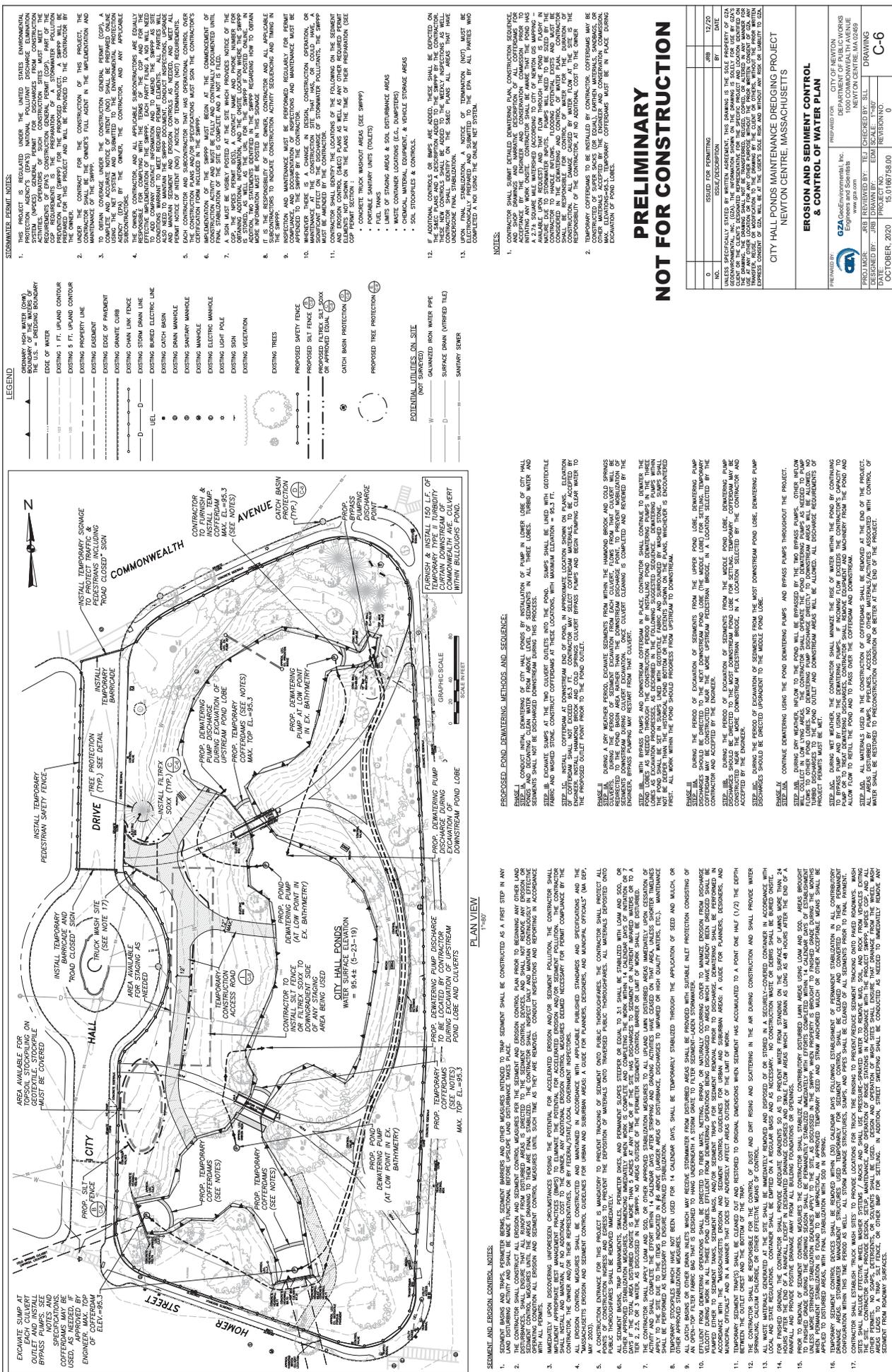
CITY OF NEWTON
 DEPARTMENT OF PUBLIC WORKS
 1000 COMMONWEALTH AVENUE
 NEWTON CENTRE, MA 02459

DRAWING: C-5

SCALE: 1"=40'

SCALE: 1"=40'

SCALE: 1"=40'



STORMWATER PERMIT NOTES:

1. THE PROJECT IS REGULATED UNDER THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY'S (EPA'S) NATIONAL POLLUTANT DISCHARGE ELIMINATION ACT (NPDES) PERMIT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD.
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- NOTES:**
1. CONTRACTOR SHALL SUBMIT DETAILED DEMATERIALING PLAN, CONSTRUCTION SCHEDULE, AND SCHEDULE OF DEMATERIALING ACTIVITIES TO THE OWNER AND CONSERVATION COMMISSION FOR REVIEW AND APPROVAL. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD.
 2. TEMPORARY COFFERDAMS TO BE INSTALLED BY CONTRACTOR. COFFERDAMS MAY BE ACCEPTED BY THE OWNER AND CONSERVATION COMMISSION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD.

PRELIMINARY NOT FOR CONSTRUCTION

NO.	ISSUED FOR REVISION	ISSUED BY	DATE
0	ISSUED FOR PERMITTING	BY	10/20/20
1	ISSUED FOR PERMITTING	BY	10/20/20

UNLESS SPECIFICALLY STATED BY WRITTEN AGREEMENT, THIS DRAWING IS THE SOLE PROPERTY OF GZA AND SHALL REMAIN THE PROPERTY OF GZA. NO PART OF THIS DRAWING SHALL BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN CONSENT OF GZA. THE USER'S SOLE RISK AND LIABILITY IN CONNECTION WITH THE USE OF THIS DRAWING SHALL BE THE USER'S SOLE RISK AND LIABILITY IN CONNECTION WITH THE USE OF THIS DRAWING.

CITY HALL PONDS MAINTENANCE PRECONSTRUCTION PROJECT
NEWTON CENTRE, MASSACHUSETTS

EROSION AND SEDIMENT CONTROL & CONTROL OF WATER PLAN

PROJECT NO. 15-016793-00
REVISION NO. 0

DATE: OCTOBER, 2020

DESIGNED BY: JIB
DRAWN BY: EMM SCALE: 1"=50'
CHECKED BY: JIB
SCALE: 1"=50'

PROJECT NO. 15-016793-00
REVISION NO. 0

C-6

- LEGEND**
- INSTALL 1 FT. UPWARD CONTOUR EXISTING 5 FT. UPWARD CONTOUR
 - EXISTING PROPERTY LINE
 - EXISTING EDGE OF PAVEMENT
 - EXISTING GRANITE CURB
 - EXISTING STORM DRAIN LINE
 - EXISTING BARED ELECTRIC LINE
 - EXISTING CATCH BASIN
 - EXISTING SANITARY MANHOLE
 - EXISTING ELECTRIC MANHOLE
 - EXISTING LIGHT POLE
 - EXISTING SIGN
 - EXISTING VEGETATION
 - EXISTING TREES
 - PROPOSED SAFETY FENCE
 - PROPOSED SIGN
 - PROPOSED FLEXIBLE SUEX SOX OR APPROVED EQUIV.
 - CATCH BASIN PROTECTION
 - PROPOSED TREE PROTECTION
- POTENTIAL UTILITIES, ON SITE (NOT SHOWN)**
- UNSATURATED IRON WATER PIPE
 - SURFACE DRAIN (W/WRITTEN TIE)
 - SANITARY SEWER
- EROSION AND SEDIMENT CONTROL:**
1. SEDIMENT BARRIERS AND OTHER MEASURES INTENDED TO TRAP SEDIMENT SHALL BE CONSTRUCTED AS A FIRST STEP IN ANY LAND DISTURBING ACTIVITY AND SHALL BE MADE FUNCTIONAL BEFORE UPRIDE LAND DISTURBANCE BEGINS.
 2. DISTURBED AREAS SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION AS SOON AS POSSIBLE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD.
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 4. ALL EROSION CONTROL MEASURES SHALL BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH APPLICABLE PUBLISHED STANDARDS AND SPECIFICATIONS AND IN ACCORDANCE WITH THE NPDES PERMIT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD.
 5. A CONSTRUCTION ENTRANCE FOR THIS PROJECT IS MANDATORY TO PREVENT TRACKING OF SEDIMENT ONTO PUBLIC THOROUGHFARES. THE CONTRACTOR SHALL PROTECT ALL PUBLIC THOROUGHFARES FROM TRACKING OF SEDIMENT ONTO PUBLIC THOROUGHFARES. THE CONTRACTOR SHALL PROTECT ALL PUBLIC THOROUGHFARES FROM TRACKING OF SEDIMENT ONTO PUBLIC THOROUGHFARES. THE CONTRACTOR SHALL PROTECT ALL PUBLIC THOROUGHFARES FROM TRACKING OF SEDIMENT ONTO PUBLIC THOROUGHFARES.
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PLAN VIEW

1:500

PROCESSED POND DEMATERIALING METHODS AND SEQUENCE:

STEP I: INITIAL DEMATERIALING OF CITY HALL PONDS BY INSTALLATION OF PUMP IN LOWER LOBE OF CITY HALL POND. DURING THE PERIOD OF DEMATERIALING, FLOWS FROM THAT LOBE WILL BE DIRECTED TO THE MIDDLE POND. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD.

STEP II: EXCAVATE SWAMP AT TWO CULVERT OUTLETS INTO THE POND. SWAMP SHALL BE USED WITH GEOTEXTILE FABRIC AND WASHED STONE. CONSTRUCT COFFERDAMS AT THESE LOCATIONS WITH MAXIMUM ELEVATION = 94.3 FT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD.

STEP III: DURING THE PERIOD OF DEMATERIALING OF SEDIMENTS FROM THE MIDDLE POND LOBE, DEMATERIALING PUMPS SHOULD BE DIRECTED TO THE MIDDLE POND LOBE (THE MIDDLE LOBE) FOR SETTLING. TEMPORARY COFFERDAMS SHALL BE CONSTRUCTED NEAR THE MORE DOWNSTREAM FEEDSTREAM BRIDGE, IN A LOCATION SELECTED BY THE ENGINEER. BYPASS PUMPING MAY RESUME FROM THAT CULVERT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD.

STEP IV: DURING THE PERIOD OF DEMATERIALING OF SEDIMENTS FROM THE MIDDLE POND LOBE, DEMATERIALING PUMPS SHOULD BE DIRECTED TO THE MIDDLE POND LOBE (THE MIDDLE LOBE) FOR SETTLING. TEMPORARY COFFERDAMS SHALL BE CONSTRUCTED NEAR THE MORE DOWNSTREAM FEEDSTREAM BRIDGE, IN A LOCATION SELECTED BY THE ENGINEER. BYPASS PUMPING MAY RESUME FROM THAT CULVERT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD.

STEP V: DURING THE PERIOD OF DEMATERIALING OF SEDIMENTS FROM THE MIDDLE POND LOBE, DEMATERIALING PUMPS SHOULD BE DIRECTED TO THE MIDDLE POND LOBE (THE MIDDLE LOBE) FOR SETTLING. TEMPORARY COFFERDAMS SHALL BE CONSTRUCTED NEAR THE MORE DOWNSTREAM FEEDSTREAM BRIDGE, IN A LOCATION SELECTED BY THE ENGINEER. BYPASS PUMPING MAY RESUME FROM THAT CULVERT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING AND MAINTAINING THE NPDES PERMIT THROUGHOUT THE CONSTRUCTION PERIOD.



**US Army Corps
of Engineers**®
New England District

WORK-START NOTIFICATION FORM
(Minimum Notice: Two weeks before work begins)

EMAIL TO: paul.j.sneeringer@usace.army.mil and cenae-r@usace.army.mil; or

MAIL TO: **Paul Sneeringer**
Regulatory Division
U.S. Army Corps of Engineers, New England District
696 Virginia Road
Concord, Massachusetts 01742-2751

Corps of Engineers Permit #NAE-2021-0356 was issued to the City of Newton – DPW on **May 18, 2022**. This work is located in the City Hall Pond(s), Cold Spring Brook, and Hammond Brook at Newton City Hall, 1000 Commonwealth Avenue in Newton, Massachusetts. This permit authorized the City (the permittee to grade and to discharge dredged and/or fill material into approximately 1.0 acres of waters of the United States, including jurisdictional wetlands. City Hall Pond(s) is an in-river impoundment located at the intersection of Cold Springs Brook and Hammond Brook. The purpose for this project is to remove 4 to 6 feet of accumulated sediment from the pond to re-establish the pond capacity and to maintain aesthetic and passive recreational values of the pond.

The City of Newton proposes to dewater the pond using bypass pumps so that the sediment removal operations can be done “in the dry”. Standard earth-moving equipment, such as excavators and bulldozers, will be used to remove the accumulated sediments, to stockpile materials for further dewatering, and/or to load materials onto dump trucks. The City will utilize three 15-foot-wide construction accessways into City Hall Pond(s), utilizing temporary construction mats, where necessary. The City estimates that it will remove approximately 3,270 cubic yards of accumulated sediment from the City Hall Pond(s) and an additional 330 cubic yards from the upgradient Cold Springs and Hammond Brook culverts. All removed sediment will be permanently disposed at or beneficially re-used at an off-site upland disposal and/or beneficial re-use site.

The work is shown on the enclosed plans entitled “City Halls Ponds Maintenance Dredging Project, Newton Centre, Massachusetts,” on a total of nine sheets, and dated “September 2020” and revised “12/20”.

The people (e.g., contractor) listed below will do the work, and they understand the permit's conditions and limitations.

PLEASE PRINT OR TYPE

Name of Person/Firm: _____

Business Address: _____

Phone & email: () _____ () _____

Proposed Work Dates: **Start:** _____ **Finish:** _____

Permittee/Agent Signature: _____ **Date:** _____

Printed Name: _____ **Title:** _____

Date Permit Issued: May 18, 2022 **Date Permit Expires:** May 31, 2032

FOR USE BY THE CORPS OF ENGINEERS

PM: Paul Sneeringer **Submittals Required:** Yes

Inspection Recommendation: Yes



**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-2021- 0356

Project Manager: Paul Sneeringer

Name of Permittee: City of Newton – Department of Public Works

Permit Issuance Date: May 18, 2022

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 the mitigation monitoring, which requires separate submittals.

* E-MAIL TO: cenae-r@usace.army.mil; or *
* * * * *
* MAIL TO: Permits and Enforcement Branch A *
* U.S. Army Corps of Engineers, New England District *
* Regulatory Division *
* 696 Virginia Road *
* Concord, Massachusetts 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



Ruthanne Fuller
Mayor

City of Newton, Massachusetts
Department of Planning and Development
1000 Commonwealth Avenue Newton, Massachusetts 02459

Telephone
(617) 796-1120
Telefax
(617) 796-1142
TDD/TTY
(617) 796-1089
www.newtonma.gov

Barney S. Heath
Director

November 20, 2020

Maria Rose
City of Newton
1000 Commonwealth Ave
Newton, MA 02459

RE: Order of Conditions and
Certificate of Understanding
Site: 1000 Commonwealth Avenue
DEP#: 239-878

Dear Ms. Rose:

Enclosed you will find the Order of Conditions (the Order) issued pursuant to the Wetlands Protection Act, General Laws, Ch. 131, Sec. 40 and pursuant to the Newton Floodplain/Watershed Protection Ordinance, Section 22-22, for the above-referenced project.

No work on the project may begin until the following requirements have been satisfied:

- You have read and understand the enclosed Order of Conditions (especially Newton's Findings and Special Conditions). It is the responsibility of the owner/applicant to ensure that all conditions and approved plans are complied with. Deviation from the approved plans or conditions may result in a stop work order or further enforcement.
- The owner has signed and returned to me the attached Certificate of Understanding.
- The 10-business day appeal period had elapsed. The appeal period begins on the date of issue (pages 1 and 11 of the Order).
- You have recorded the original Order and Newton's Special Conditions at the Middlesex South Registry of Deeds and have forwarded proof of recording to the Conservation Commission and to the Building Department. The Order is not valid until it is recorded.
- Special conditions include, but are not limited to:
 22. The Stowmwater Pollution Prevention Plan (SWPPP) must be submitted to the Conservation Office prior to the start of work.
 24. The applicant must schedule and attend a pre-construction site visit.
 26. Approved plans, notes, and pertinent aspects of the NOI narrative must be adhered to. The proposed sequencing of activities such as sediment and erosion control, dewatering, access creation, dredging operations, and restoration is critical and must be adhered to.
 27. In general, dewatering shall occur as noted on plan sheet C-6. Details associated with the dewatering of North Pond must be submitted to the Conservation Office for review and approval prior to execution. At no time shall sediment-laden water be allowed to enter Bullough's Pond.
 34. Restoration plantings (27 native shrubs, as per the approved plans) within Commission jurisdiction must:
 - a. Be distributed through all disturbed and unvegetated areas (a sketch plan showing proposed locations will be submitted to the Conservation Office for review and approval prior to installation)
 - b. Be installed in compliance with the approved plans (desired changes must be approved by the Conservation office in advance)
 - c. Be installed within 5 months of the completion of dredging.
 - d. Have a survival rate of 80% of total number of shrubs (after 2 growing seasons)
 - e. Disturbed soil around the shrubs will be mulched and seeded as per the approved plans.
 35. All areas of disturbed turf shall be restored immediately upon conclusion of construction activities as per the approved plans.

Upon completion of the project, you must:

- Submit a "Request for a Certificate of Compliance" (state WPA Form 8a),
- Submit a letter from an engineer stating that the project was completed in substantial compliance with the order and plans.

- Submit an sketch "as-built plan" and letter from the landscaper certifying compliance with the approved planting plan.
- Record your Certificate of Compliance at the Middlesex South Registry of Deeds (& send proof of recording to Cons. Office)

If you have any questions, please don't hesitate to contact the office at 617-796-1134.

For the Commission,



Claire Rundell
Assistant Environmental Planner

Enclosures: Order of Conditions

Certificate of Understanding

CC: *Wetlands Division, DEP - NERO, 205B Lowell St., Wilmington, MA 01887*

**Certificate of Understanding re
Conditions and Restrictions in Wetlands and Buffer Zones**

Street Address: _____

DEP File # _____

Owner: _____

OOO Issue Date: _____

I, _____, one of the owners of _____, Newton, Massachusetts, do hereby acknowledge and understand that:

<ul style="list-style-type: none"> • A portion of my property lies within buffer zones and/or wetlands and that any new work within this area is subject to review and approval by the Conservation Commission, 	<i>initials</i> _____
<ul style="list-style-type: none"> • I, as property owner, am responsible for all work on my property even if it is conducted by private contractors, 	<i>initials</i> _____
<ul style="list-style-type: none"> • I have received and read and understand all the conditions established in the referenced Order of Conditions (OOO), 	<i>initials</i> _____
<ul style="list-style-type: none"> • I have recorded the OOO at the Registry of Deeds and submitted proof of recording to the Conservation Office and Building Dept./ISD. 	<i>initials</i> _____
<ul style="list-style-type: none"> • There are specific requirements PRIOR to the start of work, 	<i>initials</i> _____
<ul style="list-style-type: none"> • There are specific requirements DURING construction and work, 	<i>initials</i> _____
<ul style="list-style-type: none"> • There are specific requirements for getting a Certificate of Compliance once all work is complete, and 	<i>initials</i> _____
<ul style="list-style-type: none"> • There are a number of ongoing/perpetual conditions that restrict the kind of landscaping and maintenance activities allowed within wetlands and/or buffer zones. 	<i>initials</i> _____

I have carefully reviewed and understand all these requirements and agree to adhere to them.

(Signature)

(Printed Name)

(Date)

Please complete this form and return it to:

Jennifer Steel, Conservation Commission
1000 Commonwealth Avenue
Newton, Massachusetts 02459



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

Provided by MassDEP:
 239-878
 MassDEP File #

eDEP Transaction #

City/Town

A. General Information (cont.)

6. Property recorded at the Registry of Deeds for (attach additional information if more than one parcel):
 Middlesex

a. County _____ b. Certificate Number (if registered land) _____
 c. Book _____ d. Page _____

7. Dates: 11/3/20 11/19/20 11/20/20
 a. Date Notice of Intent Filed b. Date Public Hearing Closed c. Date of Issuance

8. Final Approved Plans and Other Documents (attach additional plan or document references as needed):

City Hall Ponds Maintenance Dredging Project
 a. Plan Title _____
 GZA GeoEnvironmental, Inc _____ Thomas Jenkins Jr _____
 b. Prepared By c. Signed and Stamped by
 9/11/20 _____ varies _____
 d. Final Revision Date e. Scale _____
 Operation and Maintenance Plan for City Hall Ponds _____ October 2020 _____
 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

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) _____ 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. <input checked="" type="checkbox"/> Bank	45 (temp) a. linear feet	45 (temp) b. linear feet	45 c. linear feet	45 d. linear feet
5. <input type="checkbox"/> Bordering Vegetated Wetland	a. square feet	b. square feet	c. square feet	d. square feet
6. <input checked="" type="checkbox"/> Land Under Waterbodies and Waterways	39200 a. square feet 3600 e. c/y dredged	39200 b. square feet 3600 f. c/y dredged	39200 c. square feet	39200 d. square feet
7. <input type="checkbox"/> 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. <input type="checkbox"/> 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. <input type="checkbox"/> 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. <input type="checkbox"/> Designated Port Areas	Indicate size under Land Under the Ocean, below			
11. <input type="checkbox"/> Land Under the Ocean	_____	_____		
	a. square feet	b. square feet		
	_____	_____		
	c. c/y dredged	d. c/y dredged		
12. <input type="checkbox"/> Barrier Beaches	Indicate size under Coastal Beaches and/or Coastal Dunes below			
13. <input type="checkbox"/> Coastal Beaches	_____	_____	_____ cu yd	_____ cu yd
	a. square feet	b. square feet	c. nourishment	d. nourishment
14. <input type="checkbox"/> Coastal Dunes	_____	_____	_____ cu yd	_____ cu yd
	a. square feet	b. square feet	c. nourishment	d. nourishment
15. <input type="checkbox"/> Coastal Banks	_____	_____		
	a. linear feet	b. linear feet		
16. <input type="checkbox"/> Rocky Intertidal Shores	_____	_____		
	a. square feet	b. square feet		
17. <input type="checkbox"/> Salt Marshes	_____	_____	_____	_____
	a. square feet	b. square feet	c. square feet	d. square feet
18. <input type="checkbox"/> Land Under Salt Ponds	_____	_____		
	a. square feet	b. square feet		
	_____	_____		
	c. c/y dredged	d. c/y dredged		
19. <input type="checkbox"/> Land Containing Shellfish	_____	_____	_____	_____
	a. square feet	b. square feet	c. square feet	d. square feet
20. <input type="checkbox"/> 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. <input type="checkbox"/> Land Subject to Coastal Storm Flowage	_____	_____		
	a. square feet	b. square feet		
22. <input type="checkbox"/> 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.)

* #23. If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.5.c (BVW) or B.17.c (Salt Marsh) above, please enter the additional amount here.

23. Restoration/Enhancement *:

a. square feet of BVW

b. square feet of salt marsh

24. 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.
 - c. If the work is for a Test Project, this Order of Conditions shall be valid for no more than one year.
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. An Order of Conditions for a Test Project may be extended for one additional year only upon written application by the applicant, subject to the provisions of 310 CMR 10.05(11)(f).
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 11/20/23 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.



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C. General Conditions Under Massachusetts Wetlands Protection Act

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.
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 than two square feet or more than three square feet in size bearing the words,

"Massachusetts Department of Environmental Protection" [or, "MassDEP"]
"File Number 239-878 "
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.



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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

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.
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.
19. The work associated with this Order (the "Project")
- (1) is subject to the Massachusetts Stormwater Standards
- (2) is NOT 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;



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C. General Conditions Under Massachusetts Wetlands Protection Act (cont.)

- 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.
- 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):

See attached "Findings and Special Conditions of the Newton Conservation Commission" pages 10-A et seq.

- 20. For Test Projects subject to 310 CMR 10.05(11), the applicant shall also implement the monitoring plan and the restoration plan submitted with the Notice of Intent. If the conservation commission or Department determines that the Test Project threatens the public health, safety or the environment, the applicant shall implement the removal plan submitted with the Notice of Intent or modify the project as directed by the conservation commission or the Department.



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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 Newton hereby finds (check one that applies):
 Conservation Commission

a. that the proposed work cannot be conditioned to meet the standards set forth in a municipal ordinance or bylaw, specifically:

<u>City Floodplain Ordinance</u>	<u>22-22</u>
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:

<u>City Floodplain Ordinance</u>	<u>22-22</u>
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):

If "yes" above, please see attached "Findings and Special Conditions of the Newton Conservation Commission" pages 10-A et seq.

Findings and Special Conditions of the Newton Conservation Commission
DEP #239-878, 1000 Comm Ave, City Hall pond dredging

Findings (considered as and given equal status as special conditions)

Site: 1000 Commonwealth Avenue
Owner/Applicant: Maria Rose, City of Newton
1000 Commonwealth Avenue, Newton, MA 02459
617-796-1661 mrose@newtonma.gov
Representative Robin Casioppo, GZA GeoEnvironmental, Inc.
1350 Main Street, Suite 1400, Springfield, MA 01103
413-726-2100 robin.casioppo@gza.com
Date of Issuance November 20, 2020
Existing Conditions: Existing ponds with landscaping or lawn surrounding

Approved Project Summary:

- Dredge the three ponds (South, Middle, and North) at City Hall to reestablish stormwater storage and transmission capacity, improve water quality, and improve wildlife habitat.
- Ponds will be dewatered sequentially. Sediment will be dredged and allowed to drain in each basin prior to being trucked off site for reuse.
- Disturbed banks and buffer zone will be restored to pre-operation conditions with stones from the walls, native shrubs and loam and sod.

Final Approved Plans

- "City Hall Ponds Maintenance Dredging Project", prepared by GZA GeoEnvironmental, Inc., stamped and signed by Thomas Jenkins Jr.
 - COVER SHEET
 - Existing Conditions, last revised 9/11/20, scale 1"=30'
 - Existing Pond Bottom Contours and Sediment Sampling Locations, last revised 9/11/20, scale 1"=30'
 - Estimated Bottom of Sediment Contours, last revised 9/11/20, scale 1"=30'
 - Representative Pond Cross Sections, last revised 9/11/20, no scale
 - Pond Profiles, last revised 9/11/20, scale as shown
 - Erosion and Sediment Control & Control of Water Plan, last revised 11/18/20, scale 1"=40'
 - Pond Restoration, last revised 11/18/20, scale 1"=30'
 - Culvert Cleaning Plan and Details, last revised 11/17/20, scale as shown
- Operations and Maintenance Plan for City Hall Ponds, last revised October 2020

Plan Revisions

- Any required or desired deviations from this plan shall be requested in writing of the Commission Office. Relatively minor changes which result in the same or decreased impact on the interests protected by the Act may be considered by the Conservation Commission for an amended Order of Conditions. If, however, the project purpose or scope changes substantially or the interests of the Wetlands Protection Act are not protected, the Conservation Commission will require the filing of a new Notice of Intent.
- When plans are updated it is the responsibility of the applicant to provide all City Departments involved in the permitting and approval process complete and consistent plans.
- The Newton Conservation Commission retains the right to require the submittal of additional information or impose additional conditions deemed necessary to ensure the protection of wetland resource areas.

Jurisdiction

- Buffer Zone: 301 CMR 10.53(1)
- Bank: 301 CMR 10.55 (4)
- Land Under Water and Waterways: 301 CMR 10.56

Reasons for Approval (Impact Analysis) – 5-year Order of Conditions

- Buffer Zone: Alteration of naturally vegetated Buffer Zone has been minimized and will be planted with native trees and shrubs. Remaining Buffer Zone alteration is of turf grass, which will be restored.
- Land Under Water and Waterways: The ponds, where LUWW will be altered, was created as an aesthetic feature and is managed as a stormwater management system. To serve its intended function, the system must be maintained at a certain depth. The ponds have filled in with up to 3 feet of sediment over the years. The dredging

Findings and Special Conditions of the Newton Conservation Commission
DEP #239-878, 1000 Comm Ave, City Hall pond dredging

permitted here is for maintenance of the original contours. If turtles are encountered during dredging operations, they will be netted and placed safely out of the work zone if possible/practicable.

- Bank: The Bank will only be disturbed at the points of access. Banks are man-made stone walls that will be restored in place and in kind at the end of the project.
- Conclusion: The approved work will result in enhancements of flood storage, stormwater capture and infiltration, nutrient capture, and wildlife habitat value.

Limit of Work: The sediment control line shall be the limit of work.

In case of emergencies, problems, or questions, contact: Jennifer Steel: 617-796-1134.

Conditions Prior to the Start of Work

21. All other applicable federal, state and/or local permits and/or approvals must be obtained.
22. The Stowmwater Pollution Prevention Plan (SWPPP) must be submitted to the Conservation Office prior to the start of work.
23. This document shall be included in all construction contracts, subcontracts, and specifications associated with the proposed work and shall supersede any conflicting contract requirements. The Applicant shall ensure that all contractors, subcontractors and personnel performing the permitted work are aware of the permit's terms and conditions. Thereafter, the contractor will be held jointly liable for any violation of this Order. Nothing in this paragraph shall limit or restrict the liability of the Applicant for violations of this Order.
24. The applicant must schedule and attend a pre-construction site visit with the applicant, construction supervisor and Conservation agent, to review:
 - a. Proof of Recording the Order and the Operations and Maintenance Plan appended hereto
 - b. A signed Certificate of Understanding
 - c. Contact information for those responsible for construction, sediment controls, and landscaping
 - d. Anticipated timeline
 - e. DEP File number sign (minimum size 2'x2', clearly visible from the street)
 - f. Sedimentation/erosion controls (properly installed in the correct locations)
 - g. Protection of all trees and shrubs as shown within the limit of work, and as necessary outside the limit of work, with orange snow fence installed at the dripline, plywood sheeting over the roots, and boards tied to the trunk.
25. Notice shall be given to the Conservation Commission at least two business days prior to the start of work.

Conditions During Work

26. Approved plans, notes, and pertinent aspects of the NOI narrative must be adhered to. The proposed sequencing of activities such as sediment and erosion control, dewatering, access creation, dredging operations, and restoration is critical and must be adhered to.
27. In general, dewatering shall occur as noted on plan sheet C-6. Details associated with the dewatering of North Pond must be submitted to the Conservation Office for review and approval prior to execution. At no time shall sediment-laden water be allowed to enter Bullough's Pond.
28. A copy of the approved plans and Order of Conditions shall be on-site and available at all times. All contractors must adhere to the approved plan and conditions. Should any damage occur during the project, the applicant or any successor shall be responsible for the full cost of restoration of the wetland to the satisfaction of the Commission.
29. Erosion controls must be inspected and properly maintained during construction until the site is stable. If a breach of the erosion control barriers occurs, the Newton Conservation Commission shall be notified, and measures shall be taken to remediate said breach. City streets shall be kept clean and catch basins in the immediate area shall be protected from eroding soils. An adequate supply of extra erosion control materials shall be stored on-site at all times for repair or replacement. Hay bales are prohibited without permission from the Commission. Erosion control barriers shall remain in place until written authorization for their removal has been received from the Newton Conservation Commission.
30. Wetlands flags in the vicinity of the work area are to be clearly numbered as they are on the approved plan and must be maintained at all times.
31. "Good housekeeping practices" shall be implemented at all times, including:
 - a. appropriate limits to stormwater discharges

Findings and Special Conditions of the Newton Conservation Commission
DEP #239-870, 1000 Comm Ave, City Hall pond dredging

- b. appropriate stockpile area management
 - c. appropriate limits to vehicle refueling, washing, etc.
 - d. appropriate litter management
 - e. appropriate controls for tire tracking
32. During the construction period and prior to issuance of a Certificate of Compliance, members and agents of the Conservation Commission shall have the right to inspect the applicant's project to evaluate compliance with the approved plans and these conditions.
33. Work shall be immediately halted on the site if an Agent of the Commission or DEP determines that any of the work is not in compliance with this Order of Conditions or Special Conditions.
34. Restoration plantings (27 native shrubs, as per the approved plans) within Commission jurisdiction must:
- a. Be distributed through all disturbed and unvegetated areas (a sketch plan showing proposed locations will be submitted to the Conservation Office for review and approval prior to installation)
 - b. Be installed in compliance with the approved plans (desired changes must be approved by the Conservation office in advance)
 - c. Be installed within 5 months of the completion of dredging.
 - d. Have a survival rate of 80% of total number of shrubs (after 2 growing seasons)
 - e. Disturbed soil around the shrubs will be mulched and seeded as per the approved plans.
35. All areas of disturbed turf shall be restored immediately upon conclusion of construction activities as per the approved plans.

Conditions after Work has been Completed

36. The applicant must apply for a Certificate of Compliance in accordance with DEP Condition #12, by submitting:
- a. A completed "Request for Certificate of Compliance (WPA Form 8A)."
 - b. A written statement from a Professional Engineer registered in Massachusetts certifying that the work has been completed in substantial compliance with this Order of Conditions and the approved plans referenced herein (or approved revisions). If the completed work differs from that in the approved plans and conditions, the report must specify how the project differs.
 - c. As-built sketch plan and letter from the landscaper certifying compliance with the approved planting scheme.



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E. Signatures

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



This Order is valid for three years, unless otherwise specified as a special condition pursuant to General Conditions #4, from the 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.

11/20/20
 1. Date of Issuance
 6
 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.

I, Jennifer Steel, Chief Environmental Planner of the City of Newton, am authorized to execute on behalf of the members of the City of Newton Conservation Commission all Determinations of Applicability, Orders of Condition, and Certificates of Compliance pursuant to the Commission's vote dated April 2, 2020, and recorded with the Middlesex South District Registry of Deeds in Book 74537, Page 433.

Duly authorized by MGL Ch. 110G.

Signatures: Jennifer Steel /s/ Daniel Green
 /s/ Ellen Katz /s/ Judith Hepburn
 /s/ Leigh Gilligan /s/ Katherine Cade
 /s/ Jeff Zabel

by hand delivery on 11/20/20 through City Hall internal mail
 Date 11/20/20
 by certified mail, return receipt requested, on
 Date



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

Provided by MassDEP:
 239-878
 MassDEP File #

eDEP Transaction #

City/Town

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



**Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands**

DEP File Number: _____

**Request for Departmental Action Fee
Transmittal Form**

Provided by DEP

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

A. Request Information

1. Location of Project

a. Street Address _____

b. City/Town, Zip _____

c. Check number _____

d. Fee amount _____

2. Person or party making request (if appropriate, name the citizen group's representative):

Name _____

Mailing Address _____

City/Town _____

State _____

Zip Code _____

Phone Number _____

Fax Number (if applicable) _____

3. Applicant (as shown on Determination of Applicability (Form 2), Order of Resource Area Delineation (Form 4B), Order of Conditions (Form 5), Restoration Order of Conditions (Form 5A), or Notice of Non-Significance (Form 6)):

Name _____

Mailing Address _____

City/Town _____

State _____

Zip Code _____

Phone Number _____

Fax Number (if applicable) _____

4. DEP File Number: _____

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



B. Instructions

1. When the Departmental action request is for (check one):

Superseding Order of Conditions – Fee: \$120.00 (single family house projects) or \$245 (all other projects)

Superseding Determination of Applicability – Fee: \$120

Superseding Order of Resource Area Delineation – Fee: \$120



Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands
**Request for Departmental Action Fee
Transmittal Form**

DEP File Number:

Provided by DEP

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Instructions (cont.)

Send this form and check or money order, payable to the *Commonwealth of Massachusetts*, to:

Department of Environmental Protection
Box 4062
Boston, MA 02211

2. On a separate sheet attached to this form, state clearly and concisely the objections to the Determination or Order which is being appealed. To the extent that the Determination or Order is based on a municipal bylaw, and not on the Massachusetts Wetlands Protection Act or regulations, the Department has no appellate jurisdiction.
3. Send a **copy** of this form and a **copy** of the check or money order with the Request for a Superseding Determination or Order by certified mail or hand delivery to the appropriate DEP Regional Office (see <http://www.mass.gov/eea/agencies/massdep/about/contacts/>).
4. 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.

SECTION 01200
PROJECT COORDINATION AND MEETINGS

PART 1 - GENERAL

1.01 SUMMARY

- A. The Contractor shall be required to attend meetings prior to and during execution of the Work, or as necessary to facilitate the smooth and orderly execution of the Work. All meetings shall be held at a location designated by and within the City.
- B. The Contractor shall conduct daily site safety briefings as necessary for Contractor and Subcontractor employees working the site, in compliance with OSHA rules.
- C. All meetings with the City (or its representative) shall be attended by the Contractor's Superintendent and other personnel having authority to legally bind Contractor to issues discussed and resolved during the meetings. The Contractor's subcontractor(s) may also be required to attend such meetings. Subcontractor attendance (if applicable) shall be at the discretion of the Engineer and/or the City.
- D. Formal meetings that require attendance by the Contractor are as follows:
 - 1. Pre-construction Conference and other preconstruction walkthroughs with regulatory bodies
 - 2. Weekly Progress and Coordination Meetings during active construction
 - 3. Final walkthroughs by Conservation Commissions or other regulatory bodies
 - 4. 'Punchlist' Meeting
 - 5. Closeout (Final Acceptance) Meeting
 - 6. Other Special Meetings
- E. The Contractor shall be required to attend all meetings ordered or requested by representatives of regulatory agencies with jurisdiction over the site or any aspect of the work being performed at the site, either by the Contractor or others.

1.02 PRE-CONSTRUCTION CONFERENCE

- A. The Contractor shall not commence Work at the Site until a pre-construction conference has been held at the Site or another mutually agreed on location at which representatives of the Contractor, City, any applicable regulatory agencies (Conservation Commission, etc.) and City's Design Consultant are present. The pre-construction conference(s) will be arranged by the City and is intended to establish lines of communication between the parties involved, establish project schedules, discuss proposed performance methods, and coordinate Work to be performed by subcontractors. The time and place of the pre-construction conference(s) shall be determined after the Contract has been executed by the Contractor and the City.

1.03 PROGRESS MEETINGS

- A. The Contractor and all Subcontractors shall be required to attend such Progress Meeting as deemed necessary by the City (or its Engineer) at the work site. The purpose of these meetings is to coordinate the efforts of all Contractors and to update the City and Engineer with respect to progress, and resolve outstanding issues.
- B. Meetings will be held at a time to be determined by the City and/or its Engineer. These meetings shall be held once per week and shall be mandatory during periods of active onsite construction.
- C. The Contractor shall be prepared to discuss progress, planned resolutions to problems and anticipated problems that could delay timely completion of the work. The Contractor shall bring to each meeting: updated schedule, daily work summaries, safety meeting minutes, weekly progress reports, and other pertinent information as requested by the City and/or its Engineer.
- D. The City's Consultant will record the meeting minutes and distribute them to the Contractor, Subcontractors, and Attendees. The Contractor and subcontractors are to read the minutes and make noted exceptions in writing or will otherwise be understood to be in agreement with all meeting minutes.
- E. The Contractor shall bring to each meeting for review a set of marked "as built" drawings showing any changes or deletions to the design.
- F. The City may waive the Progress Meetings individually if appropriate.

1.04 PUNCHLIST MEETING

- A. Upon substantial completion of the project, the Contractor shall attend a "punch list" meeting with the Engineer and City. The purpose of this meeting shall be to discuss and list all items which require additional attention or work by the Contractor prior to final acceptance. A "punch list" memo will be produced by the City following this meeting and provided to the Contractor.

1.05 CLOSEOUT (FINAL ACCEPTANCE) MEETING

- A. Upon resolution of all items listed on the "punch list", the Contractor shall meet with the City and its Engineer at the project site to verify completion such that the City can issue final acceptance. At this meeting the Contractor shall provide to the City all outstanding documentation, records, spares, maintenance items, or other information and materials.

1.06 SPECIAL MEETINGS

- A. From time to time, the Contractor shall be required to attend Special Meetings on site as requested by the Engineer and/or the City. The purpose of these meetings is to address Contractor and/or his Subcontractor's performance, schedule, change orders, modifications, alternatives, substitutions, safety, payment or other issues as they relate to the Work.
- B. Special meetings may also address issues regarding permits and permit conditions. The Contractor is referenced to the Permits issued by the various regulatory agencies for information regarding specific meeting requirements. Unscheduled meetings may also take place as part of site inspections or to deal with compliance issues.
- C. Some meetings may be scheduled after normal business hours for the purpose of permitting. Such meetings shall be at no additional cost to the City.

1.07 JOB SITE ADMINISTRATION

- A. The Contractor shall keep a competent and authorized supervisory representative at the project location during all working hours who shall act as the agent of the Contractor. The supervisory representative's responsibilities shall include ensuring all issues/questions raised by the Engineer are addressed in a timely fashion.
- B. The supervisory representative shall be a competent, English-speaking superintendent capable of reading and thoroughly understanding the Drawings and Specifications, with full authority to fulfill the Contractor's duties and responsibilities on the job. If, in the opinion of the City, the supervisory representative, or any of his successors is incompetent, or otherwise not satisfactory, then the Contractor shall replace him upon written request by the City.
- C. The Contractor shall only employ competent workmen on the job who have received training applicable to the nature and extent of the work they are employed to perform. Whenever the City notifies the Contractor in writing that, in its opinion, any workman on the job, whether employed by the Contractor or any of his subcontractors, is incompetent, unfaithful, disorderly, or otherwise unsatisfactory, such workman shall be discharged from the contract Work and shall not be employed on it, except with the written consent of the City.

1.08 SUBMITTALS

- A. Within five (5) days of the Notice to Proceed, the Contractor shall submit the names and contact information for the following persons involved with the Work of the Contract. Contact information shall include cell phone and home phone numbers and an e-mail address.

Contact information shall be provided for the following, at a minimum:

1. Owner of Chief Executive of Prime Contracting Company.
2. Contractor's Project Manager
3. Contractor's Site Superintendent
4. Contractor's Safety Officer
5. Contractor's Environmental Compliance Responsible Party

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

No measurement shall be made of any work performed under this section. No separate payment shall be made for any work performed under this section. The cost of any work done or facilities provided under this section shall be included under other bid items within the Contract.

*** * * END OF SECTION * * ***

**SECTION 01300
SUBMITTALS**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. This section specifies the general requirements and procedures for preparing and transmitting data to the the City for information or review. Required submittals are specified herein as well as under applicable sections of the Contract Specifications.

1.02 CONTRACTOR'S DRAWINGS

- A. The Contract Plans and these Specifications show the general arrangement and such details as are necessary to provide a description of the work to be performed.
- B. The Contractor shall prepare shop and working drawings, for temporary and permanent work as required under the applicable sections of the Contract Specifications, complete with all relevant calculations, descriptions, technical and performance data, as necessary to adequately perform the work. The Contractor shall take responsibility for such drawings and for the safe and successful construction of the work.
- C. Shop drawings shall be presented in a clear and thorough manner, complete with respect to dimensions, design criteria, materials of construction, and like information to enable Consultant to review information as required.
- D. Sheet size: 8-1/2" x 11" or larger, as required. Typically, significant shop drawings shall be 24" x 36".

1.03 CONSTRUCTION PROGRESS SCHEDULES

- A. Submit three (3) copies of overall project schedule no later than five (5) working days after Notice to Proceed.
- B. The overall project schedule shall be prepared in Gantt chart format. The schedule shall identify all major work items or activities, including material procurement, and shall provide an estimate of start date, duration, completion date, and float (if any) for each item or activity. The schedule shall identify dependencies among work items or activities and project milestones.
- C. Submit revised schedules with each Application for Payment, identifying changes since the previous version, and indicating status of all work items or activities.

1.04 SAMPLES

- A. Submit samples as necessary and as stipulated within each individual section of these Specifications to illustrate functional and aesthetic characteristics of the Product, with integral parts and attachment devices. Coordinate sample submittals for interfacing work with the Engineer and City.
- B. Any samples shall be clearly identified as to material, manufacturer, any pertinent catalog numbers, and use for which intended, and shall be of sufficient size and quantity to clearly illustrate functional characteristics of item, with integrally related parts and attachment devices.

1.05 RELATED WORK SPECIFIED ELSEWHERE

- A. Required submittals are listed under the relevant Section of the Contract and Specifications. It shall be the Contractor's responsibility to read each Section and provide the submittal required therein.

1.06 CONTRACTOR RESPONSIBILITIES

- A. Review shop drawings and samples prior to submission.
- B. Determine and verify:
 - 1. Field measurements.
 - 2. Field construction criteria.
 - 3. Catalog numbers and similar data.
 - 4. Conformance to specifications.
- C. Coordinate each submittal with requirements of work and of Contract Documents.
- D. Notify Engineer and City in writing, at time of submission, of any deviations in submittals from requirements of Contract Documents. Any such deviations permitted by City will require modifications to the Contract Documents.
- E. Begin no fabrication or work which requires submittals until submittals have been approved by the City.

1.07 SUBMISSION REQUIREMENTS

- A. Make submittals to City promptly in accordance with approved schedule and in such sequence as to cause no delay in work. Allow five (5) working days following receipt of submittal or resubmittal for review.
- B. At a minimum, submittals shall be provided to the City, to the Engineer (in duplicate). Additional requirements for the number of are contained in the specific Specification sections. Additional copies may be required as per the Supplementary General

Conditions.

- C. Shop Drawings: Shop Drawings shall be submitted as necessary to the City and Engineer for review and comment for the limited purpose of checking for conformance with information given in the design concept expressed in the Contract Documents. Shop drawings shall be presented in a clear and thorough manner, complete with respect to dimensions, design criteria, materials of construction, and the like information to enable the City and Engineer to review information as required. Sheet size shall be 8-1/2" x 11" or larger.
- D. In addition, submittals shall contain:
1. Date and sequential number of submission, along with Section number of the Technical Specification to which the submittal refers.
 2. Project title and number.
 3. Names of:
 - a. Contractor
 - b. Manufacturer/Supplier
 4. Identification of product, with specification section number.
 5. Field dimensions, clearly identified as such.
 6. Relation to adjacent or critical features of work or materials.
 7. Applicable standards, such as ASTM or other applicable federal or state regulations.
 8. Identification of deviations from Contract Documents.
 9. Identification of revisions on re-submittals.
 10. Calculations and drawings certified and stamped by a Professional Engineer licensed in the Commonwealth of Massachusetts, if required.

Each submittal shall be numbered. The numbering system shall utilize the Section number to which the submittal pertains and then a sequential number designating the order of the submittal for that Section. For instance, the first submittal applying to Earthwork shall be numbered as 02200-1. The second submittal applying to Earthwork shall be numbered as 02200-2.

- E. Resubmission Requirements: Make any corrections, additions and/or changes in submittals required by the City, and re-submit revised editions. Revised submittals shall be designated with a revision number. For instance, the first revision to the second Earthwork submittal shall be numbered as 02200-2 rev. 1.
- F. Submittals shall also be numbered sequentially in order of submission.

1.08 CERTIFICATES

- A. When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor.

- B. Indicate material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certificates as appropriate.
- C. Certificates may be recent or previous test results on material or Product, but must be acceptable to the City.

1.09 DISTRIBUTION

- A. The Contractor will distribute submittals to concerned parties as appropriate. Promptly report any inability to comply with revisions. Four (4) copies of each submittal shall be submitted directly to the Engineer.

1.10 ENGINEER'S DUTIES

- A. The Engineer will review submittals only for general conformance to design concept of project and compliance with information given in Contract Documents. Review shall not extend to means, methods, sequences, techniques or procedures of performing the Work or to safety precautions or program incident thereto. Review of a separate item as such will not indicate approval of assembly in which item functions.
- B. The Engineer will return submittals to the City with the Engineer's written opinion as to the general conformance of the submittal with the Contract Documents. The City will then return the submittal to the Contractor for distribution or for resubmission, if required by the Contract Documents and/or due to the Engineer's opinion of their non-compliance and/or incompleteness. The Engineer will respond to all submittals within ten (10) working days from the date of receipt. Re-submittals required as a result of the Engineer's review and comment shall be re-submitted promptly by the Contractor. Work shall not commence until all submittals related to it are submitted and accepted by the City.
- C. The Engineer's review of Contractor's submittals shall not relieve Contractor from responsibility for any deviations from Contract Documents unless Contractor has, in writing, called attention to such deviation at time of submission and has received written concurrence from the City pursuant to Contract Documents to specific deviation, nor shall any concurrence in submittals.
- D. The Engineer or other City personnel may also perform submittal review duties, at the discretion of the City and with the concurrence of the Engineering Design Consultant.

1.11 CITY DUTIES

- A. The City will receive comments from the Engineer and return the submittal to the Contractor.
- B. The City will have the final authority to judge the adequacy of the Contractor's submittal and shall have final authority for acceptance or rejection.

1.12 SUBMITTALS REGARDING THE PERFORMANCE OF THE WORK

- A. During the performance of the Work, the Contractor shall submit progress reports, as requested by the City or Engineer. Progress reports shall be submitted at the beginning of (or before) progress meetings (Section 01200 - Project Coordination and Meetings). Such reports shall contain:
1. A summary of Work activities occurring during the period covered by the report.
 2. The type of materials and/or major equipment being installed by the Contractor and the total number of employees working in each category on that particular day.
 3. The names of the subcontractors working and the type of materials and/or major equipment being installed by each together with the total number of employees working for each subcontractor on that particular day.
 4. The excavation, compaction, and other equipment being used by the Contractor and each subcontractor.
 5. A discussion of problems encountered and corrective actions taken.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not used.

PART 4 - MEASUREMENT AND PAYMENT

No measurement shall be made of any work performed under this section. No separate payment shall be made for any work performed under this section. The cost of any work done or facilities provided under this section shall be included under other bid items within the Contract.

*** * * END OF SECTION * * ***

SECTION 01400
QUALITY CONTROL

PART I - GENERAL

1.01 SCOPE

- A. Quality assurance and control of installation.
- B. References.
- C. Field samples.
- D. Inspection and testing laboratory services.

1.02 QUALITY ASSURANCE/CONTROL OF INSTALLATION

- A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.
- B. Comply fully with manufacturers' instructions, including each step in sequence.
- C. Should manufacturers' instructions conflict with Contract Documents notify the City and Engineer.
- D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.
- E. Perform work by persons qualified to produce workmanship of specified quality,
- F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.03 PROTECTION OF WORK, PROPERTY AND PERSONS

- A. The Contractor will be responsible for initiating, maintaining and supervising all safety precautions and programs in connection with their Work. They will take all necessary precautions for the safety of, and will provide the necessary protection to prevent damage, injury or loss to all employees on the work, and other persons who may be affected thereby, all the work and all materials or equipment to be incorporated therein, whether in storage on or off the site. These precautions and protections shall include other properties at the site or adjacent thereto, including trees, shrubs, lawns, walks, pavements, roadways, structures and utilities not designated for removal, relocation or replacement in the course of construction.
- B. The Contractor shall be responsible for and pay for all loss or damage to materials and property, whether such are to be incorporated in the work, or are adjacent thereto. The Contractor shall also replace or restore to original condition every public or

private way, conduit, catch basin, tree, fence, or other thing injured or interfered with by the Contractor in carrying on the Contract.

1.04 SUPERVISION BY CONTRACTOR

- A. The Contractor shall supervise and direct the Work of the Contract. Contractor shall be solely responsible for the means, methods, techniques, sequences and procedures of construction. The Contractor shall employ and maintain on the work a qualified supervisor or superintendent who shall have been designated in writing to the Engineer by the Contractor as the Contractor's representative at the site. The supervisor shall have full authority to act on behalf of the Contractor and all communications given to the supervisor shall be as binding as if given to the Contractor. The supervisor shall be present on the site at all times as required to perform adequate supervision and coordination of the work.
- B. The Contractor and their Subcontractors shall employ only competent persons to do the work and, whenever the City shall notify the Contractor, in writing, that any person on the work is, in his opinion, incompetent, unfaithful, disorderly or otherwise unsatisfactory or not employed in accordance with the provisions of this contract, such persons shall be discharged from the work and shall not again be employed on it, except with the consent of the Engineer.
- C. In performance of the contract and insofar as their employees and Subcontractor employees are concerned, the Contractor shall be responsible in addition to items specified elsewhere in the contract, for the following:
 - 1) Safety of their own tools and equipment whether inside or outside of the construction area.
 - 2) Protection of the construction site and all adjoining premises or property from all damage until the work has been accepted by the City, and making good at their own expense all damage thereto arising out of any contract operations.
 - 3) Strictly prohibiting and taking all necessary measures to prevent the committing of nuisances on the land of the City and adjacent properties.
- D. The Contractor shall coordinate his work with that of any Subcontractors working on the project and allow them all necessary access to the construction areas, so as to facilitate the progress of the work. The Contractor shall coordinate the work of all trades to complete the work within the time required. Each trade shall afford all other trades every reasonable opportunity for installation of their work and for storage of materials.
- E. All workmanship necessary to complete the work required by these specifications shall be of the highest quality. The Contractor shall, at all times, employ workmen in sufficient number and of the various degrees of skill and experience required to perform satisfactorily the work of these specifications in accordance with the best

modern standard practice. The Contractor shall bear the entire expense and no separate or direct payment shall be made as a result of extra work which may be necessary because of inferior workmanship, or for specific items of work which are normally considered a part of good workmanship in completing any particular phase of the work.

1.05 REFERENCES

- A. All work and materials shall conform to the latest applicable sections under the Massachusetts Highway Department's Standard Specifications for Highways and Bridges, herein referred to as the Standard Specifications, as well as the codes and standards referenced in individual Sections. In case of conflict, the codes and standards referenced in the individual sections shall govern.
- B. All work and materials shall also be in full accordance with the latest rules, regulations, and safety orders of the state, county, municipality and utility laws, rules, and regulations. Nothing in these Drawings and Specifications shall be construed to permit work not conforming to the above.
- C. Conform to reference standard by date of issue current on date of Contract Documents.
- D. Obtain copies of standards when required by Contract Documents.
- E. When the Specifications call for material or construction of better quality or larger size than is required by the above-mentioned codes and standards, then the provisions of the Specifications shall take precedence over the requirements of the said codes and standards. If there is any direct conflict between the above-referenced codes and standards and the Drawings and Specifications, the codes and standards shall govern. Contractor shall furnish, without additional charge to the City, any additional material and labor when required to comply with these codes and standards, even though work is not mentioned in the Drawings and Specifications.

1.06 FIELD SAMPLES

- A. Install field samples at the site as required by individual specification Sections for review.
- B. Acceptable samples represent a quality level for the Work.
- C. Where field samples are specified in individual Sections to be removed, clear area after field sample has been accepted by Engineer.

1.07 INSPECTION AND TESTING LABORATORY SERVICES

- A. As appropriate, the City will appoint and employ services of an independent firm to perform inspection and testing that have to be approved by Engineer and City. The City will pay for the services required. Retesting required because of nonconformance to specified requirements shall be paid for by the Contractor. Testing of materials submitted for review and approval, including sieves, Proctors, and all other tests spec-

ified in the Contract Documents, shall be provided and paid for by the Contractor.

- B. The independent firm will perform inspections, tests, and other services specified in individual specification Sections and as required by the City or Engineer.
- C. Reports will be submitted by the independent firm to the City and Engineer, in duplicate indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- D. The Contractor shall cooperate with independent firm; furnish samples of materials, design mix, equipment, tools, and storage and assistance as requested.
- E. Notify Engineer and independent firm 24 hours prior to expected time for operations requiring services.
- F. Make arrangements with independent firm and pay for additional samples and tests required for Contractor's use.
- G. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the Engineer. Payment for retesting shall be paid by the Contractor.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

No measurement shall be made of any work performed under this section. No separate payment shall be made for any work performed under this section. The cost of any work done or facilities provided under this section shall be included under other bid items within the Contract.

*** * * END OF SECTION * * ***

**SECTION 01500
CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS**

PART I - GENERAL

1.01 GENERAL REQUIREMENTS

- A. The Contractor shall be responsible for providing and maintaining all temporary facilities until Substantial Completion. Removal of such prior to Substantial Completion must be with the concurrence of the Engineer. The Contractor bears full responsibility for providing any facility removed prior to Substantial Completion if required for the work.
- B. Removal of all temporary facilities shall be a condition precedent to Substantial Completion unless directed otherwise by the City or specifically noted in the Specifications.
- C. The Contractor shall comply with all safety laws and regulations of the Commonwealth of Massachusetts, the United States Government, and local government agencies applicable to the work under this contract. The Contractor's attention is directed to the Commonwealth of Massachusetts, Department of Labor and Industries 454 CMR.

1.02 TEMPORARY WATER

- A. The Contractor shall provide connections, meter and pipe to the water main or nearest hydrant, subject to the approval of the City and seasonal availability. The Contractor shall request a hydrant meter from the City and pay a refundable deposit. The Contractor shall pay for water used at the prevailing rate to the City. Upon completion of work, the Contractor shall remove the temporary connections and return the meter. If the Project occurs outside of the period between April 15 and November 15, City water from the hydrant will not be available and the Contractor will need to supply their own potable water source for the Project, as required for completion of their Work.
- B. The Contractor shall provide an adequate supply of drinking water from approved sources of acceptable quality, satisfactorily cooled, for their employees and those of his Subcontractors.
- C. The Contractor shall provide facilities and adequate supply of water for irrigation, dust control, cleaning and associated activities required by these specifications.

1.03 WEATHER PROTECTION

- A. General: It is the intention of this contract that all work shall be completed outside adverse winter conditions. If for any reason the construction is protracted the following weather protection requirements shall be enforced.
- B. It is the intent of the Specifications to require that the General Contractor shall provide temporary enclosures to permit construction work to be carried out during the

months of this Contract and as required in compliance with M.G.L. Chapter 149, Section 44D (G).

- C. "WEATHER PROTECTION" shall also mean the temporary protection of that work adversely affected by moisture, wind and cold, by covering, enclosing and/or heating. This protection shall provide adequate working areas during the work of the Contract as determined by the City and Engineer and consistent with the approved construction schedule to permit the continuous progress of all work necessary to maintain an orderly and efficient sequence of construction operations. The Contractor shall furnish and install all "weather protection" material and be responsible for all costs, including heating required to maintain a minimum temperature of 40 degrees F, at the working surface. This provision does not supersede any specific requirements for methods of construction, curing of materials or the applicable General Conditions set forth in the Contract Articles with added regard to performance obligations of the Contractor. All such work must be coordinated and appropriately permitted with the City and other applicable agencies.
- D. Installation of weather protection and heating devices shall comply with all safety regulations including provisions for adequate ventilation and fire protection devices. Heating devices which may cause damage to finish surfaces shall not be used.

1.04 TEMPORARY POWER

- A. The Contractor shall be responsible for the installation and temporary power and pay for all electric service used by themselves and all Subcontractors during construction, at the prevailing rate to the Utility Company if temporary power is required for the work. The Contractor shall provide at its expense, all connections, meters, extension lines, wire, piping, and other items required for the utilization of such services.
- B. All temporary facilities shall comply with OSHA regulation, DLI Requirements, and other applicable codes, standards, statutes, rules and regulations.
- C. Make necessary arrangements with the power company to install temporary service, if required, including temporary poles and transformer.
- D. Contractor and all Subcontractors, individually, shall furnish all graded extension cords, sockets, lamps, motors, and accessories required for their work.
- E. All temporary wiring installed by the Contractor shall be removed after it has served its purpose. Use copper wire only.

1.05 TEMPORARY LIGHTING

- A. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required or desired by the Contractor.
- B. Maintain lighting and provide routine repairs.

1.06 DUST CONTROL

- A. The Contractor shall provide adequate means for the purpose of preventing dust caused by construction operations throughout the period of the construction Contract, and shall provide positive means to prevent airborne dust from dispersing into the atmosphere, in accordance with all permits and regulations.
- B. This provision does not supersede any specific requirements for methods of construction or applicable General Conditions set forth in the Contract Documents with added regard to performance obligations of the Contractor.
- C. All trash containers shall be located on the property. The Contractor shall be responsible for securing permits, bonds, and pay required fees for trash containers with covers, and exterior care in keeping all areas around trash containers and the site in general, clear of debris and accumulated trash.
- D. The Contractor shall provide additional collections and disposal of debris whenever periodic schedule is inadequate to prevent accumulation.

1.07 CLEANING DURING CONSTRUCTION

A. General:

- 1. Unless otherwise specified under the various trade Sections of the Specifications, the Contractor shall perform clean-up operations during construction as herein specified.
- 2. Control accumulation of waste materials and rubbish; periodically dispose of off-site and off premises. The Contractor shall bear all costs, including permits and/or fees resulting from such disposal.

B. Safety and Disposal Requirements:

- 1. Standards: Maintain Project in accordance with all Commonwealth of Massachusetts and Federal Regulatory Requirements, and with City agencies having jurisdiction at the site.
- 2. Hazards Control:
 - a. Store volatile wastes in covered, labeled metal containers, and remove from premises.
 - b. Prevent accumulation of wastes which create hazardous conditions.
 - c. Provide adequate ventilation during use of volatile or noxious substances.
- 3. Conduct cleaning and disposal operations to comply with local ordinances and anti-pollution laws.
 - a. Do not burn or bury rubbish or waste materials on Project site.
 - b. Do not dispose of volatile wastes such as mineral spirits, oil, or paint thinner in storm or sanitary drains.
 - c. Do not dispose of wastes into the earth or to streams or waterways.

C. Materials:

1. Use only those materials which will not create hazards to health or property and which will not damage surfaces.
2. Use only those cleaning materials and methods recommended by manufacturer of surface material to be cleaned.

D. Execution:

1. Execute cleaning on a daily basis to ensure that the site and adjacent properties are maintained free from accumulation of waste materials and rubbish and wind-blown debris, resulting from construction operations.
2. Provide on-site containers of non-combustible construction for collection of waste materials, debris and rubbish. Containers shall be partitioned so that a fire within same will not affect construction, properties, structures, or existing trees.
3. Remove waste materials, debris, and rubbish from the site periodically and dispose of it at legal disposal areas off the construction site.
4. Handle materials in a controlled manner with as few handlings as possible.

1.08 NOISE CONTROL

- A. Contractor is hereby notified that Newton City Hall, Newton Free Library, and residences abut the work site and are sensitive noise receptors. Develop, submit, and maintain a noise-abatement program and enforce strict discipline over all personnel to keep noise to a minimum. Adhere to the specified hours of work. Refer to Section 01060, Regulatory Requirements for further information.
- B. Execute construction work by methods and by use of equipment which will reduce excess noise.
 1. Equip air compressors with silencers, and power equipment with mufflers.
 2. Manage vehicular traffic and scheduling to reduce noise.
 3. Use pumping systems with low noise profiles and/or provide sound attenuating enclosures for systems that will run on regular basis.

1.09 POLLUTION CONTROL

- A. Provide methods, means and facilities required to prevent contamination of soil, water or atmosphere by the discharge of noxious substances from construction operations.
- B. Provide equipment and personnel, perform emergency measures required to contain any spillage, and to remove contaminated soils or liquids resulting from the work of this Contract.
- C. Excavate and dispose of any contaminated earth off-site, and replace with suitable compacted fill and topsoil.
- D. Take special measures to prevent harmful substances from entering public waters.

- E. Prevent disposal of wastes, effluents, chemicals, or other such substances adjacent to streams, or in sanitary or storm sewers.
- F. Provide systems for control of atmospheric pollutants.
 - 1. Prevent toxic concentrations of chemicals.
 - 2. Prevent harmful dispersal of pollutants into the atmosphere.
- G. All equipment and materials brought onsite shall be cleaned prior to entering the site to prevent the spread of invasive species, including but not limited to vehicles/equipment, pumps, cofferdam materials, and temporary matting.

1.10 TOILET FACILITIES

- A. The Contractor shall provide temporary toilet facilities with provisions for handwashing/sanitizing on the Site to remain until substantial completion.
- B. The toilets shall be maintained by the Contractor in a clean and orderly condition in compliance with all local and state health requirements.

1.11 PROTECTION OF WORK, PROPERTY, AND THE PUBLIC

- A. Erect barricades and protective facilities required for the protection of the public in accordance with City and State regulations. Furnish and install all signs, lights, reflectors, and all such protection facilities as may be required. Refer to Section 01041, Maintenance and Protection of Traffic.
- B. The Contractor shall hold the City harmless from claims arising from the use of public streets, sidewalks, and adjoining premises for construction purposes.
- C. Keep all access roads and walks clear of debris, materials, construction plant and equipment during construction operations. Repair streets, drives, curbs, sidewalks, fences, poles, and the like where disturbed in construction operations and leave them in as good condition after completion of the Work as before operations started.
- D. Provide ways and means to control the flow of water from every source which may cause delay or damage during the construction operations.
- E. Protect all planting, landscaping, trees and site improvements in the area of site work.
- F. The Contractor shall be responsible for the maintenance of construction barriers and traffic barriers in order to maintain pedestrian and automotive traffic over, through, or around the work included in this Contract with the maximum of safety and practical convenience of such traffic during the life of the Contract, and whether or not work has been suspended temporarily. Contractor shall take all precautions for preventing injuries to persons or damage to property to or about the Work.
- G. The Work shall be carried on and the barriers erected in such a manner as to provide safe passage at all times for public travel and with least obstruction to traffic. The Contractor shall maintain at their own expense in a safe and passable condition such temporary bypasses as created by the barriers as may be necessary to accommodate both pedestrian and vehicular traffic.

- H. The Contractor shall establish and maintain all legally required means of egress, from existing buildings and site as may be affected by the Work, and shall not erect barriers which interfere with, or obstruct such means of egress.
- I. Provide for all required police details for traffic and access control throughout the Project.
- J. Whenever gale or high winds are forecast, take proper measures to secure all loose material, equipment, or other items which could blow about and be damaged or cause damage to materials and completed work. No such loose items shall be left unsecured at the end of working day.
- K. Take all required measures to protect the work at all times against fire, storm, theft, vandalism, and other losses.
- L. The Contractor shall be wholly responsible for patrolling and protecting the work under construction and the materials stored on the site; and shall reimburse the City for any losses, damages, or injury not compensated by insurance, except those directly caused by the City, its agents, or its employees.

1.12 WATER CONTROL

- A. Grade site to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
- B. Protect site from puddling or running water. Provide water barriers as required to protect site from soil erosion.
- C. All work is to be performed in the dry other than the installation of diversions, cofferdams, and the turbidity curtain.

1.13 PARKING AND SITE ACCESS

- A. Arrange for temporary off-street parking to accommodate construction personnel.
- B. Restrict site access to only those vehicles actually performing the work.

1.14 PROJECT SIGN

- A. Provide 8 foot wide x 4 foot high project sign of 1" thick medium density overlaid exterior plywood laminated with waterproof glues. All edges of sign shall be banded with 1" x 1/2" pine banding. Sign shall be supported by two 4" x 4" post supports set into the ground to a depth of 4 feet and so that the lower edge of the sign is raised to a minimum of 4 feet above grade. (Note: Alternate methods of support required by site conditions may be proposed subject to approval by City). All fasteners shall be galvanized.
- B. Sign shall be lettered by a professional sign painter and shall include the following information at a minimum along with the City of Newton's logo:

City Hall Ponds Maintenance Dredging Project 2022-2023

City of Newton Department of Public Works

Engineer: GZA GeoEnvironmental, Inc.

Contractor: [SELECTED CONTRACTOR NAME]

For questions or more information about this project, please contact the Newton DPW at 617-796-1000

- C. Information to be presented on the sign will be provided by the City. The Contractor shall submit shop drawings for City's review - drawings must indicate means of support and graphic layout.
- D. The City will direct location of the Project sign. No other signs, banners, notices, or advertisements may be displayed without written approval of the City.
- E. The sign shall be maintained in good condition by the Contractor for the duration of the Project and removed only with the written authorization of the City. All temporary signage will be removed at the completion of the project and lawfully disposed offsite. Post holes will be filled to grade following removal and loamed and seeded.
- F. This sign is separate from the signage required for project permits (MassDEP File # sign, which is covered under Regulatory Requirements – Section 01060).

1.15 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

- A. Remove temporary above grade or buried utilities, equipment, facilities, materials, prior to Final Application for Payment inspection.
- B. Remove underground installations to a minimum depth of 2 feet, or as directed by the City. Grade site as indicated.
- C. Clean and repair damage caused by installation or use of temporary work.

1.16 REPORTING, RECORDING AND PRESERVING HISTORICAL AND ARCHAEOLOGICAL FINDS

- A. All items having any apparent historical or archaeological interest which are discovered in the course of any construction activities shall be carefully preserved so that proper action can be taken.
- B. The Contractor shall leave the archaeological find undisturbed and shall immediately stop work and report the find to the City so that the proper authorities may be notified.

1.17 REQUIREMENTS FOR WORK IN PUBLIC WAYS

- A. Normal City restrictions and permits/approvals will be required of the Contractor for work in all streets, sidewalks and public ways, including notification of all public and private utilities of all impending work.

1.18 FIRE PREVENTION AND PROTECTION

- A. The Contractor shall establish a fire prevention and protection program and submit for review by the City prior to the start of any work. Contractor shall maintain open access to the adjacent fire hydrant to the job site.
- B. Hazard Control: Take all necessary precautions to prevent fire during construction. Do not store flammable or combustible liquids in existing buildings. Provide exterior and environmentally controlled storage facilities.
- C. Smoking: Smoking within buildings or temporary storage sheds is strictly prohibited.
- D. Protection equipment required: Vehicles and equipment - provide one extinguisher on each vehicle or piece of equipment.

1.19 WORKING HOURS

- A. Allowable daily working hours shall consist of up to 10 hours between 7:00 AM and 5:00 PM EDT, Monday through Friday, excluding state and federal holidays and shall comply with local and state ordinances.
- B. If the Contractor desires to work outside of those hours, a written request must be submitted to the City and Engineer at least three (3) working days prior to the date(s) requested by the Contractor. The Contractor shall allow ample time to enable satisfactory arrangements to be made by the City and Engineer for observing the work. The Contractor shall be responsible for all permits for such work. No additional payment shall be made for work outside regular hours. The City will provide, in writing, approval or denial of the request.

1.20 NOTIFICATIONS

- A. The Contractor shall notify Dig Safe[®] within the advance notice period required by law prior to any activities where such notification is required. The Contractor shall make all other necessary efforts to identify other features which might interfere with the work. Contractor shall retain the services of a qualified utility locating company, as appropriate, to assist in location of underground utilities, at no additional cost to the City.
- B. The Contractor shall notify all appropriate agencies regarding work on public roads, including site access points.
- C. The Contractor shall coordinate with the City Parks Department before any site disturbance regarding irrigation facilities onsite to document and pre-mark all locations in areas to be disturbed, for use in later restoration.

1.21 SUBMITTALS

- A. No less than ten (10) days prior to bringing any temporary facilities on site, the Contractor shall provide a submittal which describes all temporary facilities and services to be used by the Contractor, including noise and fire prevention and protection plans.
- B. Contractor shall submit a template of the Project sign for City approval at least two

(2) weeks prior to procurement.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT FOR PAYMENT

A. No measurement shall be made of any work performed under this section. The bid item under this section is a Lump Sum quantity.

4.02 PAYMENT

A. Payment for the scope of work specified herein, including all labor, materials, equipment, and incidentals and mobilization/demobilization costs to provide, install, maintain, and remove Construction Facilities and Temporary Controls associated with the work of this Contract will be paid for at the applicable Lump Sum price for Item No. 01500.01 stated on the Form for Bid.

1. Partial payments for this item will be billable at 60% after the initial mobilization and installation of temporary facilities and 40% after demobilization at the conclusion of the Project.

B. No separate payment shall be made for any other work performed under this section. The cost of any work done or facilities provided under this section, which are not specifically mentioned as pay items under this section, shall be included under other bid items within the Contract.

<u>Item No.</u>	<u>Payment Item</u>	<u>Unit</u>
01500.01	Construction Facilities and Temporary Controls	Lump Sum

***** END OF SECTION *****

SECTION 01560
TEMPORARY EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall furnish all labor, materials and equipment and shall perform all work required to install, maintain, and remove erosion, sedimentation, and siltation control measures to protect the site, and upstream and downstream wetlands, water bodies, streams, and drainage structures from siltation and sedimentation damage and accumulation or damage from other byproducts of the work during this Contract, as specified herein and as directed by the City.
- B. Erosion control measures are used to prevent the displacement of soil. Such measures may include, but not be limited to, grading, erosion control matting, plastic coverings, mulching, temporary seeding, riprap, check dams, cross tracking, and other items intended to stabilize soil material and/or reduce the erosive potential of water.
- C. Sedimentation and siltation control measures are used to prevent the movement and transport of soil particles. Sedimentation and siltation control measures may include, but not be limited to, use of sedimentation basins, filtration dams, siltation sumps, silt fences, turbidity curtains, construction entrances and other items as necessary to contain sediment and other deleterious material produced from excavation and filling, dewatering, and related contract operations.
- D. The Work shall also include all work necessary to continually clean and maintain and promptly repair/replace all erosion, sedimentation, and siltation measures as needed to sustain their intended function and operability.
- E. It is the intent of this Section that the Contractor shall be responsible for the use of all Best Management Practices (BMPs), both structural and operational, to reduce, to the greatest extent possible, the erosion and transport of soil and sediment. The Contractor shall be responsible for implementing all measures which are both prudent under good construction practices and required under local, state, and federal regulations and law. The Contractor shall also be responsible for all monitoring, maintenance, and repair of all BMPs utilized. In the event of the failure of sediment and erosion control BMPs, the Contractor shall be responsible, at no additional cost to the City, for all work necessary to mitigate and correct the situation, including, but not limited to, the removal of transported sediment.
- F. The Contractor shall deploy all Best Management Practices (BMPs), both structural and operational, to reduce, to the greatest extent possible, the erosion and transport of soil and sediment, and monitor, maintenance, and repair said BMPs. The work of this Section

shall include sediment and erosion control in and around all disturbed areas, including staging and stockpile areas

- G. Temporary erosion and sedimentation controls shall be provided during all work on the project, where shown on the Contract Drawings, where necessary, or requested by the City, and temporary erosion and sedimentation controls shall be maintained throughout the project.
- H. Work shall also include all labor, equipment, materials, staffing, and incidentals to meet all requirements of the CGP, including NOI and NOT filing, SWPPP modification and maintenance, all required inspections, monitoring, reporting, and recordkeeping.

1.02 SCOPE OF WORK

- A. The scope of the Work of this Section shall include the installation of Best Management Practices (BMPs), as detailed on the Contract Drawings, and as needed elsewhere. This work shall also include the monitoring, cleaning, maintenance, and repair of all installed erosion control barriers and the proper removal and offsite disposal of the BMPs after final stabilization of the site.
- B. The scope of the Work of this Section shall include the installation of turbidity curtains. This work shall also include the monitoring, cleaning, maintenance, and repair of all installed turbidity curtains and the proper removal and disposal of turbidity curtains after final stabilization of the site.
- C. The scope of Work of this Section shall include the installation of anti-tracking Construction Entrances, as needed. This work shall also include the monitoring, cleaning, maintenance, re-stoning, and repair of each entrance and the proper removal and disposal of materials after final stabilization of the site.
- D. General work covered and paid for under this Section shall include the installation of all other sediment and erosion control BMPs, as shown on the Contract Plans, and as needed elsewhere. This work shall also include the monitoring, cleaning, maintenance, and repair of all installed sediment and erosion control BMPs and disposal of same fencing after final stabilization of the site. General work covered and paid for under this Section shall also include all other work, including recordkeeping and reporting, necessary to meet the conditions of the Contract Documents, Permits, Approvals, Licenses issued for the project and all relevant codes, rules, regulations, laws and ordinances applicable to sediment and erosion control.

1.03 SPECIAL CONDITIONS

- A. All work shall comply with all codes, rules, regulations, laws and ordinances and executed in conformance with any permits, licenses etc., as issued by the City of Newton, Commonwealth of Massachusetts Department of Environmental Protection (MassDEP), the U.S. Army Corps of Engineers (USACE), U.S. Environmental Protection Agency

(EPA) and all other authorities having jurisdiction within the project areas. All work necessary to make site preparation comply with such requirements shall be provided without additional cost to the City.

- B. Copies of all permits and licenses are contained in the Contract Documents or will be forwarded to the Contractor prior to the beginning of the work. The Contractor shall be responsible for conducting their work in accordance with all provisions of said permits.
- C. The Contractor shall procure all other required permits and licenses, (except for those to be obtained by the City as stated herein), pay all charges, fees and taxes and shall give all notices necessary and incidental to the due and lawful prosecution of the work under this Contract. The cost thereof shall be included in the prices bid for the various items specified herein for the work of this Contract. Copies of all required permits and licenses shall be filed with the City prior to the beginning of the work.
- D. As per Section 01060, the Contractor shall be responsible for submitting a Notice of Intent (NOI) for coverage under the NPDES Construction General Permit (CGP) for Stormwater Discharges from Construction Activities. As part of complying with the Construction General Permit, the Contractor shall be responsible for modifying and maintaining the Stormwater Pollution Prevention Plan (SWPPP) for the Project. The SWPPP shall encompass the implementation of sediment, erosion, and water control performance specifications. All temporary erosion and sedimentation control measures shall be installed and maintained in accordance with the approved SWPPP. It shall be the Contractor's responsibility to maintain a copy of the SWPPP on the site at all times and abide by its requirements. The Contractor is responsible for all inspections, monitoring (including any required turbidity monitoring), reporting, and Corrective Actions under the permit. At the conclusion of the project, the Contractor shall file a Notice of Termination to end permit coverage.
- E. The Contractor shall be responsible for adhering to the requirements of the City of Newton Order of Conditions.
- F. No work of any type in any area shall commence until sedimentation control measures are in place to the satisfaction of the City, the Engineer, and the Newton Conservation Commission.

1.04 IMPLEMENTATION

- A. The Contractor shall familiarize himself with the nature of work to be performed. The Contractor shall be responsible for scheduling his submittals and/or meetings, if required, with the applicable regulatory agencies.
- B. Measures may include, but not be limited to, the following:
 - Silt fences, compost filter tubes, inlet protection, and/or turbidity curtains
 - Temporary seeding/tackifiers for temporary stabilization

- Stabilized construction entrances
- Application of weed-free straw (or other) mulch
- Tire rinsing
- Tree protection
- Track-roughening of slopes to slow runoff flow
- Geotextile filter bags or other filtration devices, such as sediment settling tanks
- Energy dissipaters for pipe, culvert, and hose discharge points

1.05 LOCATION AND STORAGE OF MATERIALS

A. No materials shall be dispersed or stockpiled in any areas beyond authorized the limits of disturbance. No excavated materials or materials to be used in backfilling or restoration shall be deposited within one hundred feet (100') of any watercourses, wetland areas or drainage facilities unless appropriate and approved measures are specifically taken to protect the adjacent resource area and approved by the appropriate permitting agencies. Materials rejected for use in the Work shall be removed and disposed of as soon as practical to do so. Adequate protective measures shall be taken to prevent the erosion of stockpiled and/or placed materials and resultant sedimentation of adjacent watercourses, wetland areas or drainage facilities, during the course of performing the work.

1.06 PROTECTION OF THE POND AND RELATED RESOURCES

A. The Contractor shall employ Best Management Practices (BMP's) throughout the conduct of the work of this Contract and ensure that impact on Cold Springs Brook, Hammond Brook, City Hall Ponds, Bulloughs Pond, downstream resources, and associated site wetland resource areas is minimized.

B. The Contractor shall not store or discharge fuel oil, sewage, septic water or other deleterious substances into streams, lakes, reservoirs, groundwater supplies or wetland resource areas. The storage of fuel oil and refueling of equipment shall be restricted to designated areas approved by the Engineer, the City and regulatory agencies. Machinery shall not be refueled or rinsed within 100 feet of any resource area. Any spillage of deleterious substance (fuel oil, sewage, septic waste, etc.) shall be reported to the Engineer, the City, and appropriate regulatory agency, by the Contractor and appropriate measures taken, (at costs solely borne by the Contractor) as determined by the regulatory agency, to contain and to clean up the affected areas. Any water that is pumped or bailed from the excavations shall be conveyed by conduit or hose to approved points of discharge. Water shall be filtered through approved discharge area erosion controls and/or sedimentation barriers, constructed in such a manner so as to minimize velocities of discharge and to remove and contain suspended sediment. Sedimentation barriers shall be cleaned and/or replaced periodically to ensure effective control and protection of wetlands and water resource areas.

C. The general sediment control performance standard is outlined in the Massachusetts State Water Quality Standards (314 CMR 4.00). These regulations state the following

regarding discharges into freshwater waterways. The Contractor shall insure that temporary erosion and sediments controls are adequate to insure compliance with these regulations, or other more stringent regulations, as needed.

Solids - These waters shall be free from floating, suspended and settleable solids in concentrations or combinations that would impair any use assigned to this class, that would cause aesthetically objectionable conditions, or that would impair the benthic biota or degrade the chemical composition of the bottom.

Color and Turbidity - These waters shall be free from color and turbidity in concentrations or combinations that are aesthetically objectionable or would impair any use assigned to this class.

1.07 RELATED WORK SPECIFIED ELSEWHERE

A. The following is a list of related work items that shall be performed or furnished under other Sections of these Specifications as indicated.

1. Regulatory Requirements: Section 01060
2. Construction Facilities and Temporary Controls: Section 01500
3. Temporary Water Control: Section 01565
4. Site Restoration: Section 01740
5. Construction Access: Section 02080
6. Temporary Cofferdams: Section 02170
7. Earthwork: Section 02200
8. Sediment Excavation: 02210
9. Sediment Management/Disposal: Section 02260
10. Paving and Resurfacing: Section 02500
11. Landscape Work: Section 02970

1.08 SUBMITTALS

A. A written plan detailing the methods and layout of BMPs proposed to contain sediments, soils, and debris at City Hall Ponds shall be submitted to the City for review and approval prior to proceeding with the work of this Section. If required by the Orders of Conditions, the plan shall also be submitted to the Newton Conservation Commission. This may take the form of a SWPPP and NPDES NOI, with modifications as needed.

B. The methods and materials for proposed construction of individual BMPs, including filter tubes and sedimentation control fences or silt fence barriers shall be submitted to the City for review and approval prior to proceeding with the work of this Section. Certification of straw bales or straw mulch as weed free shall be required if proposed for use.

C. A written plan either included within the overall plan or as a stand-alone document, detailing the Contractor's plan for in-water sediment and erosion control barriers. This

plan will discuss the use of floating turbidity curtains and means and methods for anchoring the same.

- D. The written plan shall detail the phasing of the installation and removal of the proposed BMPs.

PART 2 - PRODUCTS

2.01 TEMPORARY GRASS SEED

- A. Grass seed for temporary erosion control shall be Annual Ryegrass applied at a minimum rate of 2 pounds per 1,000 SF.

2.02 SILT FENCE

- A. Silt fence shall meet the requirements of Section M9.50.0, Geotextile Fabrics, for Temporary Silt Fence of the Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges Standard Specifications 2020 Ed. (Standard Specifications), with high sediment filtration efficiency and minimum clogging properties. Silt fence shall be made of woven high tenacity industrial polypropylene (3.2 oz/s.y.) fabric with plastic net backing. Fabric shall be stable against ultraviolet radiation. Minimum flow rate shall be 10 gal/min/SF, with apparent opening size of #30 US sieve. Fabric width shall be three feet. Siltation fence shall be "Envirofence" as manufactured by Mirafi Inc. Charlotte, North Carolina or approved equivalent. Stakes for anchoring the silt fence shall be 1.25" nominal square hardwood posts prefabricated with the fencing. If necessary, the Contractor shall provide a backing mesh to provide stability to the silt fence fabric against blow over or knock down.

2.03 TURBIDITY CURTAIN

- A. Turbidity Curtains are a floating system designed to confine and control suspended sediment in a water body. The turbidity curtain system provided by the Contractor shall provide for an impermeable barrier which will trap suspended sediment within the area encircled by the curtain and promote settling of suspended particles. The turbidity curtain system shall be designed and installed to account for the specific conditions at the site, including range of depths, water velocity, wind and wave action, sediment characteristics, etc.
- B. Turbidity curtains shall include a floatation boom, a suspended impermeable curtain or skirt of appropriate length, ballast, a skirt connection system, and an anchorage system.
- C. Turbidity curtains shall include end and intermediate anchors sufficient to maintain the position of the line of curtains.

- D. Turbidity curtains shall be Type II, durable and suitable for mild currents, waves, and wind, and designed for the control of silt and sediment during marine construction and dredging. Curtains shall be designed for the depths to be encountered in Bulloughs Pond downstream.
- E. Turbidity curtain systems such as those manufactured by Elastec / American Marine or approved equivalent shall be judged acceptable.

2.04 COMPOST FILTER TUBES

- A. Compost filter tubes shall be a three-dimensional tubular sediment control and stormwater runoff filtration device for the perimeter control of sediment on and around construction sites. The unit functions by filtering runoff as it passes through the media and by allowing water to temporarily pond behind the unit, allowing sediment particles to settle.
- B. Tubes shall be 18" diameter and manufactured in the U.S.. Units shall be green with black striping and may be Filtrex Sox or approved equal.
- C. Netting materials shall be either photodegradable or biodegradable, with 1/8 inch mesh openings. Tensile strength according to ASTM D4595 of machine direction (MD): 670 lbs, tensile direction (TD): 423 lbs (numbers are based on 12" diameter unit). Material shall have 100% of its original strength from UV exposure per ASTM G-155 at 1,000 hrs. Density when filled shall be 67 lbs/ft with 20% air space. Hydraulic flow through rate shall be 15.0 gpm/ft.
- A. Filter media shall be weed free coarse composted material specifically designed for removal of solids from stormwater runoff and shall be third party tested and certified, with minimum 78% TSS removal efficiency and minimum flow through rate of 5gpm/SF. Composted products shall be produced using an aerobic composting process meeting CFR503 regulations. Composted products shall be free from any refuse, contaminants or other materials toxic to plant growth. Non-composted products will not be accepted. Particle size shall be 99% passing a 2 in sieve and a maximum of 40% passing a 3/8 in sieve. pH shall be 5.0-8.0, and moisture content shall be less than 60%.
- B. Wooden stakes shall be as recommended by the manufacturer, but as a minimum staking pattern, as shown on the Project Drawings.
- C. Tubes shall be placed parallel to contours with both ends of the sock extended upslope 45 degrees to prevent "end around".
- D. Replacement will be required when the sock is ripped, degraded, or clogging is evident, in accordance with manufacturer's instructions. At the end of the project, tubes will be removed from the site.

2.05 CATCH BASIN INLET PROTECTION

- A. Catch basin inlet protection shall be open top geotextile fabric filter bags that is specifically designed to hang below the catch basin grate to filter sediment laden stormwater runoff.
- B. The unit shall have lifting straps to allow removal of the unit and manual inspection of the system.
- C. The unit shall have orange monofilament fabric manufactured in the U.S. with the following characteristics:

PROPERTY	TEST METHOD	UNITS	TEST RESULTS
Grab Tensile Strength	ASTM D 4632	lbs	450 x 300
Grab Tensile Elongation	ASTM D 4632	%	40 x 25
Puncture Strength	ASTM D 4833	lbs	130
Mullen Burst Strength	ASTM D 3786	psi	600
Trapezoid Tear Strength	ASTM D 4533	lbs	165 x 150
% Open Area (POA)	COE – 22125-86	%	28
Apparent Opening Size	ASTM D 4751	US Std Sieve	30
Permittivity	ASTM D 4491	sec ¹	3.5
Permeability	ASTM 4491	cm/sec	0.25
Water Flow Rate	ASTM 4491	gal/min/ft ²	250
Ultraviolet Resistance	ASTM D 4355	%	70

2.06 OTHER MATERIALS

- A. Other materials (including stabilized construction entrances) required for completion of the work in this Section shall be of adequate quality and construction such that intended performance is satisfied.

2.07 SEDIMENT SETTLING TANKS

- A. If needed, the Contractor shall provide settling tanks for the purpose of treating discharge from all pumping systems. Settling tanks shall be constructed of metal with watertight seams and sufficient stiffness to accommodate full tank levels. The Contractor shall size the tanks sufficient to provide residence time commensurate with pumping rates and sediment grain size. Baffles and booms shall be provided as needed.
- B. An acceptable substitute for sediment settling tanks may be so-called dewatering bags. Such bags shall be made from permeable non-woven geotextile fabric into which water is pumped. Sediment is filtered on the inside of the bag and water diffuses out. The Contractor may propose dewatering bags as a substitute for settling tanks, provided the bags are sized appropriately, the apparent opening size of the geotextile is suitable for the sediment grain size distribution; and that for upland applications, the bags are placed on

gravel bedding, and surrounded by a silt fence. Full dewatering bags must be removed from site and disposed of in a lawful manner.

PART 3 - EXECUTION

3.01 INITIAL CONSTRUCTION ACTIVITIES AND PRELIMINARY DRAINAGE CONTROL

- A. Construction Entrance: The construction access entrance shall function as an anti-tracking pad. Entrances shall be prepared by removing posts, railings, curbing and fencing as necessary and storing and resetting at the conclusion of work. Existing curbing may be removed and restored at the conclusion of work or may be protected in place. Any damaged sections of curbing will be removed and replaced by the Contractor at no additional cost to the City. The construction access entrances shall be installed as detailed and maintained in a condition that shall prevent tracking of sediment onto the public right-of-way. This shall require top dressing with additional stone and/or additional length as conditions demand, and cleanout of any measures used to trap sediment. Maintenance of the construction entrances as anti-tracking pads shall be performed by the Contractor at no additional cost to the City. If the Contractor does not remove sediment tracked onto the existing pavement within 24 hours of notification by the City or does not remove sediment to the satisfaction of the City, the City may proceed to conduct the work itself and reduce all costs associated with the effort from payment due to the Contractor.

- B. The Contract Drawings show the deployment of silt fence, turbidity curtains, perimeter controls, and cofferdams. The limits of these controls have been established based on ground conditions, anticipated channel conditions, expected water surface elevation at the start of construction and in accordance with applicable permits and regulations. Prior to the installation of any sedimentation barrier, the Contractor, the Owner, and the Engineer shall meet on site to discuss conditions. Any adjustments to the configuration shown on the Contract Drawings shall be discussed at that time and mutually agreed upon. The Contractor should expect the possibility that sedimentation controls may be installed and/or removed in the wet.

- C. Prior to beginning any dewatering, clearing, stockpiling, excavation or filling, the Contractor shall perform the following sequence of implementation of sedimentation and siltation control measures.
 - 1. Perform all necessary work to install all anticipated sedimentation barriers including but not necessarily limited to silt fence barriers, compost filter tubes, turbidity curtains, stabilized construction entrances, and other items as necessary. Provide all necessary sedimentation and siltation control measures as required by the Engineer, the City and regulatory agencies, to minimize sedimentation or siltation from occurring beyond the immediate limits of work.

2. In addition to initial sedimentation and siltation control set-up measures, take additional steps as necessary to minimize sedimentation and siltation within work areas and eliminate sedimentation and siltation outside of work areas throughout the conduct of the Work at no additional cost to the City.
 3. Following initial setup of sediment and erosion controls, the site shall be inspected by the City, Engineer, and Conservation Commission representatives. No work can continue until the Erosion controls meet the approval of the Conservation Commissions.
 4. Damaged or loose siltation fence or other control measures shall be replaced as necessary to maintain their function of controlling sedimentation and siltation.
- D. Remove any accumulation of silt or soil build-up behind straw bale /silt fence barrier or other siltation dams, as it occurs. Remove accumulations of silt and soil build-up from siltation sumps, sedimentation basins, and silt traps as necessary to properly maintain their function.
- E. Following periodic cleaning of all sedimentation controls and upon completion of the use of the controls, the accumulated sediment shall be allowed to dry prior to transporting to lawful off-site upland disposal locations. Costs of said disposal shall be included as part of the price stated on the Bid Proposal Form.
- F. The Contractor shall repair any damage resulting from sedimentation or siltation during subsurface exploration program and related activities and restore property to its prior condition at no additional cost to the City.

3.02 ADDITIONAL EROSION AND SEDIMENTATION CONTROLS

- A. The City or Engineer may make periodic inspections of the site and shall advise the Contractor of the need for additional erosion and sedimentation controls necessary to meet the performance standards of this Section. Representatives of the Conservation Commission may also make inspections.
- B. Additional erosion and sedimentation control necessary to deal with transient conditions on the site, such as following the placement of topsoil but prior to the establishment of grass cover, shall be provided by the Contractor as needed and at no additional cost to the City.

3.03 INSPECTION AND MAINTENANCE

- A. Throughout the entire duration of the Contract (including periods when actual site work is being conducted), the Contractor shall perform weekly inspections of erosion and sediment control installations. Additional inspections shall be required immediately after each rain event exceeding requirements of the CGP and SWPPP. Turbidity monitoring

and additional inspections shall be at the frequency required by the SWPPP and CGP. The Contractor shall develop a checklist to assist with periodic inspection and maintenance and shall keep completed copies of the checklist for each inspection on file along with the SWPPP or sediment and erosion control plan.

- B. Throughout the entire duration of the Contract (including periods when actual site work is being conducted), the Contractor shall repair any damage resulting from sedimentation or erosion during construction and/or construction related activities and restore property to its prior condition at no additional cost to the City.
- C. Throughout the entire duration of the Contract (including periods when actual site work is being conducted), the Contractor shall take such steps as are necessary to maintain the sediment and erosion controls in good working order, including repair or replacing controls and cleaning or removing sediment from controls.
- D. The site entrance(s) shall be maintained in a condition that will prevent tracking or flow of mud onto public right-of-way or adjacent private roadways. All materials spilled, dropped, washed, or tracked from vehicles onto public roadways or into on- or off-site storm drains must be removed immediately. The entrance(s) and exit(s) to the site and affected portions of the adjacent rights of way shall be swept periodically, as required or directed by the City or Engineer.
- E. In the event of inclement weather, the Contractor shall protect the site and materials from damage from the weather. If, in the opinion of the City or its Engineer, any portion of the Work or materials has been damaged by reason of failure on the part of the Contractor to so protect the Work, such Work and materials shall be removed and replaced with new materials and Work to the satisfaction of the City. Weather protection shall include all activities necessary to prevent the spread of sediment from wind, runoff, erosion, and other causes.

3.04 REMOVAL AND CLEANUP

- A. After the site has been fully stabilized against erosion and upon the approval of the City and the Conservation Commission, remove sediment control devices and accumulated silt. Legally dispose of off-site all accumulated silt and all sedimentation and siltation control devices such as, but not limited to siltation fencing, inlet and perimeter controls, and other related products.

3.05 IN-POND CONTROLS

- A. Floating Turbidity Curtains shall be deployed per the Contract Drawings in Bulloughs Pond to mitigate against turbidity transport. The curtains shall be deployed prior to any clearing or earth disturbance and prior to the installation of any cofferdam or commencement of dewatering/diversions. The curtain shall be left in place until the cofferdams have been finally removed and work is complete.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT FOR PAYMENT

A. No measurement for payment of Temporary Erosion and Sedimentation Controls or materials including turbidity curtains, including CGP compliance, monitoring, inspections, and maintenance, shall be made. The bid item for Temporary Erosion and Sedimentation Controls shall be a lump sum quantity.

4.02 PAYMENT

A. Payment for the scope of work specified herein, including all labor, materials, equipment and incidentals and mobilization/demobilization costs to provide, install, maintain, inspect, and remove all Temporary Erosion and Sedimentation Controls including turbidity curtains and CGP compliance work will be paid for at the applicable lump sum price for Item No. 01560.01 stated on the Bid Form.

B. Partial payments for this item will be billable at 50% after initial installation and acceptance and NOI approval, with the remaining 50% after demobilization and final stabilization of all areas.

<u>Item No.</u>	<u>Payment Item</u>	<u>Unit</u>
01560.01	Temporary Erosion and Sedimentation Controls	Lump Sum

***** END OF SECTION *****

SECTION 01565

TEMPORARY WATER CONTROL

Part A of this Section describes Temporary Surface Water Control.

Part B of this Section describes Temporary Construction Dewatering and Groundwater Control.

PART A – TEMPORARY SURFACE WATER CONTROL

PART 1 - GENERAL

1.01 SCOPE

- A. This Section specifies the removal and control of water in the work area in order to permit all excavation, construction, installations, and repairs to be performed in the dry (to the extent practicable). The Work under this Section includes the furnishing of all labor, equipment, supplies, materials and utilities required for the operation, maintenance and supervision of the control of water (except as specifically specified under other Sections) such that all construction within this Contract can proceed unhindered by water and flow into or through the work area. Water control shall also extend to all provisions necessary to control water in and from the limits of work, and surface drainage from upland areas from flowing into, disrupting, and damaging the work area. All work shall be performed in accordance with the Contract Documents (Drawings and Specifications) and to the satisfaction of the City. Water control is of the utmost importance.
- B. The Contractor shall be responsible for determining the need for and the means and methods of implementing water control during the Work of the Contract, except as specifically stated herein and in other Sections. The City may monitor conditions at the site and the effects of water levels and flows on the Work. If, in the City's opinion, the presence of water has the potential to create a deleterious effect on the Work, then the Contractor shall take measures to control such water to the satisfaction of the City at no additional cost to the City. Monitoring of the site by the City shall not remove the Contractor's responsibility to properly control water and protect all installed Work.
- C. The control of surface water shall consist of installing such provisions, as needed, to divert, reduce, or stop water which may be flowing into, on, or through the work area. The need for control of surface water may change over the course of the project depending on the work underway, as well as rainfall/runoff conditions encountered. Pumping, siphoning, and/or diversion channels may be required for certain activities.

- D. Temporary construction dewatering systems will be necessary for completion of the Work of this Contract. The temporary construction dewatering systems shall be provided as described in Part B of this Section. Temporary construction dewatering systems shall act in concert with the surface water control and temporary cofferdams.
- E. The Contractor shall take all necessary precautions during construction to provide and maintain proper equipment and facilities to remove promptly and dispose of properly, all water entering work area and keep work areas dry, as necessary. The Contractor shall implement such temporary surface water control measures as necessary to maintain the water level such that all Work, where judged necessary, proceeds in the dry. Temporary water control work may include, but shall not be limited to diversion pipes, channels, swales, pumps, siphons, culverts, temporary cofferdams, etc.
- F. Water control measures shall be in operation as needed until all work within those areas of the work zone subject to interference by surface water is complete and accepted by the City.
- G. The Contractor shall remove all channeled, pumped, diverted, or siphoned surface water away from the work area, and provide sedimentation control and recharge in accordance with all applicable local codes and laws. Requirements specified in the City of Newton Conservation Commission Order of Conditions shall be met during this process. All water which is discharged by water control measures shall be passed through appropriate and adequate sediment and/or filtration measures such that the effluent meets the standards set out in Section 01560, water quality standards, and those provided herein as well as velocity dissipation measures to prevent erosion and scour at the outlet to meet all permit conditions.
- H. Only clean streamflow water diverted by the Contractor shall be pumped downstream of the work area. Adequate provision for erosion control/velocity dissipation at the discharge point shall be provided as part of the Work of this Section.
- H. All temporary surface water control Work shall be coordinated with the sedimentation and erosion control Work as specified under Section 01560.
- I. Per the Order of Conditions issued for the Project, turtles encountered during the Work will be relocated. Contractor shall provide a summary of means and methods to be used for relocation for review and approval by the City and Conservation Commission.

1.02 ADHERENCE TO REGULATORY CONDITIONS

- A. All Work shall comply with all codes, rules, regulations, laws and ordinances and executed in conformance with any permits, licenses etc., as issued by the City of Newton, Commonwealth of Massachusetts Department of Environmental Protection (DEP), the U.S. Army Corps of Engineers, Environmental Protection Agency, and all other authorities having jurisdiction within the project areas. All Work necessary to make the site comply with such requirements shall be provided without additional cost to the City.
- B. The permits and licenses listed under Section 01060 are an integral part of the Contract. The Contractor shall be responsible for conducting their work in accordance to all provisions of said permits.
- C. The Contractor shall procure all other required permits and licenses, (except for those to be obtained by the City as stated herein), pay all charges, fees and taxes and shall give all notices necessary and incidental to the due and lawful prosecution of the work under this Contract. The cost thereof shall be included in the prices bid for the various items specified herein for the work of this Contract. Copies of all required permits and licenses shall be filed with the City prior to the beginning of the work.
- D. The Contractor shall be responsible for compiling with all orders and permit conditions of the Newton Conservation Commission or other regulatory bodies for the installation, maintenance, and removal of all erosion and sedimentation control measures.
- E. No work of any type in any area shall commence until sedimentation control measures are in place to the satisfaction of the City.
- F. As per Section 01560, the Contractor shall be responsible for submitting a Notice of Intent (NOI) for Stormwater Discharges Associated with Construction Activity Under a NPDES General Permit and modification and maintenance of a project specific Stormwater Pollution Prevention Plan (Contractor's SWPPP). All temporary water control work shall be performed in accordance with the applicable permits and the Contractor's SWPPP and applicable permits. All temporary dewatering and water control measures must be installed and maintained in accordance with the approved sediment and erosion control plan (or SWPPP) and all project permits and applicable regulations.

1.03 RELATED SECTIONS

- A. The following is a list of related work items that shall be performed or furnished in other Sections of these Specifications as indicated.
 - 1. Regulatory Requirements: Section 01060

2. Temporary Erosion and Sedimentation Controls: Section 01560
3. Hydraulic and Hydrologic Data: Section 01566
4. Site Restoration: Section 01740
5. Site Preparation and Demolition: Section 02065
6. Construction Access: Section 02080
7. Temporary Cofferdams: Section 02170
8. Earthwork: Section 02200

1.04 SUBMITTALS

Not less than ten (10) days prior to the scheduled start of work, the Contractor shall submit their proposed method of controlling surface water and maintaining dry conditions, to the City and Conservation Commission for review. The submittal shall include as a minimum the following items:

- The Contractor's proposed design, sequence of operation, maintenance and supervision of the surface water and control systems, as needed for each phase of the work, and coordination with temporary groundwater control and any temporary cofferdams.
- The Contractor's proposed contingency plan for additional surface water measures for all systems in the event of system failure – monitoring, instrumentation, on-call repair, etc.
- Schedule for installation of sedimentation and water control measures.
- The Contractor's proposed contingency plan for potential storm emergency conditions (e.g., anticipated heavy rainfall). The contingency plan should address, but not be limited to, measures for protection of installed Work from flooding, handling flooding of the Work area and removing equipment and materials from the Work area.
- The Contractor's proposed means of turtle relocation, if turtles are encountered during the project in areas being dewatered or diverted, per the Order of Conditions for the Project.

1.05 WATER CONTROL RESTRICTIONS

- A. The Contractor shall abide by the conditions of all relevant permits issued to the Project which pertain to water control. The Contractor alone shall be responsible for meeting the conditions of the permits and shall be held accountable for penalties as a result of violations of permit conditions.
- B. The City makes no guarantee regarding the water surface elevation or stream flows at the start or at any time during the project.
- C. The Contractor is hereby made aware that inflow to the Project site cannot be fully controlled or predicted. Rainfall events may cause the level of the City Hall Ponds and associated waters to rise rapidly and lead to potential inundation of the work

sites. In the event of uncontrolled increases in the river level, the Contractor shall undertake measures to protect existing structures and new work at no additional cost to the City.

1.06 MAXIMUM WATER CONTROL DISCHARGE RATE

To protect the downstream portions of the Laundry Brook system, including Bulloughs Pond, and reduce potential for increased erosion due to Contractor's activities, the total flow rate from all Contractor water control operations shall be such that significant downstream erosion, flooding, or other damage is avoided, in the opinion of the City, or regulatory authority. The Contractor's water control measures shall not lead to an increase in downstream flood impacts.

1.07 PROTECTION OF WORK FROM FLOOD CONDITIONS

- A. The Contractor shall take all such precautions necessary to protect the site and the Works of this Contract, either completed or incomplete, from flood waters and flows which would either damage the Work or the site or cause a delay to the Work.
- B. The Contractor shall be aware of the potential for the water levels in City Hall Ponds to rise rapidly in response significant rainfall events. Available hydraulic and hydrologic data for the subject portion of City Hall Ponds is included in Section 01566. If significant rainfall, or extensive flooding is expected, the Contractor shall implement his/her contingency plan to prepare for increased river flows. The Contractor shall remove all equipment and erosion-susceptible material from areas liable to be inundated or otherwise impacted by flooding. The Contractor shall secure the site and make all efforts to protect completed and incomplete Work. The cost of these efforts shall be considered incidental to the Work.

PART 2 - PRODUCTS

2.01 DIVERSION BARRIER / MINOR COFFERDAM MATERIALS

- A. All materials used in the construction of cofferdams or diversion barriers, if used, shall be clean and free of substances or materials which might lead to contamination of the rivers, wetlands, or other water courses.
- B. Any sandbags shall be free of rips or tears which would lead to a loss of sand into the rivers or wetlands, and bag openings shall be tied to prevent the same.
- C. Loose soil material will NOT be an acceptable material for the construction of cofferdams or diversion barriers.

- D. Sandbags shall consist of polypropylene bags about 14” to 18” wide, and 24” to 30” deep. Sand bags shall be filled with Granular Fill as set out in Section 02200-Earthwork or other approved material. “Super Sacks” may be used as appropriate.

2.02 PUMPS, HOSES, SIPHONS

- A. Pumps, hoses, or siphons used at the site shall be sized appropriately and shall be maintained in good working order by the Contractor.
- B. All equipment shall be thoroughly cleaned and free from contaminants prior to being brought to the Site.
- C. Pumps shall be sized appropriately by the Contractor and shall operate in a manner which does not create a nuisance to abutters (i.e. quietly and without significant exhaust).
- D. Pumps must be properly baffled against excessive noise.
- E. Secondary containment shall be provided for gasoline or diesel-powered pumping equipment.

2.03 PIPE

Pipes used for water control and/or diversions shall be sized appropriately and shall be in good condition without leaks or cracks. Pipe pressure ratings shall be adequate for static head loading when pressure flow is expected. Pipe joints shall be watertight and installed as per the manufacturer’s recommendations.

Pipe shall be clean and free from contaminants.

PART 3 - EXECUTION

3.01 GENERAL

- A. The Contractor is responsible for means and methods and compliance with the specification will be judged on a performance criteria. The Contractor shall submit a water control plan to the City for review and may, at that time, propose alternative water control strategies. The Contractor’s water control plan must however satisfy the terms and conditions of all permits issued to the project.
- B. If pumps or similar equipment are utilized, the Contractor shall maintain ready access to back-up electrical generators, fuel, pumps and related equipment and supplies with output capacity sufficient to maintain continuous operation of the water control systems in the event the original water control equipment or power

source(s) which is in use becomes inoperable. The back-up generator, pumps and necessary equipment and supplies shall be capable of rapid deployment for replacement for the inoperable equipment.

- C. The Contractor shall take all reasonable and prudent precautions during construction to provide and maintain proper equipment and facilities to control and divert water.
- D. If necessary, water control systems shall be operated continuously during all construction specified herein. The operation time may include breaks, nights, weekends, holidays and other times when work is not otherwise being performed on the sites.
- E. Water control in the sites shall account for the range of flow reasonably expected into and out of the work areas during the course of the Project. Pumps, siphons, pipes, channels, etc. shall be sized appropriately. Any cofferdam / diversion barrier shall be constructed of such materials and to such extents that it will withstand the forces and pressures exerted by flows and depths of a reasonably expected magnitude and shall be capable of overtopping without damage or destruction. The cofferdams / diversion barriers shall be compatible with other dewatering, water control, and sedimentation control procedures. Dewatering equipment shall be provided as needed to remove water from the interior areas of cofferdams / diversion barriers.
- F. All cofferdams / diversion barriers constructed by the Contractor shall be completely removed upon the completion of the Project. All material shall be legally disposed of off-site at the Contractor's expense. No material shall be left within the work area.
- G. If deployed by the Contractor, pumps must be operated in such a way as to not disturb abutters (e.g. noise). Pump intakes shall be placed so as to reduce the potential for sediment entrainment and pump discharge points shall make provisions for reducing erosion potential through energy dissipation, riprap protection, etc.
- H. In general, the Contractor shall only work in the dry to the extent practicable, unless approved otherwise by the City. If the City approves the Contractor to work in the wet, the Work shall be performed such that the intent of the Work underway is not violated and the quality of the finished product is not reduced. The City will monitor conditions at the Site and the effects of water surface levels and flows on the Work. If it is judged that the Contractor cannot appropriately complete the Work under the conditions present, the City will notify the Contractor and the Contractor shall make provisions for water controls beyond what is already in-place.
- I. The Contractor shall install and maintain temporary staff gages and/or measurement

points as necessary to provide for water level measurement during construction.

- J. Sand bags may be used to direct runoff or for other purposes shall be included as Work of this Section.

3.02 SITE SPECIFIC WATER CONTROL REQUIREMENTS

- A. Water control is of the utmost importance during the Work of this Contract.
- B. During the Work of this contract, it is possible that the flow in the Hammond Brook or Cold Springs Brook would interrupt the work. The Contractor shall be responsible for selecting the appropriate means and methods for providing necessary water control.
- C. Pond draw down and dewatering phasing shall be in accordance with Construction Drawings or an alternative sequence as approved by the City.

PART B – TEMPORARY CONSTRUCTION DEWATERING AND GROUNDWATER CONTROL

PART 1 - GENERAL

1.01 SCOPE

- A. This section specifies the removal and control of groundwater and hydrostatic pressures in the work area in order to permit excavation, construction, installations, and repairs to be performed in the dry. The work under this section includes the furnishing of all labor, equipment, supplies, materials and utilities required for the operation, maintenance and supervision of the dewatering system and control of water such that the excavation and/or backfilling operation can proceed unhindered by groundwater and flow into or through the work area. All work shall be performed in accordance with the Plans and Specifications and to the satisfaction of the City.
- B. The Contractor shall implement groundwater dewatering and control measures to maintain the groundwater level such that excavation work proceeds in the dry, to the extent practicable. All outlets shall have sediment removal devices such as dewatering bags, etc. and velocity dissipation to prevent erosion/scour or resuspension of sediment.
- C. The Contractor shall take all reasonable and prudent precautions during construction to provide and maintain proper equipment and facilities to remove promptly and dispose of properly, all groundwater entering work area and keep such areas dry so as to obtain a satisfactory undisturbed subgrade condition.

- D. Shallow sumps may be required to maintain the lowered groundwater level until work has been completed. Sumps shall be surrounded by suitable filter material to mitigate the movement of soil/fines during pumping. Sumps shall not disturb the liner of the pond.
- E. The Contractor shall remove all pumped water away from the work area, and provide sedimentation control and recharge in accordance with all applicable local codes and laws as well as the Sedimentation & Erosion Control and Surface Water Control Sections of the Contract Documents. Requirements specified in the Newton Conservation Commission's Order of Conditions shall be met during this process. All water which is discharged by dewatering measures shall be passed through appropriate and adequate sediment and/or filtration measures such that the effluent meets the standards set out in Section 01560 and this Section. The Contractor shall not discharge dewatering and groundwater control effluent directly into the adjacent rivers.
- F. Dewatering systems shall act in concert with surface water control systems and with the temporary cofferdams erected.

1.02 ADHERENCE TO REGULATORY CONDITIONS

- A. All work shall comply with all codes, rules, regulations, laws and ordinances and executed in conformance with any permits, licenses etc., as issued by the City of Newton, Commonwealth of Massachusetts Department of Environmental Protection (DEP), Department, the U.S. Army Corps of Engineers, USEPA, and all other authorities having jurisdiction within the project areas. All work necessary to make the work site comply with such requirements shall be provided without additional cost to the City.
- B. The permits and licenses listed under Section 01060 are an integral part of the Contract. The Contractor shall be responsible for conducting their work in accordance with all provisions of said permits.
- C. The Contractor shall procure all other required permits and licenses, (except for those to be obtained by the City as stated herein), pay all charges, fees and taxes and shall give all notices necessary and incidental to the due and lawful prosecution of the work under this Contract. The cost thereof shall be included in the prices bid for the various items specified herein for the work of this Contract. Copies of all required permits and licenses shall be filed with the City prior to the beginning of the work.
- D. The Contractor shall be responsible for working with representatives of the Newton Conservation Commission or other regulatory bodies for the installation, maintenance, and removal of all erosion and sedimentation control measures.

- E. No work of any type in any area shall commence until sedimentation control measures are in place to the satisfaction of the City.
- F. As per Section 01560, the Contractor shall be responsible for submitting a Notice of Intent (NOI) for Storm Water Discharges Associated with Construction Activity Under a NPDES General Permit and modification and maintenance of a project specific Stormwater Pollution Prevention Plan (Contractor's SWPPP). All temporary water control work shall be performed in accordance with the applicable permits and the Contractor's SWPPP. All temporary dewatering and water control measures must be installed and maintained in accordance with the approved sediment and erosion control plan (or SWPPP).
- G. The Contractor shall be responsible for obtaining all other necessary permits required for the work of this project, including permits relating to temporary dewatering and water control. If necessary, the Contractor shall file all the necessary applications and documentation with the appropriate issuing authority(s). The Contractor shall obtain all permits required for planned dewatering and water control operations and shall abide by all appropriate terms and conditions as a part of the Work of this Section.

1.03 RELATED SECTIONS

- A. Regulatory Requirements: Section 01060
- B. Temporary Erosion and Sedimentation Control: Section 01560
- C. Hydraulic and Hydrologic Data: Section 01566
- D. Site Restoration: Section 01740
- E. Site Preparation and Demolition: Section 02065
- F. Construction Access: Section 02080
- G. Temporary Cofferdams: Section 02170
- H. Earthwork: Section 02200

1.04 DISCHARGE OF WATER

The general performance standard for the discharge of effluent into State Waters states that the discharge water shall not have a significant impact on the receiving waters. The discharged water shall therefore meet the applicable standards, including but not limited to State Water Quality Standards and the CGP.

1.05 SUBMITTALS

Not less than ten (10) days prior to the scheduled start of work, the Contractor shall submit his proposed method of dewatering and maintaining dry conditions, to the City and Conservation Commission for review. The submittal shall include as a minimum the following items:

- The Contractor's proposed design, sequence of operation, maintenance and supervision

of the dewatering system for the maintenance of groundwater levels as specified herein and as needed for the Contractor's operations.

- The Contractor's proposed contingency plan for groundwater control measures for all systems.
- Scheduling requirements with regard to sedimentation control.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 GENERAL

- A. The Contractor shall provide a back-up electrical generator, pumps and related equipment and supplies on-site with output capacity sufficient to maintain continuous operation of the dewatering systems in the event the original dewatering equipment or power source(s) which is in use becomes inoperable. The back-up generator, pumps and necessary equipment and supplies shall be connected to the operating system to the greatest degree possible prior to the start of all dewatering operations in such a manner to allow immediate replacement of the inoperable equipment.
- B. Dewatering systems shall be operated continuously and groundwater levels monitored and maintained at specified levels during all construction specified herein. The operation time is to include breaks, nights, weekends, holidays and other times when work is not otherwise being performed on the site.
- C. Prior to dewatering, all sedimentation controls shall be in-place and operable. Prior to excavation, groundwater levels shall be lowered and maintained by the dewatering system submitted by the Contractor and approved by the Resident Engineer to the subgrade elevation in all work areas. Compliance of the dewatered levels with the level specified herein shall be determined by visual observation of sumps, subgrades, etc.
- D. Where the Contractor proposes to remove groundwater from the bottom of the excavation by sumping as approved by the City, the sump shall be surrounded by a suitable filter to prevent removal of soil fines. Pumping from sumps which remove fines from the soil shall be immediately terminated and the dewatering method revised accordingly. Do not excavate the clay liner for sumps.

- E. All pumped water shall be discharged in accordance with project permits and applicable regulatory requirements.
- F. If applicable, all requirements of local environmental and Newton Conservation Commission Order of Conditions shall be satisfied.
- G. The Contractor may stage their dewatering plan such that dewatering and groundwater control is limited to areas where work is or soon will be occurring. Groundwater control may cease when the Contractor and City are satisfied that groundwater will no longer affect the Work of the Contract or the integrity of the structure in the area.

3.02 GENERAL WATER CONTROL METHODOLOGY LIMITATIONS

In order to maintain the quality of dewatering and water control effluent and to prevent the discharge of unacceptable quantities of sediment, the following minimum restrictions shall be observed:

- A. When sumps are required, the intake must be placed within a perforated pipe and the annular space between the pipe and the sump pit (as well as the bottom of the pit) must be filled with crushed stone. Filter fabric may also be used, if necessary.
- B. Discharge water may be passed through “Silt socks,” “Dirt Bags,” or other proprietary devices which mitigate turbidity delivered to receiving waters. These devices should have a supplemental perimeter line of turbidity curtains or siltation barrier.
- C. Discharge may also be passed through a temporary sedimentation tank sized appropriately for the flow rate.

Part 4 below applies to the work of both Part A and Part B of this Section.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT FOR PAYMENT

No measurement will be made for this item. The bid item under this section, including both temporary surface water control and temporary construction dewatering and groundwater control is a single lump sum quantity. Temporary cofferdams shall be paid under Section 02170.

4.02 PAYMENT

- A. Payment for the scope of work specified herein, including all labor, materials, equipment and incidentals and mobilization/demobilization costs to provide Temporary

Water Controls associated with the work of this Contract, including both temporary surface water control and temporary construction dewatering and groundwater control, as well as all mobilization, demobilization, remobilization in the event of flooding, and site restoration as a result of flooding will be paid for at the applicable Lump Sum price for Item No. 01565.01 stated on the Form for Bid. No additional payments will be made for remobilizations or restoration of disturbed areas due to flooding damage.

- B. Partial payments for this item will be billable in four (4) equal payment of twenty-five percent (25%) of the lump sum bid price over the duration of the Project.

<u>Item No.</u>	<u>Payment Item</u>	<u>Unit</u>
01565.01	Temporary Water Controls	Lump Sum

**** *END OF SECTION* ****

**SECTION 01566
HYDRAULIC AND HYDROLOGIC DATA**

PART 1 - GENERAL

1.01 PURPOSE AND INTENT OF DATA

No known site-specific data is available regarding Hammond Brook, Cold Springs Brook, Laundry Brook, or City Hall Ponds water level fluctuations or inflow/outflow flow rates. The Engineering Design Consultant compiled the data contained herein regarding certain theoretical hydraulic and hydrologic characteristics of the Hammond Brook and Cold Springs watershed and similar watersheds, as well as data on climate in the area, and the estimated hydraulic characteristics of the waterways. This information is presented for general informational purposes only. Neither the City nor the Engineering Design Consultant makes any assurances as to the accuracy of the information depicted in this section. The Contractor is responsible for making their own assumptions, interpretations, and conclusions regarding the data contained herein. A bidder may, at their own expense, make additional investigations to confirm the information presented herein and is free to seek out and consider any other additional sources of data.

1.02 STREAMFLOW DATA

The waterbody, City Hall Ponds, and influent watercourses – Hammond Brook and Cold Springs Brook which flow through the Project Site, have no known gages upstream or downstream of the Project Site.

Streamflow data provided in this Section was acquired from the United States Geological Survey's StreamStats—a Web-based Geographic Information Systems (GIS) application that provides users with access to an assortment of analytical tools that are useful for a variety of water-resources planning and management purposes, and for engineering and design purposes. StreamStats users can select USGS data-collection station locations shown on a map and obtain previously published information for the stations. Users also can select any location along a stream and obtain the drainage-basin boundary, basin characteristics, and estimates of streamflow statistics for the location. The streamflow statistics that StreamStats can provide for data-collection stations and for user-selected unengaged sites vary among the implemented states and among data-collection stations within states.

Streamflow data provided in this Section was generated by StreamStats v4.6.2. No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the software and related material nor shall the fact of release constitute any such warranty. The software is provided on the condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the software.

StreamStats data attached to this Section consists of six pages and includes:

- General Basin Characteristics
- Flow-Duration Statistics
- Low-Flow Statistics
- August Flow-Duration Statistics
- Bankfull Statistics
- Probability Statistics

1.03 RAINFALL DATA

Monthly Mean Precipitation¹ from 1991-2020 Boston Logan International Airport, Boston, MA

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Precip. (in)	3.39	3.21	4.17	3.63	3.25	3.89	3.27	3.23	3.56	4.03	3.66	4.30

Point precipitation frequency estimates for the site, obtained by the Engineer from NOAA Atlas 14, Volume 10, Version 2², are as follows. Data (3 pages) is also attached to this Section.

Average Recurrence Interval	24-Hour Duration Rainfall (inches)
1-year	2.63
2-year	3.26
5-year	4.28
10-year	5.13
25-year	6.30
50-year	7.16
100-year	8.11
200-year	9.28
500-year	11.1
1000-year	12.7

1.04 FLOOD FLOWS

An area of 0.2% annual change floodplain is identified upstream of the Site according to FEMA mapping.

¹ National Oceanic and Atmospheric Administration-National Centers for Environmental Information, *1991-2020 U.S. Climate Normals*; <https://www.ncei.noaa.gov/access/us-climate-normals/#dataset=normals-monthly&timeframe=30&location=MA&station=USW00014739>

² NOAA Atlas 14 Precipitation-Frequency Atlas of the United States Volume 10 Version 3, dated 2015 and revised 2019

The Contractor is responsible for making their own interpretation of possible precipitation and/or resultant flow conditions, and responsible for all such decisions which may affect Contractor's water control and construction methods or associated cost of construction.

PART 2 – PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 - MEASUREMENT AND PAYMENT

No measurement shall be made of any work performed under this section. No separate payment shall be made for any work performed under this section. The cost of any work done or facilities provided under this section shall be included under other bid items within the Contract.

*** * * END OF SECTION * * ***

**HYDRAULIC AND HYDROLOGIC INFORMATION
(FOR INFORMATION PURPOSES ONLY)**



NOAA Atlas 14, Volume 10, Version 3
 Location name: Newton Center, Massachusetts,
 USA*

Latitude: 42.3375°, Longitude: -71.2077°
 Elevation: 93.54 ft**

* source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aeriels](#)

PF tabular

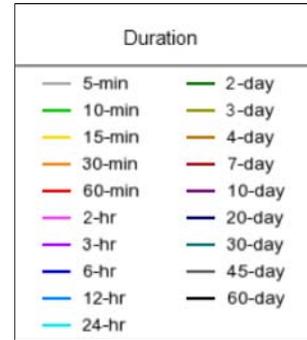
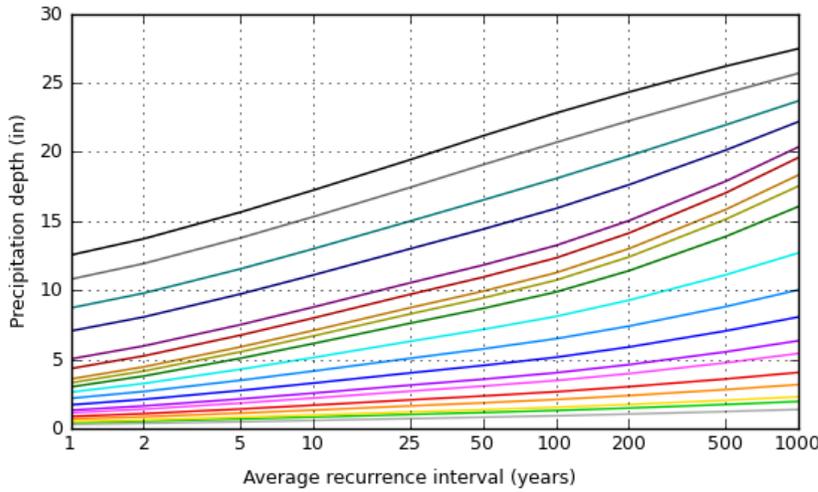
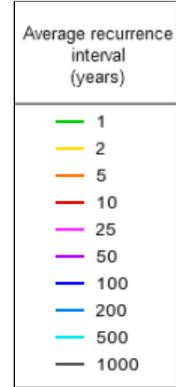
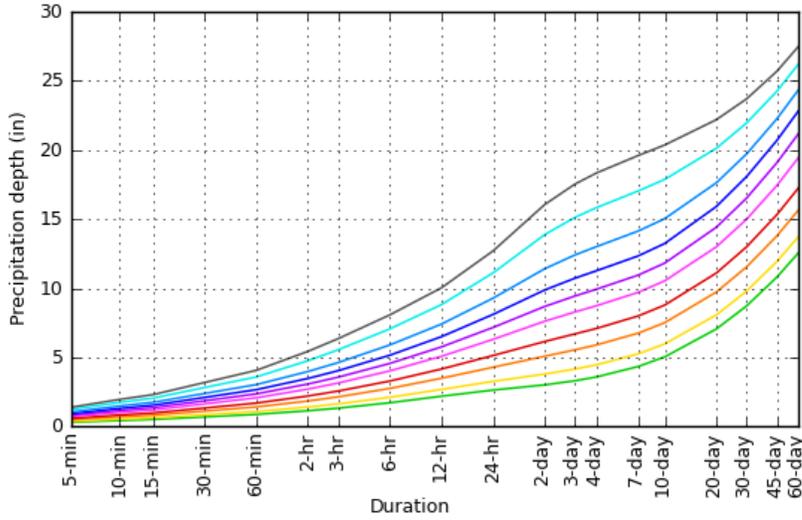
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) ¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.302 (0.239-0.383)	0.373 (0.294-0.473)	0.489 (0.384-0.623)	0.585 (0.457-0.750)	0.717 (0.542-0.968)	0.816 (0.604-1.13)	0.921 (0.662-1.33)	1.04 (0.705-1.54)	1.23 (0.795-1.88)	1.38 (0.872-2.16)
10-min	0.428 (0.338-0.543)	0.529 (0.417-0.671)	0.693 (0.544-0.882)	0.829 (0.647-1.06)	1.02 (0.768-1.37)	1.16 (0.856-1.60)	1.30 (0.938-1.89)	1.48 (0.999-2.18)	1.74 (1.13-2.66)	1.95 (1.24-3.06)
15-min	0.504 (0.398-0.638)	0.622 (0.490-0.789)	0.815 (0.640-1.04)	0.975 (0.762-1.25)	1.20 (0.903-1.61)	1.36 (1.01-1.88)	1.54 (1.10-2.22)	1.74 (1.18-2.57)	2.04 (1.32-3.13)	2.30 (1.45-3.60)
30-min	0.687 (0.543-0.871)	0.849 (0.669-1.08)	1.11 (0.875-1.42)	1.33 (1.04-1.71)	1.63 (1.23-2.21)	1.86 (1.38-2.57)	2.10 (1.51-3.04)	2.38 (1.61-3.52)	2.81 (1.82-4.31)	3.18 (2.01-4.97)
60-min	0.871 (0.688-1.10)	1.08 (0.848-1.36)	1.41 (1.11-1.79)	1.69 (1.32-2.16)	2.07 (1.57-2.80)	2.35 (1.75-3.27)	2.66 (1.92-3.86)	3.02 (2.04-4.46)	3.58 (2.32-5.49)	4.06 (2.57-6.35)
2-hr	1.13 (0.900-1.43)	1.40 (1.11-1.77)	1.84 (1.45-2.32)	2.20 (1.73-2.80)	2.70 (2.06-3.63)	3.07 (2.29-4.24)	3.47 (2.53-5.03)	3.97 (2.69-5.81)	4.75 (3.09-7.22)	5.43 (3.45-8.42)
3-hr	1.32 (1.05-1.66)	1.63 (1.30-2.05)	2.14 (1.70-2.69)	2.56 (2.02-3.24)	3.14 (2.40-4.21)	3.56 (2.67-4.91)	4.03 (2.95-5.82)	4.62 (3.13-6.73)	5.54 (3.61-8.38)	6.35 (4.04-9.79)
6-hr	1.71 (1.37-2.13)	2.11 (1.69-2.63)	2.75 (2.19-3.44)	3.28 (2.61-4.13)	4.02 (3.09-5.35)	4.56 (3.44-6.23)	5.15 (3.79-7.37)	5.89 (4.02-8.51)	7.06 (4.61-10.6)	8.07 (5.15-12.3)
12-hr	2.18 (1.77-2.70)	2.68 (2.16-3.32)	3.48 (2.80-4.33)	4.15 (3.32-5.19)	5.07 (3.92-6.69)	5.75 (4.36-7.78)	6.49 (4.78-9.19)	7.40 (5.07-10.6)	8.81 (5.78-13.1)	10.0 (6.42-15.2)
24-hr	2.63 (2.14-3.23)	3.26 (2.65-4.01)	4.28 (3.47-5.29)	5.13 (4.13-6.37)	6.30 (4.90-8.26)	7.16 (5.46-9.63)	8.11 (6.01-11.4)	9.28 (6.38-13.2)	11.1 (7.31-16.3)	12.7 (8.15-19.0)
2-day	3.01 (2.46-3.67)	3.79 (3.10-4.63)	5.08 (4.14-6.23)	6.14 (4.97-7.58)	7.61 (5.97-9.93)	8.68 (6.67-11.6)	9.87 (7.40-13.9)	11.4 (7.86-16.0)	13.9 (9.16-20.2)	16.1 (10.3-23.8)
3-day	3.30 (2.71-4.01)	4.15 (3.41-5.05)	5.54 (4.53-6.77)	6.69 (5.44-8.22)	8.28 (6.52-10.8)	9.44 (7.28-12.6)	10.7 (8.07-15.0)	12.4 (8.57-17.3)	15.1 (10.00-21.9)	17.5 (11.3-25.9)
4-day	3.58 (2.95-4.34)	4.46 (3.67-5.41)	5.90 (4.83-7.18)	7.09 (5.77-8.68)	8.73 (6.89-11.3)	9.93 (7.68-13.2)	11.3 (8.49-15.7)	13.0 (9.00-18.1)	15.8 (10.5-22.8)	18.3 (11.8-26.9)
7-day	4.33 (3.59-5.23)	5.25 (4.34-6.34)	6.75 (5.56-8.17)	7.99 (6.54-9.73)	9.70 (7.68-12.5)	10.9 (8.49-14.4)	12.3 (9.32-17.0)	14.1 (9.82-19.5)	17.0 (11.3-24.3)	19.6 (12.7-28.5)
10-day	5.03 (4.18-6.04)	5.97 (4.96-7.18)	7.51 (6.21-9.06)	8.78 (7.21-10.7)	10.5 (8.36-13.4)	11.8 (9.18-15.4)	13.2 (9.98-18.1)	15.0 (10.5-20.7)	17.9 (11.9-25.4)	20.4 (13.2-29.5)
20-day	7.05 (5.90-8.41)	8.07 (6.74-9.63)	9.73 (8.10-11.7)	11.1 (9.18-13.4)	13.0 (10.3-16.3)	14.4 (11.2-18.5)	15.9 (11.9-21.2)	17.6 (12.4-23.9)	20.1 (13.5-28.3)	22.2 (14.4-31.8)
30-day	8.72 (7.33-10.4)	9.79 (8.22-11.6)	11.5 (9.64-13.8)	13.0 (10.8-15.6)	15.0 (11.9-18.7)	16.5 (12.8-21.0)	18.1 (13.5-23.7)	19.7 (13.9-26.6)	22.0 (14.8-30.6)	23.7 (15.4-33.8)
45-day	10.8 (9.11-12.8)	11.9 (10.1-14.1)	13.8 (11.6-16.4)	15.3 (12.8-18.3)	17.4 (13.9-21.5)	19.1 (14.8-24.0)	20.7 (15.4-26.7)	22.3 (15.7-29.8)	24.2 (16.4-33.6)	25.7 (16.8-36.4)
60-day	12.5 (10.6-14.8)	13.7 (11.6-16.2)	15.6 (13.2-18.5)	17.2 (14.4-20.5)	19.4 (15.5-23.9)	21.2 (16.4-26.4)	22.8 (16.9-29.2)	24.3 (17.3-32.5)	26.2 (17.7-36.2)	27.5 (18.0-38.7)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves
Latitude: 42.3375°, Longitude: -71.2077°



NOAA Atlas 14, Volume 10, Version 3

Created (GMT): Thu Oct 14 17:46:43 2021

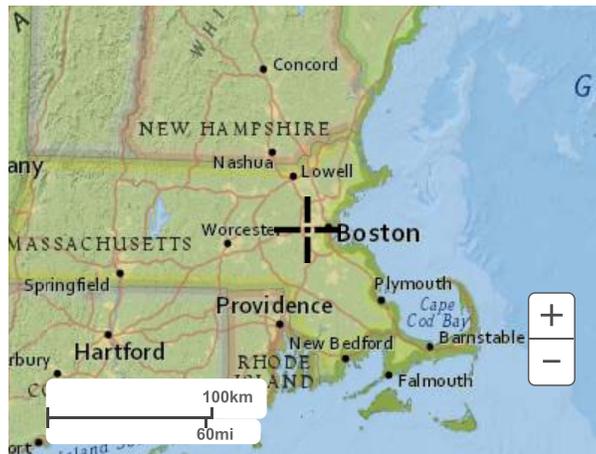
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Maps & aerials

Small scale terrain



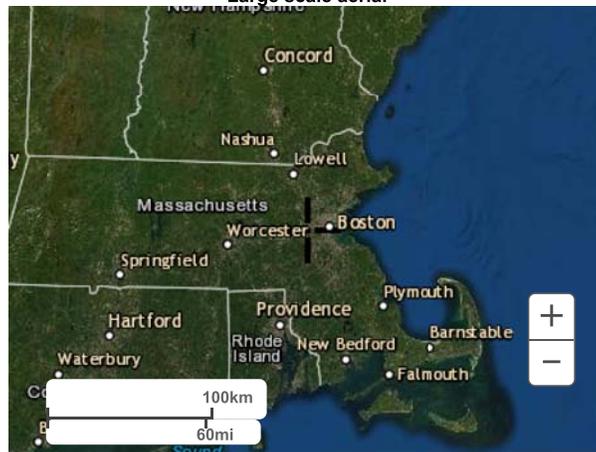
Large scale terrain



Large scale map



Large scale aerial



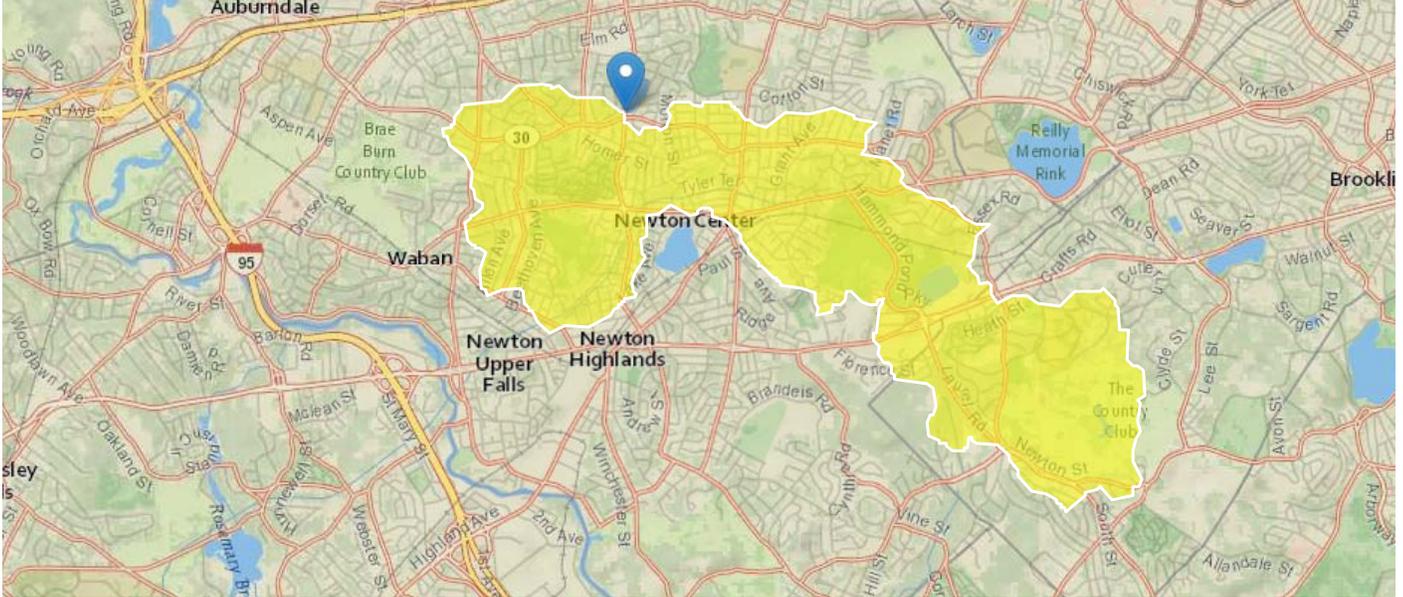
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[US Department of Commerce](#)
[National Oceanic and Atmospheric Administration](#)
[National Weather Service](#)
[National Water Center](#)
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)

StreamStats Report-City Hall Ponds Newton

Region ID: MA
 Workspace ID: MA20211014165341449000
 Clicked Point (Latitude, Longitude): 42.33904, -71.20686
 Time: 2021-10-14 12:54:02 -0400



Basin Characteristics			
Parameter Code	Parameter Description	Value	Unit
ACRSDFT	Area underlain by stratified drift	1.45	square miles
BSLDEM10M	Mean basin slope computed from 10 m DEM	5.635	percent
BSLDEM250	Mean basin slope computed from 1:250K DEM	1.229	percent
CAT1ROADS	Length of interstates lmt'd access highways and ramps for lmt'd access highways, includes cloverleaf interchanges (USGS Ntl Transp Dataset)	0.62	miles
CAT2ROADS	Length of sec hwy or maj connecting roads; main arteries & hwys not lmt'd access, usually in the US Hwy or State Hwy systems (USGS Ntl Transp Dataset)	1.49	miles
CAT3ROADS	Length of local connecting roads; roads that collect traffic from local roads & connect towns, subdivisions & neighborhoods (USGS Nat Transp Dataset)	7.31	miles
CAT4ROADS	Length of local roads; generally paved street, road, or byway that usually have single lane of traffic in each direction (USGS Ntl Transp Dataset)	58.9	miles
CENTROIDX	Basin centroid horizontal (x) location in state plane coordinates	225876.3	meters
CENTROIDY	Basin centroid vertical (y) location in state plane units	897346.3	meters
CROSCOUNT1	Number of intersections between streams and roads, where the roads are interstate, limited access highway, or ramp (CAT1ROADS)	0	dimensionless
CROSCOUNT2	Number of intersections between streams and roads, where the roads are secondary highway or major connecting road (CAT2ROADS)	0	dimensionless
CROSCOUNT3	Number of intersections between streams and roads, where roads are local connecting roads (CAT3ROADS)	5	dimensionless
CROSCOUNT4	Number of intersections between streams and roads, where roads are local roads (CAT4ROADS)	6	dimensionless

Parameter Code	Parameter Description	Value	Unit
CRSDFT	Percentage of area of coarse-grained stratified drift	34.61	percent
CSL10_85	Change in elevation divided by length between points 10 and 85 percent of distance along main channel to basin divide - main channel method not known	15.9	feet per mi
DRFTPERSTR	Area of stratified drift per unit of stream length	-100000	square mile per mile
DRNAREA	Area that drains to a point on a stream	4.17	square miles
ELEV	Mean Basin Elevation	170	feet
FOREST	Percentage of area covered by forest	18.2	percent
LAKEAREA	Percentage of Lakes and Ponds	1.28	percent
LC06STOR	Percentage of water bodies and wetlands determined from the NLCD 2006	2.81	percent
LC11DEV	Percentage of developed (urban) land from NLCD 2011 classes 21-24	81.3	percent
LC11IMP	Average percentage of impervious area determined from NLCD 2011 impervious dataset	28.3	percent
LFPLENGTH	Length of longest flow path	5.33	miles
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless
MAXTEPC	Mean annual maximum air temperature over basin area, in degrees Centigrade	14.9	degrees C
OUTLETX	Basin outlet horizontal (x) location in state plane coordinates	224155	feet
OUTLETY	Basin outlet vertical (y) location in state plane coordinates	898765	feet
PCTSDNGRV	Percentage of land surface underlain by sand and gravel deposits	34.61	percent
PRECPRI00	Basin average mean annual precipitation for 1971 to 2000 from PRISM	47.3	inches
STRMTOT	total length of all mapped streams (1:24,000-scale) in the basin	0	miles
WETLAND	Percentage of Wetlands	3.06	percent

Peak-Flow Statistics Parameters [Peak Statewide 2016 5156]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.17	square miles	0.16	512
ELEV	Mean Basin Elevation	170	feet	80.6	1948
LC06STOR	Percent Storage from NLCD2006	2.81	percent	0	32.3

Peak-Flow Statistics Flow Report [Peak Statewide 2016 5156]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PII	PIu	ASEp
50-percent AEP flood	134	ft ³ /s	68.2	263	42.3
20-percent AEP flood	220	ft ³ /s	110	438	43.4
10-percent AEP flood	287	ft ³ /s	141	585	44.7
4-percent AEP flood	384	ft ³ /s	182	811	47.1
2-percent AEP flood	465	ft ³ /s	213	1010	49.4
1-percent AEP flood	550	ft ³ /s	244	1240	51.8
0.5-percent AEP flood	644	ft ³ /s	278	1490	54.1
0.2-percent AEP flood	778	ft ³ /s	320	1890	57.6

Peak-Flow Statistics Citations

Zarriello, P.J.,2017, **Magnitude of flood flows at selected annual exceedance probabilities for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2016–5156, 99 p.** (<https://dx.doi.org/10.3133/sir20165156>)

Low-Flow Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.17	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	1.229	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	-100000	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

Low-Flow Statistics Flow Report [Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
-----------	-------	------

Low-Flow Statistics Citations

Flow-Duration Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.17	square miles	1.61	149
DRFTPERSTR	Stratified Drift per Stream Length	-100000	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1
BSLDEM250	Mean Basin Slope from 250K DEM	1.229	percent	0.32	24.6

Flow-Duration Statistics Flow Report [Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
-----------	-------	------

Flow-Duration Statistics Citations

August Flow-Duration Statistics Parameters [Statewide Low Flow WRIR00 4135]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.17	square miles	1.61	149
BSLDEM250	Mean Basin Slope from 250K DEM	1.229	percent	0.32	24.6
DRFTPERSTR	Stratified Drift per Stream Length	-100000	square mile per mile	0	1.29
MAREGION	Massachusetts Region	0	dimensionless	0	1

August Flow-Duration Statistics Flow Report [Statewide Low Flow WRIR00 4135]

Statistic	Value	Unit
-----------	-------	------

August Flow-Duration Statistics Citations

Bankfull Statistics Parameters [Bankfull Statewide SIR2013 5155]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.17	square miles	0.6	329
BSLDEM10M	Mean Basin Slope from 10m DEM	5.635	percent	2.2	23.9

Bankfull Statistics Parameters [Appalachian Highlands D Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.17	square miles	0.07722	940.1535

Bankfull Statistics Parameters [New England P Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.17	square miles	3.799224	138.999861

Bankfull Statistics Parameters [USA Bieger 2015]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.17	square miles	0.07722	59927.7393

Bankfull Statistics Flow Report [Bankfull Statewide SIR2013 5155]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
Bankfull Width	25.3	ft	21.3
Bankfull Depth	1.39	ft	19.8
Bankfull Area	34.9	ft ²	29
Bankfull Streamflow	91.1	ft ³ /s	55

Bankfull Statistics Flow Report [Appalachian Highlands D Bieger 2015]

Statistic	Value	Unit
Bieger_D_channel_width	27.5	ft
Bieger_D_channel_depth	1.69	ft
Bieger_D_channel_cross_sectional_area	47.1	ft ²

Bankfull Statistics Flow Report [New England P Bieger 2015]

Statistic	Value	Unit
Bieger_P_channel_width	37.7	ft
Bieger_P_channel_depth	1.88	ft
Bieger_P_channel_cross_sectional_area	71.7	ft ²

Bankfull Statistics Flow Report [USA Bieger 2015]

Statistic	Value	Unit
Bieger_USA_channel_width	20.5	ft
Bieger_USA_channel_depth	1.63	ft
Bieger_USA_channel_cross_sectional_area	36.9	ft ²

Bankfull Statistics Flow Report [Area-Averaged]

PII: Prediction Interval-Lower, PIu: Prediction Interval-Upper, ASEp: Average Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	ASEp
Bankfull Width	25.3	ft	21.3
Bankfull Depth	1.39	ft	19.8
Bankfull Area	34.9	ft^2	29
Bankfull Streamflow	91.1	ft^3/s	55
Bieger_D_channel_width	27.5	ft	
Bieger_D_channel_depth	1.69	ft	
Bieger_D_channel_cross_sectional_area	47.1	ft^2	
Bieger_P_channel_width	37.7	ft	
Bieger_P_channel_depth	1.88	ft	
Bieger_P_channel_cross_sectional_area	71.7	ft^2	
Bieger_USA_channel_width	20.5	ft	
Bieger_USA_channel_depth	1.63	ft	
Bieger_USA_channel_cross_sectional_area	36.9	ft^2	

Bankfull Statistics Citations

Bent, G.C., and Waite, A.M.,2013, Equations for estimating bankfull channel geometry and discharge for streams in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2013-5155, 62 p., (<http://pubs.usgs.gov/sir/2013/5155/>)

Bieger, Katrin; Rathjens, Hendrik; Allen, Peter M.; and Arnold, Jeffrey G.,2015, Development and Evaluation of Bankfull Hydraulic Geometry Relationships for the Physiographic Regions of the United States, Publications from USDA-ARS / UNL Faculty, 17p. (https://digitalcommons.unl.edu/usdaarsfacpub/1515?utm_source=digitalcommons.unl.edu%2Fusdaarsfacpub%2F1515&utm_medium=PDF&utm_campaign=PDFCoverPages)

Probability Statistics Parameters [Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	4.17	square miles	0.01	1.99
PCTSDNDRV	Percent Underlain By Sand And Gravel	34.61	percent	0	100
FOREST	Percent Forest	18.2	percent	0	100
MAREGION	Massachusetts Region	0	dimensionless	0	1

Probability Statistics Disclaimers [Perennial Flow Probability]

One or more of the parameters is outside the suggested range. Estimates were extrapolated with unknown errors

Probability Statistics Flow Report [Perennial Flow Probability]

Statistic	Value	Unit
Probability Stream Flowing Perennially	0.985	dim

Probability Statistics Citations

Bent, G.C., and Steeves, P.A.,2006, A revised logistic regression equation and an automated procedure for mapping the probability of a stream flowing perennially in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2006-5031, 107 p. (http://pubs.usgs.gov/sir/2006/5031/pdfs/SIR_2006-5031rev.pdf)

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Application Version: 4.6.2

StreamStats Services Version: 1.2.22

NSS Services Version: 2.1.2

SECTION 01567

SEDIMENT SAMPLING TECHNICAL DATA

PART 1 - GENERAL

1.01 SEDIMENT SAMPLING INFORMATION

- A. On November 15, 2019, GZA GeoEnvironmental, Inc. collected a seven (7) sediment cores from the bottom of City Hall Ponds. Seven samples, one from each of the seven full depth sediment cores, were analyzed for Volatile Organic Compounds before compositing. Five (5) samples were composited from the seven full-depth sediment cores and were bottled and sent for analysis by a Massachusetts-certified analytical laboratory for analysis for physical and chemical parameters. The sediment testing results are included with these specifications, with annotations made by the Engineer as shown on the geotechnical laboratory report forms.

1.02 SEDIMENT SAMPLING INFORMATION LIMITATIONS

- A. A limited number of sediment samples were collected from City Hall Ponds and laboratory-analyzed for the purpose of determining their physical and chemical characteristics.
- B. Subsurface information is appended herewith in the form of sediment sample analysis reports provided by the laboratory. Contract Drawings include the approximate locations of the samples. The sediment sample core log information should be taken as approximate and conceptual. No warranties, express or implied, are made as to accuracy of subsurface information provided herein.
- C. The subsurface information gathered to date will likely need to be repeated/supplemented for characterization for offsite sediment management/disposal at a receiving facility. Contractor shall be responsible for all such testing and Licensed Site Professional (LSP) services, as well as all reporting and documentation for all required approvals, permits, and permit closeouts.

1.03 AVAILABLE SEDIMENT SAMPLING INFORMATION

The information referred to in Paragraph 1.01 is included herein. The information is included in the Contract by reference as if fully reproduced herein. The City assumes that all bidders have made themselves familiar with the information in the process of formulating their bids.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

Not Used

PART 4 – MEASUREMENT AND PAYMENT

No measurement will be made of any work performed under this section. No separate payment will be made for any work performed under this section. The cost of any work done or facilities provided under this section will be included under other bid items within the Contract.

*** * * END OF SECTION * * ***

SEDIMENT SAMPLING INFORMATION

Table 1
City Hall Ponds
Sediment Sample Analysis

Physical Characteristics

	SAMPLE ID:				
	SS-1	SS-2	SS-3	SS-4/5	SS-6/7
Sample Date:	11/15/2019	11/15/2019	11/15/2019	11/15/2019	11/15/2019
Testing Parameter:					
Percent Moisture (%) (2540G)	47	43	23	56	50
Total Organic Carbon (%) (9060)	0.23	15.40	4.67	8.92	7.38
Particle Size -- By Sieve (Percent Finer) (D6913 and ASTM D 1140)					
Sieve, 2"			100.0		
Sieve, 1.5"			95.2		
Sieve, 1"			95.2		
Sieve, 0.75"			81.6	100.0	
Sieve, 0.5"		100.0	81.6	90.6	100.0
Sieve, 0.375"	100.0	96.8	81.6	88.5	96.9
Sieve, #4	97.2	96.5	80.2	85.3	92.5
Sieve, #10	90.7	90.9	72.6	81.5	85.5
Sieve, #20	82.2	77.9	56.2	75.2	76.8
Sieve, #40	68.1	59.9	29.7	67.2	67.0
Sieve, #60	46.7	45.2	14.1	59.0	58.9
Sieve, #100	26.4	30.8	6.3	47.2	50.8
Sieve, #200	14.9	17.3	3.0	31.2	40.7

**Table 2
City Hall Ponds
Sediment Sample Analysis**

Total Metals

Total Metals (6010C, 7471B)	MCP Method 1 Standards	MADEP BUD Standards	MADEP Identified Background Levels in "Natural" Soil	MADEP Limiting Soil Concentration at an RCS-1 Receiving Location	COMM 97 Reuse at Unlined Landfills Standard	SAMPLE ID:				
						SS-1	SS-2	SS-3	SS-4/5	SS-6/7
	S-1 & GW-1, S-1 & GW-2	S-1 & GW-1 S-1 & GW-2	--		--					
					Sample Date:	11/15/2019	11/15/2019	11/15/2019	11/15/2019	11/15/2019
Arsenic, Total	20	11	20	20	40	4.94	4.25	2.58	6.42	5.59
Cadmium, Total	70	0.8	2	20	30	0.22	0.32	0.27	0.62	0.50
Chromium, Total	100	11	30	100	1,000	15.6	22.8	14.5	22.0	20.2
Copper, Total	N/A	N/A	40	300	N/A	31.9	35.2	21.7	59.7	45.2
Lead, Total	200	19	100	200	1,000	57.7	111	49.3	133	95.8
Mercury, Total	20	8.7	0.3	3.0	10	0.057	0.081	0.035	0.171	0.159
Nickel, Total	600	7.2	20	150	N/A	9.51	8.87	7.47	12.7	11.6
Zinc, Total	1,000	28	100	500	N/A	97.3	110	98.2	183	139

Notes:

1. All units are mg/kg.

2. **Bold underlined** values exceed MADEP BUD S-1/GW- 1 and S-1/GW-2 standards (Ref. "Draft Interim Guidance Document for Beneficial Use Determination Regulations 301 CMR 19.060 (2004), Appendix 5 - Proposed Beneficial Use Determination Chemical-Specific Values).

3. **YELLOW highlighted values exceed MADEP Background Levels in Soil** (Ref. "Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil)

N/A = Standard not available.

**Table 3
City Hall Ponds
Sediment Sample Analysis**

Polycyclic Aromatic Hydrocarbons (PAHs)

PAH by GC/MS SIM 8270	MCP Method 1 Standards	MCP Method 1 Standards	MADEP BUD Standards	MADEP BUD Standards	MADEP Limiting Soil Concentration at an RCS-1 Receiving Location	MADEP Identified Background Levels in "Natural" Soil	SAMPLE ID:				
	S-1 & GW-1	S-1 & GW-2	S-1 & GW-1	S-1 & GW-2		--	SS-1	SS-2	SS-3	SS-4/5	SS-6/7
						Sample Date:	11/15/2019	11/15/2019	11/15/2019	11/15/2019	11/15/2019
2-Methylnaphthalene	0.7	80	0.66	12	0.7	0.5	0.064	0.022	ND (0.010)	ND (0.019)	ND (0.016)
Acenaphthene	4	1,000	3.9	1,000	4	0.5	0.410	0.117	0.029	0.041	ND (0.016)
Acenaphthylene	1	600	1.1	110	1	0.5	0.028	0.043	0.022	0.037	0.019
Anthracene	1,000	1,000	1,000	1,000	10	1	0.707	0.394	0.113	0.157	0.058
Benzo(a)anthracene	7	7	3.7	3.7	7	2	1.48	0.968	0.397	0.651	0.272
Benzo(a)pyrene	2	2	0.66	0.66	2	2	1.29	0.914	0.368	0.663	0.282
Benzo(b)fluoranthene	7	7	3.7	3.7	7	2	1.71	1.24	0.522	0.936	0.416
Benzo(g,h,i)perylene	1,000	1,000	1,000	1,000	10	1	0.742	0.534	0.240	0.430	0.191
Benzo(k)fluoranthene	70	70	37	37	10	1	0.472	0.368	0.190	0.309	0.126
Chrysene	70	70	370	370	20	2	1.59	1.10	0.466	0.753	0.366
Dibenzo(a,h)anthracene	0.7	0.7	0.66	0.66	0.7	0.5	0.191	0.136	0.057	0.103	0.045
Fluoranthene	1,000	1,000	1,000	1,000	40	4	3.67	2.54	1.17	1.72	0.707
Fluorene	1,000	1,000	1,000	1,000	10	1	0.437	0.154	0.049	0.056	0.021
Indeno(1,2,3-cd)pyrene	7	7	3.7	3.7	7	1	0.836	0.591	0.268	0.486	0.218
Naphthalene	4	20	0.66	14	4	0.5	0.069	0.031	0.012	0.019	ND (0.016)
Phenanthrene	10	500	10	500	10	3	4.03	1.72	0.637	0.774	0.257
Pyrene	1,000	1,000	1,000	1,000	40	4	4.00	2.30	0.962	1.52	0.656
Total PAHs	--					--	21.73	13.17	5.51	8.67	3.68

Notes:

- All units are mg/kg.
- ND (X.XXX) = Not detected - indicates the constituent was not present in quantities above the Detection Limit (shown in parenthesis).
- Bold underlined** values exceed MADEP BUD S-1/GW- 1 standards (Ref. "Draft Interim Guidance Document for Beneficial Use Determination Regulations 301 CMR 19.060 (2004), Appendix 5 - Proposed Beneficial Use Determination Chemical-Specific Values).
- YELLOW highlighted values meet or exceed MADEP Background Levels in Soil (Ref. "Technical Update: Background Levels of Polycyclic Aromatic Hydrocarbons and Metals in Soil)**

Table 4
City Hall Ponds
Sediment Sample Analysis
Volatile Organic Compounds

Volatile Organics -- 8260B (mg/kg)	MCP Method 1 Standards	MCP Method 1 Standards	MADEP BUD Standards	MADEP BUD Standards	COMM 97 Reuse at Unlined Landfills Standard	SAMPLE ID:						
	S-1 & GW-1	S-1 & GW-2	S-1 & GW-1	S-1 & GW-2	--	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7
Sample Date:						11/15/2019	11/15/2019	11/15/2019	11/15/2019	11/15/2019	11/15/2019	11/15/2019
2-Butanone	N/A	N/A	N/A	N/A	N/A	0.0228	0.0272	0.0132	0.0233	0.0246	0.0200	0.0358
4-Isopropyltoluene	N/A	N/A	N/A	N/A	N/A	ND (0.0069)	ND (0.0066)	0.0058	ND (0.0093)	ND (0.0091)	ND (0.0093)	ND (0.0098)
Acetone	6	50	0.33	50	N/A	0.143	0.149	0.0760	0.180	0.177	0.112	0.271
Tetrahydrofuran	N/A	N/A	N/A	N/A	N/A	ND (0.0069)	ND (0.0066)	ND (0.0057)	ND (0.0093)	ND (0.0091)	ND (0.0093)	ND (0.0098)
Toluene	30	500	N/A	130	N/A	ND (0.0069)	ND (0.0066)	0.0601	ND (0.0093)	ND (0.0091)	ND (0.0093)	ND (0.0098)

Notes:

1. Only constituents detected above their respective laboratory Detection Limits are shown.
 2. All units are mg/kg.
 3. ND (X.XXXX) = Not detected - indicates the constituent was not present in quantities above the Detection Limit (shown in parenthesis).
- N/A = Standard not available.

**Table 5
City Hall Ponds
Sediment Sample Analysis**

Extractable Petroleum Hydrocarbons (EPH)

MA EPH (MA EPH Method)	MCP Method 1 Standards	MADEP BUD Standards	MADEP BUD Standards	SAMPLE ID:				
	S-1 & GW-1 S-1 & GW-2	S-1 & GW-1	S-1 & GW-2	SS-1	SS-2	SS-3	SS-4/5	SS-6/7
			Sample Date:	11/15/2019	11/15/2019	11/15/2019	11/15/2019	11/15/2019
C9-C18 Aliphatics	1,000	780	780	ND (36.7)	ND (36.0)	ND (25.5)	ND (46.6)	ND (41.0)
C19-C36 Aliphatics	3,000	3,000	3,000	84.4	76.1	74.7	114	51.2
C11-C22 Aromatics	1,000	48	1,000	<u>85.2</u>	<u>74.3</u>	36.3	ND (47.0)	ND (41.3)

Notes:

1. All units are mg/kg.
2. ND (X.XXX) = Not detected - indicates the constituent was not present in quantities above the Method Detection Limit (shown in parenthesis).
3. **Bold underlined** values exceed MADEP BUD S-1/GW- 1 and S-1/GW-2 standards (Ref. "Draft Interim Guidance Document for Beneficial Use Determination Regulations 301 CMR 19.060 (2004), Appendix 5 - Proposed Beneficial Use Determination Chemical-Specific Values).

Table 6
City Hall Ponds
Sediment Sample Analysis

Polychlorinated Biphenyls (PCBs) by Summation of Congeners

PCBs (NOAA Summation of Congeners)	MCP Method 1 Standards	MADEP BUD Standards	COMM 97 Reuse at Unlined Landfills Standard	SAMPLE ID				
				S-1 & GW-1 S-1 & GW-2	S-1 & GW-1 S-1 & GW-2	--	SS-1	SS-2
			Sample Date:	11/15/2019	11/15/2019	11/15/2019	11/15/2019	11/15/2019
BZ#8	--	--	--	ND (0.00051)	ND (0.00047)	ND (0.00035)	0.00061	0.00063
BZ#18	--	--	--	0.00323	ND (0.00047)	ND (0.00035)	0.00085	0.00114
BZ#28	--	--	--	ND (0.00051)	ND (0.00047)	ND (0.00035)	ND (0.00060)	ND (0.00053)
BZ#44	--	--	--	0.00245	0.00082	0.00038	0.00226	0.00158
BZ#52	--	--	--	0.00401	0.00096	ND (0.00035)	0.00251	0.00188
BZ#66	--	--	--	0.00309	0.00285	0.00110	0.00489	0.00116
BZ#101	--	--	--	0.00548	0.00290	0.00151	0.00820	0.00668
BZ#105	--	--	--	ND (0.00051)	ND (0.00047)	ND (0.00035)	ND (0.00060)	ND (0.00053)
BZ#118	--	--	--	0.00323	0.00286	0.00054	0.00496	0.00347
BZ#128	--	--	--	0.00060	0.00068	ND (0.00035)	0.00117	0.00081
BZ#138	--	--	--	0.00267	0.00271	0.00065	0.00466	0.00334
BZ#153	--	--	--	0.00229	0.00228	ND (0.00035)	0.00402	ND (0.00053)
BZ#170	--	--	--	0.00136	0.00119	ND (0.00035)	0.00272	0.00210
BZ#180	--	--	--	0.00195	0.00164	0.00045	0.00377	0.00292
BZ#187	--	--	--	0.00155	0.00147	0.00046	0.00273	0.00191
BZ#195	--	--	--	ND (0.00051)	ND (0.00047)	ND (0.00035)	ND (0.00060)	ND (0.00053)
BZ#206	--	--	--	ND (0.00051)	ND (0.00047)	ND (0.00035)	ND (0.00060)	ND (0.00053)
BZ#209	--	--	--	ND (0.00051)	ND (0.00047)	ND (0.00035)	ND (0.00060)	ND (0.00053)
Total PCBs	1	0.044	<2	0.03497	0.02365	0.00894	<u>0.04635</u>	0.03080

Notes:

- All units are mg/kg.
- ND (X.XXXXX) = Not detected - indicates the constituent was not present in quantities above the Detection Limit (shown in parenthesis)
- Bold underlined** values exceed MADEP BUD S-1/GW- 1 and S-1/GW-2 standards (Ref. "Draft Interim Guidance Document for Beneficial Use Determination Regulations 301 CMR 19.060 (2004), Appendix 5 - Proposed Beneficial Use Determination Chemical-Specific Values).

**Table 7
City Hall Ponds
Sediment Sample Analysis**

Pesticides

Organochlorine Pesticides (8081B)	SAMPLE ID				
	SS-1	SS-2	SS-3	SS-4/5	SS-6/7
Sample Date:	11/15/2019	11/15/2019	11/15/2019	11/15/2019	11/15/2019
4,4'-DDD	0.0525	0.0514	0.0088	0.0516	0.0412
4,4'-DDE	0.0214	0.0243	0.0059	0.0270	0.0265
4,4'-DDT	0.0139	0.0136	0.0050	0.0143	ND (0.0051)
Aldrin	ND (0.0046)	ND (0.0043)	ND (0.0034)	ND (0.0055)	ND (0.0051)
alpha-BHC	ND (0.0046)	ND (0.0043)	ND (0.0034)	ND (0.0055)	ND (0.0051)
alpha-Chlordane	0.0264	0.0347	0.0072	0.0337	0.0297
beta-BHC	ND (0.0046)	ND (0.0043)	ND (0.0034)	ND (0.0055)	ND (0.0051)
Chlordane (Total)	0.191	0.227	0.0698	0.247	0.228
delta-BHC	ND (0.0046)	ND (0.0043)	ND (0.0034)	ND (0.0055)	ND (0.0051)
Dieldrin	ND (0.0046)	ND (0.0043)	ND (0.0034)	ND (0.0055)	ND (0.0051)
Endosulfan I	ND (0.0046)	ND (0.0043)	ND (0.0034)	ND (0.0055)	ND (0.0051)
Endosulfan II	ND (0.0046)	ND (0.0043)	ND (0.0034)	ND (0.0055)	ND (0.0051)
Endosulfan Sulfate	ND (0.0046)	ND (0.0043)	ND (0.0034)	ND (0.0055)	ND (0.0051)
Endrin	ND (0.0046)	ND (0.0043)	ND (0.0034)	ND (0.0055)	ND (0.0051)
Endrin Ketone	ND (0.0046)	ND (0.0043)	ND (0.0034)	ND (0.0055)	ND (0.0051)
gamma-BHC (Lindane)	ND (0.0027)	ND (0.0026)	ND (0.0021)	ND (0.0033)	ND (0.0031)
gamma-Chlordane	0.0218	0.0269	0.0076	0.0294	0.0282
Heptachlor	ND (0.0046)	ND (0.0043)	ND (0.0034)	ND (0.0055)	ND (0.0051)
Heptachlor Epoxide	ND (0.0046)	ND (0.0043)	ND (0.0034)	ND (0.0055)	ND (0.0051)
Hexachlorobenzene	ND (0.0046)	ND (0.0043)	ND (0.0034)	ND (0.0055)	ND (0.0051)
Methoxychlor	ND (0.0046)	ND (0.0043)	ND (0.0034)	ND (0.0055)	ND (0.0051)

1. All units are mg/kg.

2. ND (X.XXXXX) = Not detected - indicates the constituent was not present in quantities above the Detection Limit (shown in parenthesis)

Table 8
City Hall Ponds
Sediment Sample Analysis

Toxicity Characteristic Leaching Procedure (TCLP) - Metals

TCLP (1311/6010C)	SAMPLE ID:				
	SS-1	SS-2	SS-3	SS-4/5	SS-6/7
Sample Date:	11/15/2019	11/15/2019	11/15/2019	11/15/2019	11/15/2019
Lead	NT	0.071	NT	0.138	NT

Notes:

1. All units are mg/L unless otherwise specified.
2. NT= Not tested.



CERTIFICATE OF ANALYSIS

Jennifer Burke
GZA GeoEnvironmental, Inc.
1350 Main Street, Suite 1400
Springfield, MA 01103

RE: City Hall Ponds Dredging (15.0166758.00)
ESS Laboratory Work Order Number: 19K0547

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.

Laurel Stoddard
Laboratory Director

REVIEWED
By ESS Laboratory at 5:38 pm, Jan 24, 2020

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, Moisture Content



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

SAMPLE RECEIPT

The following samples were received on November 18, 2019 for the analyses specified on the enclosed Chain of Custody Record.

Low Level VOA vials were frozen by Client on November 15, 2019.

Revision 1 January 24, 2020: This report has been revised to include percent moisture results (Method 2540G).

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
19K0547-01	SS-7	Sediment	8260B Low
19K0547-02	SS-6	Sediment	8260B Low
19K0547-03	SS-7 and 6	Sediment	2540G, 8081B, 8082A Cong, 9060, EPH8270, EPH8270SIM, MADEP-EPH, SUB
19K0547-04	SS-5	Sediment	8260B Low
19K0547-05	SS-4	Sediment	8260B Low
19K0547-06	SS-5 and 4	Sediment	1311, 1311/6010C, 2540G, 8081B, 8082A Cong, 9060, EPH8270, EPH8270SIM, MADEP-EPH, SUB
19K0547-07	SS-3	Sediment	2540G, 8081B, 8082A Cong, 8260B Low, 9060, EPH8270, EPH8270SIM, MADEP-EPH, SUB
19K0547-08	SS-2	Sediment	1311, 1311/6010C, 2540G, 8081B, 8082A Cong, 8260B Low, 9060, EPH8270, EPH8270SIM, MADEP-EPH, SUB
19K0547-09	SS-1	Sediment	2540G, 8081B, 8082A Cong, 8260B Low, 9060, EPH8270, EPH8270SIM, MADEP-EPH, SUB
19K0547-10	SS-7 and 6 Dried	Sediment	6010C, 7471B
19K0547-11	SS-5 and 4 Dried	Sediment	6010C, 7471B
19K0547-12	SS-3 Dried	Sediment	6010C, 7471B
19K0547-13	SS-2 Dried	Sediment	6010C, 7471B
19K0547-14	SS-1 Dried	Sediment	6010C, 7471B



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

PROJECT NARRATIVE

5035/8260B Volatile Organic Compounds / Low Level

- 19K0547-01 Internal Standard(s) outside of criteria. Sample was reanalyzed to confirm (IC).
1,4-Dichlorobenzene-D4 (27% @ 50-200%)
- C9K0329-CCV1 Continuing Calibration %Diff/Drift is below control limit (CD-).
Chloromethane (22% @ 20%), Dichlorodifluoromethane (25% @ 20%)
- C9K0383-CCV1 Continuing Calibration %Diff/Drift is above control limit (CD+).
4-Methyl-2-Pentanone (28% @ 20%), Acetone (21% @ 20%)
- C9K0383-CCV1 Continuing Calibration %Diff/Drift is below control limit (CD-).
Dichlorodifluoromethane (21% @ 20%), sec-Butylbenzene (21% @ 20%)
- CK92022-BS1 Blank Spike recovery is below lower control limit (B-).
Dichlorodifluoromethane (66% @ 70-130%)
- CK92022-BSD1 Relative percent difference for duplicate is outside of criteria (D+).
1,2-Dibromo-3-Chloropropane (25% @ 20%), 1,4-Dioxane (26% @ 20%), 2-Hexanone (24% @ 20%),
4-Methyl-2-Pentanone (23% @ 20%), Acetone (23% @ 20%), Tetrahydrofuran (27% @ 20%)
- CK92245-BS1 Blank Spike recovery is above upper control limit (B+).
4-Methyl-2-Pentanone (131% @ 70-130%)
- CK92245-BS1 Blank Spike recovery is below lower control limit (B-).
Dichlorodifluoromethane (69% @ 70-130%)
- CK92245-BSD1 Blank Spike recovery is above upper control limit (B+).
4-Methyl-2-Pentanone (135% @ 70-130%)
- CK92245-BSD1 Blank Spike recovery is below lower control limit (B-).
Dichlorodifluoromethane (69% @ 70-130%)

8081B Organochlorine Pesticides

- 19K0547-03 Lower value is used due to matrix interferences (LC).
alpha-Chlordane [2C]
- 19K0547-03 Percent difference between primary and confirmation results exceeds 40% (P).
alpha-Chlordane [2C]
- 19K0547-06 Lower value is used due to matrix interferences (LC).
alpha-Chlordane [2C]
- 19K0547-06 Percent difference between primary and confirmation results exceeds 40% (P).
4,4'-DDT [2C] , alpha-Chlordane [2C]
- 19K0547-07 Lower value is used due to matrix interferences (LC).
alpha-Chlordane [2C]
- 19K0547-07 Percent difference between primary and confirmation results exceeds 40% (P).
alpha-Chlordane [2C]
- 19K0547-08 Lower value is used due to matrix interferences (LC).
alpha-Chlordane [2C]
- 19K0547-08 Percent difference between primary and confirmation results exceeds 40% (P).
4,4'-DDT [2C] , alpha-Chlordane [2C]
- 19K0547-09 Lower value is used due to matrix interferences (LC).
alpha-Chlordane [2C]



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
19K0547-09

ESS Laboratory Work Order: 19K0547

Percent difference between primary and confirmation results exceeds 40% (P).
alpha-Chlordane [2C]

8082 Polychlorinated Biphenyls (PCB) / Congeners

- 19K0547-03 **Lower value is used due to matrix interferences (LC).**
BZ#101 , BZ#138 , BZ#18 [2C] , BZ#44 , BZ#52 [2C] , BZ#66 , BZ#8
- 19K0547-03 **Percent difference between primary and confirmation results exceeds 40% (P).**
BZ#101 , BZ#138 , BZ#18 [2C] , BZ#44 , BZ#52 [2C] , BZ#66 , BZ#8
- 19K0547-06 **Lower value is used due to matrix interferences (LC).**
BZ#101 , BZ#138 , BZ#153 , BZ#18 [2C] , BZ#44 , BZ#52 [2C] , BZ#8
- 19K0547-06 **Percent difference between primary and confirmation results exceeds 40% (P).**
BZ#101 , BZ#138 , BZ#153 , BZ#18 [2C] , BZ#44 , BZ#52 [2C] , BZ#8
- 19K0547-07 **Lower value is used due to matrix interferences (LC).**
BZ#101 , BZ#138 , BZ#44
- 19K0547-07 **Percent difference between primary and confirmation results exceeds 40% (P).**
BZ#101 , BZ#138 , BZ#44
- 19K0547-08 **Lower value is used due to matrix interferences (LC).**
BZ#101 , BZ#138 , BZ#153 , BZ#44 , BZ#52 [2C]
- 19K0547-08 **Percent difference between primary and confirmation results exceeds 40% (P).**
BZ#101 , BZ#138 , BZ#153 , BZ#44 , BZ#52 [2C]

Total Metals

CK91947-BSD1 **Blank Spike recovery is below lower control limit (B-).**
Cadmium (79% @ 80-120%)

No other observations noted.

End of Project Narrative.

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: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

- 1010A - Flashpoint
- 6010C - ICP
- 6020A - 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
- 8260B - VOA
- 8270D - SVOA
- 8270D 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 04-1.1 - 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
- 3541 - Automated Soxhlet Extraction
- 3546 - Microwave Extraction
- 3580A - Waste Dilution
- 5030B - Aqueous Purge and Trap
- 5030C - Aqueous Purge and Trap
- 5035A - Solid Purge and Trap

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: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-7
Date Sampled: 11/15/19 09:20
Percent Solids: 50
Initial Volume: 5.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,1,1-Trichloroethane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,1,2,2-Tetrachloroethane	ND (0.0039)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,1,2-Trichloroethane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,1-Dichloroethane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,1-Dichloroethene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,1-Dichloropropene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,2,3-Trichlorobenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,2,3-Trichloropropane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,2,4-Trichlorobenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,2,4-Trimethylbenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,2-Dibromo-3-Chloropropane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,2-Dibromoethane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,2-Dichlorobenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,2-Dichloroethane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,2-Dichloropropane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,3,5-Trimethylbenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,3-Dichlorobenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,3-Dichloropropane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,4-Dichlorobenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
1,4-Dioxane	ND (0.157)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
2,2-Dichloropropane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
2-Butanone	0.0358 (0.0196)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
2-Chlorotoluene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
2-Hexanone	ND (0.0196)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
4-Chlorotoluene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
4-Isopropyltoluene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
4-Methyl-2-Pentanone	ND (0.0196)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Acetone	0.271 (0.0196)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Benzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Bromobenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Bromochloromethane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-7
Date Sampled: 11/15/19 09:20
Percent Solids: 50
Initial Volume: 5.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Bromoform	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Bromomethane	ND (0.0196)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Carbon Disulfide	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Carbon Tetrachloride	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Chlorobenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Chloroethane	ND (0.0196)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Chloroform	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Chloromethane	ND (0.0196)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
cis-1,2-Dichloroethene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
cis-1,3-Dichloropropene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Dibromochloromethane	ND (0.0039)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Dibromomethane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Dichlorodifluoromethane	ND (0.0196)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Diethyl Ether	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Di-isopropyl ether	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Ethyl tertiary-butyl ether	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Ethylbenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Hexachlorobutadiene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Isopropylbenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Methyl tert-Butyl Ether	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Methylene Chloride	ND (0.0196)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Naphthalene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
n-Butylbenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
n-Propylbenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
sec-Butylbenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Styrene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
tert-Butylbenzene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Tertiary-amyl methyl ether	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Tetrachloroethene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Tetrahydrofuran	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Toluene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-7
Date Sampled: 11/15/19 09:20
Percent Solids: 50
Initial Volume: 5.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-01
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
trans-1,3-Dichloropropene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Trichloroethene	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Trichlorofluoromethane	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Vinyl Chloride	ND (0.0196)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Xylene O	ND (0.0098)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Xylene P,M	ND (0.0196)		8260B Low		1	11/21/19 16:59	C9K0329	CK92022
Xylenes (Total)	ND (0.0196)		8260B Low		1	11/21/19 16:59		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>120 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>75 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>115 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>125 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-6
Date Sampled: 11/15/19 09:30
Percent Solids: 50
Initial Volume: 5.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-02
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,1,1-Trichloroethane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,1,2,2-Tetrachloroethane	ND (0.0037)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,1,2-Trichloroethane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,1-Dichloroethane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,1-Dichloroethene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,1-Dichloropropene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,2,3-Trichlorobenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,2,3-Trichloropropane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,2,4-Trichlorobenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,2,4-Trimethylbenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,2-Dibromo-3-Chloropropane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,2-Dibromoethane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,2-Dichlorobenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,2-Dichloroethane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,2-Dichloropropane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,3,5-Trimethylbenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,3-Dichlorobenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,3-Dichloropropane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,4-Dichlorobenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
1,4-Dioxane	ND (0.148)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
2,2-Dichloropropane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
2-Butanone	0.0200 (0.0185)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
2-Chlorotoluene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
2-Hexanone	ND (0.0185)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
4-Chlorotoluene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
4-Isopropyltoluene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
4-Methyl-2-Pentanone	ND (0.0185)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Acetone	0.112 (0.0185)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Benzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Bromobenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Bromochloromethane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-6
Date Sampled: 11/15/19 09:30
Percent Solids: 50
Initial Volume: 5.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-02
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Bromoform	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Bromomethane	ND (0.0185)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Carbon Disulfide	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Carbon Tetrachloride	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Chlorobenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Chloroethane	ND (0.0185)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Chloroform	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Chloromethane	ND (0.0185)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
cis-1,2-Dichloroethene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
cis-1,3-Dichloropropene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Dibromochloromethane	ND (0.0037)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Dibromomethane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Dichlorodifluoromethane	ND (0.0185)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Diethyl Ether	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Di-isopropyl ether	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Ethyl tertiary-butyl ether	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Ethylbenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Hexachlorobutadiene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Isopropylbenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Methyl tert-Butyl Ether	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Methylene Chloride	ND (0.0185)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Naphthalene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
n-Butylbenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
n-Propylbenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
sec-Butylbenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Styrene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
tert-Butylbenzene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Tertiary-amyl methyl ether	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Tetrachloroethene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Tetrahydrofuran	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Toluene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-6
Date Sampled: 11/15/19 09:30
Percent Solids: 50
Initial Volume: 5.4
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-02
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MD

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
trans-1,3-Dichloropropene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Trichloroethene	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Trichlorofluoromethane	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Vinyl Chloride	ND (0.0185)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Xylene O	ND (0.0093)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Xylene P,M	ND (0.0185)		8260B Low		1	11/22/19 14:42	C9K0383	CK92245
Xylenes (Total)	ND (0.0185)		8260B Low		1	11/22/19 14:42		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>128 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>101 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>110 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>97 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-7 and 6
Date Sampled: 11/15/19 09:40
Percent Solids: 50
Initial Volume: 19.5
Final Volume: 5
Extraction Method: 3546

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-03
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 11/19/19 10:25

8081B Organochlorine Pesticides

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
4,4'-DDD [2C]	0.0412 (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
4,4'-DDE [2C]	0.0265 (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
4,4'-DDT	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
Aldrin	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
alpha-BHC	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
alpha-Chlordane [2C]	P, LC 0.0297 (0.0103)		8081B		2	11/20/19 12:49	C9K0319	CK91810
beta-BHC	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
Chlordane (Total) [2C]	0.228 (0.0411)		8081B		1	11/20/19 2:42	C9K0319	CK91810
delta-BHC	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
Dieldrin	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
Endosulfan I	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
Endosulfan II	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
Endosulfan Sulfate	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
Endrin	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
Endrin Ketone	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
gamma-BHC (Lindane)	ND (0.0031)		8081B		1	11/20/19 2:42	C9K0319	CK91810
gamma-Chlordane [2C]	0.0282 (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
Heptachlor	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
Heptachlor Epoxide	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
Hexachlorobenzene	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810
Methoxychlor	ND (0.0051)		8081B		1	11/20/19 2:42	C9K0319	CK91810

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: Decachlorobiphenyl	43 %		30-150
Surrogate: Decachlorobiphenyl [2C]	52 %		30-150
Surrogate: Tetrachloro-m-xylene	67 %		30-150
Surrogate: Tetrachloro-m-xylene [2C]	61 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-7 and 6
Date Sampled: 11/15/19 09:40
Percent Solids: 50
Initial Volume: 30.9
Final Volume: 2
Extraction Method: 3540C

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-03
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 11/19/19 16:05

8082 Polychlorinated Biphenyls (PCB) / Congeners

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
BZ#8	P, LC 0.00063 (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#18 [2C]	P, LC 0.00114 (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#28	ND (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#44	P, LC 0.00158 (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#52 [2C]	P, LC 0.00188 (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#66	P, LC 0.00116 (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#101	P, LC 0.00668 (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#105	ND (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#118 [2C]	0.00347 (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#128 [2C]	0.00081 (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#138	P, LC 0.00334 (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#153	ND (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#170 [2C]	0.00210 (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#180 [2C]	0.00292 (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#187 [2C]	0.00191 (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#195	ND (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#206	ND (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915
BZ#209	ND (0.00053)		8082A Cong		1	11/21/19 20:10	C9K0364	CK91915

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Tetrachloro-m-xylene</i>	80 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	82 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-7 and 6
Date Sampled: 11/15/19 09:40
Percent Solids: 50

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-03
Sample Matrix: Sediment

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Percent Moisture	50 (1)		2540G		1	JLK	11/18/19 20:55	%	CK91815
Total Organic Carbon (Average)	73800 (99.2)		9060		1	CCP	11/20/19 21:47	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-7 and 6
Date Sampled: 11/15/19 09:40
Percent Solids: 50
Initial Volume: 24.4
Final Volume: 2
Extraction Method: 3546

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-03
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 11/19/19 13:15

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (41.0)		MADEP-EPH		1	CAD	11/20/19 1:24	C9K0283	CK91910
C19-C36 Aliphatics1	51.2 (41.0)		MADEP-EPH		1	CAD	11/20/19 1:24	C9K0283	CK91910
C11-C22 Unadjusted Aromatics1	ND (41.0)		EPH8270		1	VSC	11/20/19 1:11	C9K0300	CK91910
C11-C22 Aromatics1,2	ND (41.3)		EPH8270			VSC	11/22/19 19:54		[CALC]
2-Methylnaphthalene	ND (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Acenaphthene	ND (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Naphthalene	ND (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Phenanthrene	0.257 (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Acenaphthylene	0.019 (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Anthracene	0.058 (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Benzo(a)anthracene	0.272 (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Benzo(a)pyrene	0.282 (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Benzo(b)fluoranthene	0.416 (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Benzo(g,h,i)perylene	0.191 (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Benzo(k)fluoranthene	0.126 (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Chrysene	0.366 (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Dibenzo(a,h)Anthracene	0.045 (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Fluoranthene	0.707 (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Fluorene	0.021 (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Indeno(1,2,3-cd)Pyrene	0.218 (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910
Pyrene	0.656 (0.016)		EPH8270SIM		1	VSC	11/22/19 19:54	C9K0384	CK91910

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	61 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	126 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	124 %		40-140
<i>Surrogate: O-Terphenyl</i>	68 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-7 and 6
Date Sampled: 11/15/19 09:40

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-03
Sample Matrix: Sediment

Subcontracted Analysis

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Grain Size	See Attached (N/A)								
Moisture Content	See Attached (1.0)								



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-5
Date Sampled: 11/15/19 10:25
Percent Solids: 44
Initial Volume: 6.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-04
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,1,1-Trichloroethane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,1,2,2-Tetrachloroethane	ND (0.0037)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,1,2-Trichloroethane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,1-Dichloroethane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,1-Dichloroethene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,1-Dichloropropene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,2,3-Trichlorobenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,2,3-Trichloropropane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,2,4-Trichlorobenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,2,4-Trimethylbenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,2-Dibromo-3-Chloropropane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,2-Dibromoethane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,2-Dichlorobenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,2-Dichloroethane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,2-Dichloropropane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,3,5-Trimethylbenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,3-Dichlorobenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,3-Dichloropropane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,4-Dichlorobenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
1,4-Dioxane	ND (0.146)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
2,2-Dichloropropane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
2-Butanone	0.0246 (0.0183)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
2-Chlorotoluene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
2-Hexanone	ND (0.0183)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
4-Chlorotoluene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
4-Isopropyltoluene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
4-Methyl-2-Pentanone	ND (0.0183)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Acetone	0.177 (0.0183)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Benzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Bromobenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Bromochloromethane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-5
Date Sampled: 11/15/19 10:25
Percent Solids: 44
Initial Volume: 6.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-04
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Bromoform	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Bromomethane	ND (0.0183)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Carbon Disulfide	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Carbon Tetrachloride	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Chlorobenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Chloroethane	ND (0.0183)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Chloroform	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Chloromethane	ND (0.0183)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
cis-1,2-Dichloroethene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
cis-1,3-Dichloropropene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Dibromochloromethane	ND (0.0037)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Dibromomethane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Dichlorodifluoromethane	ND (0.0183)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Diethyl Ether	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Di-isopropyl ether	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Ethyl tertiary-butyl ether	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Ethylbenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Hexachlorobutadiene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Isopropylbenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Methyl tert-Butyl Ether	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Methylene Chloride	ND (0.0183)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Naphthalene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
n-Butylbenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
n-Propylbenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
sec-Butylbenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Styrene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
tert-Butylbenzene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Tertiary-amyl methyl ether	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Tetrachloroethene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Tetrahydrofuran	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Toluene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-5
Date Sampled: 11/15/19 10:25
Percent Solids: 44
Initial Volume: 6.2
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-04
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
trans-1,3-Dichloropropene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Trichloroethene	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Trichlorofluoromethane	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Vinyl Chloride	ND (0.0183)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Xylene O	ND (0.0091)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Xylene P,M	ND (0.0183)		8260B Low		1	11/21/19 17:50	C9K0329	CK92022
Xylenes (Total)	ND (0.0183)		8260B Low		1	11/21/19 17:50		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>110 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>96 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>106 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>101 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-4
Date Sampled: 11/15/19 10:40
Percent Solids: 44
Initial Volume: 6.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-05
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,1,1-Trichloroethane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,1,2,2-Tetrachloroethane	ND (0.0037)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,1,2-Trichloroethane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,1-Dichloroethane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,1-Dichloroethene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,1-Dichloropropene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,2,3-Trichlorobenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,2,3-Trichloropropane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,2,4-Trichlorobenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,2,4-Trimethylbenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,2-Dibromo-3-Chloropropane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,2-Dibromoethane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,2-Dichlorobenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,2-Dichloroethane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,2-Dichloropropane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,3,5-Trimethylbenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,3-Dichlorobenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,3-Dichloropropane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,4-Dichlorobenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
1,4-Dioxane	ND (0.149)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
2,2-Dichloropropane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
2-Butanone	0.0233 (0.0186)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
2-Chlorotoluene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
2-Hexanone	ND (0.0186)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
4-Chlorotoluene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
4-Isopropyltoluene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
4-Methyl-2-Pentanone	ND (0.0186)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Acetone	0.180 (0.0186)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Benzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Bromobenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Bromochloromethane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-4
Date Sampled: 11/15/19 10:40
Percent Solids: 44
Initial Volume: 6.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-05
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Bromoform	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Bromomethane	ND (0.0186)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Carbon Disulfide	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Carbon Tetrachloride	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Chlorobenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Chloroethane	ND (0.0186)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Chloroform	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Chloromethane	ND (0.0186)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
cis-1,2-Dichloroethene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
cis-1,3-Dichloropropene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Dibromochloromethane	ND (0.0037)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Dibromomethane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Dichlorodifluoromethane	ND (0.0186)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Diethyl Ether	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Di-isopropyl ether	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Ethyl tertiary-butyl ether	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Ethylbenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Hexachlorobutadiene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Isopropylbenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Methyl tert-Butyl Ether	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Methylene Chloride	ND (0.0186)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Naphthalene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
n-Butylbenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
n-Propylbenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
sec-Butylbenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Styrene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
tert-Butylbenzene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Tertiary-amyl methyl ether	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Tetrachloroethene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Tetrahydrofuran	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Toluene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-4
Date Sampled: 11/15/19 10:40
Percent Solids: 44
Initial Volume: 6.1
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-05
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
trans-1,3-Dichloropropene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Trichloroethene	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Trichlorofluoromethane	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Vinyl Chloride	ND (0.0186)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Xylene O	ND (0.0093)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Xylene P,M	ND (0.0186)		8260B Low		1	11/21/19 18:16	C9K0329	CK92022
Xylenes (Total)	ND (0.0186)		8260B Low		1	11/21/19 18:16		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>117 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>95 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>109 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>102 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-5 and 4
Date Sampled: 11/15/19 10:50
Percent Solids: 44

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-06
Sample Matrix: Sediment
Units: mg/L

Extraction Method: 3005A TCLP

1311 TCLP Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>TCLP Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Lead	0.138 (0.050)		1311/6010C		1	KJK	11/27/19 22:25	50	50	CK92748



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-5 and 4
Date Sampled: 11/15/19 10:50
Percent Solids: 44
Initial Volume: 20.6
Final Volume: 5
Extraction Method: 3546

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-06
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 11/19/19 10:25

8081B Organochlorine Pesticides

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
4,4'-DDD [2C]	0.0516 (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
4,4'-DDE [2C]	0.0270 (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
4,4'-DDT [2C]	P 0.0143 (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
Aldrin	ND (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
alpha-BHC	ND (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
alpha-Chlordane [2C]	P, LC 0.0337 (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
beta-BHC	ND (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
Chlordane (Total) [2C]	0.247 (0.0440)		8081B		1	11/20/19 3:43	C9K0319	CK91810
delta-BHC	ND (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
Dieldrin	ND (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
Endosulfan I	ND (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
Endosulfan II	ND (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
Endosulfan Sulfate	ND (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
Endrin	ND (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
Endrin Ketone	ND (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
gamma-BHC (Lindane)	ND (0.0033)		8081B		1	11/20/19 3:43	C9K0319	CK91810
gamma-Chlordane [2C]	0.0294 (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
Heptachlor	ND (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
Heptachlor Epoxide	ND (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
Hexachlorobenzene	ND (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810
Methoxychlor	ND (0.0055)		8081B		1	11/20/19 3:43	C9K0319	CK91810

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Decachlorobiphenyl</i>	37 %		30-150
<i>Surrogate: Decachlorobiphenyl [2C]</i>	54 %		30-150
<i>Surrogate: Tetrachloro-m-xylene</i>	61 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	58 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-5 and 4
Date Sampled: 11/15/19 10:50
Percent Solids: 44
Initial Volume: 30.8
Final Volume: 2
Extraction Method: 3540C

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-06
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 11/19/19 16:05

8082 Polychlorinated Biphenyls (PCB) / Congeners

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
BZ#8	P, LC 0.00061 (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#18 [2C]	P, LC 0.00085 (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#28	ND (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#44	P, LC 0.00226 (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#52 [2C]	P, LC 0.00251 (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#66 [2C]	0.00489 (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#101	P, LC 0.00820 (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#105	ND (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#118 [2C]	0.00496 (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#128 [2C]	0.00117 (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#138	P, LC 0.00466 (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#153	P, LC 0.00402 (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#170 [2C]	0.00272 (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#180 [2C]	0.00377 (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#187 [2C]	0.00273 (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#195	ND (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#206	ND (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915
BZ#209	ND (0.00060)		8082A Cong		1	11/21/19 20:48	C9K0364	CK91915

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Tetrachloro-m-xylene</i>	56 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	57 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-5 and 4
Date Sampled: 11/15/19 10:50
Percent Solids: 44

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-06
Sample Matrix: Sediment

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Percent Moisture	56 (1)		2540G		1	JLK	11/18/19 20:55	%	CK91815
Total Organic Carbon (Average)	89200 (97.0)		9060		1	CCP	11/20/19 22:03	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-5 and 4
Date Sampled: 11/15/19 10:50
Percent Solids: 44
Initial Volume: 24.3
Final Volume: 2
Extraction Method: 3546

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-06
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 11/19/19 13:15

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (46.6)		MADEP-EPH		1	CAD	11/20/19 2:11	C9K0283	CK91910
C19-C36 Aliphatics1	114 (46.6)		MADEP-EPH		1	CAD	11/20/19 2:11	C9K0283	CK91910
C11-C22 Unadjusted Aromatics1	ND (46.6)		EPH8270		1	VSC	11/20/19 1:47	C9K0300	CK91910
C11-C22 Aromatics1,2	ND (47.0)		EPH8270			VSC	11/22/19 20:43		[CALC]
2-Methylnaphthalene	ND (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Acenaphthene	0.041 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Naphthalene	0.019 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Phenanthrene	0.774 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Acenaphthylene	0.037 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Anthracene	0.157 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Benzo(a)anthracene	0.651 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Benzo(a)pyrene	0.663 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Benzo(b)fluoranthene	0.936 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Benzo(g,h,i)perylene	0.430 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Benzo(k)fluoranthene	0.309 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Chrysene	0.753 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Dibenzo(a,h)Anthracene	0.103 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Fluoranthene	1.72 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Fluorene	0.056 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Indeno(1,2,3-cd)Pyrene	0.486 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910
Pyrene	1.52 (0.019)		EPH8270SIM		1	VSC	11/22/19 20:43	C9K0384	CK91910

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	57 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	105 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	104 %		40-140
<i>Surrogate: O-Terphenyl</i>	58 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-5 and 4
Date Sampled: 11/15/19 10:50

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-06
Sample Matrix: Sediment

Subcontracted Analysis

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Grain Size	See Attached (N/A)								
Moisture Content	See Attached (1.0)								



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-5 and 4
Date Sampled: 11/15/19 10:50
Percent Solids: 44
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-06
Sample Matrix: Sediment
Units: °C
Analyst: BJV
Prepared: 11/26/19 18:30

TCLP Extraction by 1311

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Batch</u>
Temperature (Min C)	19.8 (N/A)		1311		1	BJV	11/27/19 11:25	CK92644
Temperature (Max C)	20.4 (N/A)		1311		1	BJV	11/27/19 11:25	CK92644
Temperature (Range)	Temperature is not within 23 +/-2 °C. (N/A)							



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-3
Date Sampled: 11/15/19 12:45
Percent Solids: 77
Initial Volume: 5.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-07
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,1,1-Trichloroethane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,1,2,2-Tetrachloroethane	ND (0.0023)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,1,2-Trichloroethane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,1-Dichloroethane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,1-Dichloroethene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,1-Dichloropropene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,2,3-Trichlorobenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,2,3-Trichloropropane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,2,4-Trichlorobenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,2,4-Trimethylbenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,2-Dibromo-3-Chloropropane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,2-Dibromoethane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,2-Dichlorobenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,2-Dichloroethane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,2-Dichloropropane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,3,5-Trimethylbenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,3-Dichlorobenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,3-Dichloropropane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,4-Dichlorobenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
1,4-Dioxane	ND (0.0917)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
2,2-Dichloropropane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
2-Butanone	0.0132 (0.0115)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
2-Chlorotoluene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
2-Hexanone	ND (0.0115)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
4-Chlorotoluene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
4-Isopropyltoluene	0.0058 (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
4-Methyl-2-Pentanone	ND (0.0115)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Acetone	0.0760 (0.0115)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Benzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Bromobenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Bromochloromethane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-3
Date Sampled: 11/15/19 12:45
Percent Solids: 77
Initial Volume: 5.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-07
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Bromoform	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Bromomethane	ND (0.0115)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Carbon Disulfide	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Carbon Tetrachloride	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Chlorobenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Chloroethane	ND (0.0115)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Chloroform	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Chloromethane	ND (0.0115)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
cis-1,2-Dichloroethene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
cis-1,3-Dichloropropene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Dibromochloromethane	ND (0.0023)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Dibromomethane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Dichlorodifluoromethane	ND (0.0115)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Diethyl Ether	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Di-isopropyl ether	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Ethyl tertiary-butyl ether	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Ethylbenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Hexachlorobutadiene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Isopropylbenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Methyl tert-Butyl Ether	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Methylene Chloride	ND (0.0115)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Naphthalene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
n-Butylbenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
n-Propylbenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
sec-Butylbenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Styrene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
tert-Butylbenzene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Tertiary-amyl methyl ether	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Tetrachloroethene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Tetrahydrofuran	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Toluene	0.0601 (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-3
Date Sampled: 11/15/19 12:45
Percent Solids: 77
Initial Volume: 5.7
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-07
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
trans-1,3-Dichloropropene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Trichloroethene	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Trichlorofluoromethane	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Vinyl Chloride	ND (0.0115)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Xylene O	ND (0.0057)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Xylene P,M	ND (0.0115)		8260B Low		1	11/21/19 18:41	C9K0329	CK92022
Xylenes (Total)	ND (0.0115)		8260B Low		1	11/21/19 18:41		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	<i>110 %</i>		<i>70-130</i>
<i>Surrogate: 4-Bromofluorobenzene</i>	<i>100 %</i>		<i>70-130</i>
<i>Surrogate: Dibromofluoromethane</i>	<i>104 %</i>		<i>70-130</i>
<i>Surrogate: Toluene-d8</i>	<i>98 %</i>		<i>70-130</i>



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-3
Date Sampled: 11/15/19 12:45
Percent Solids: 77
Initial Volume: 19.1
Final Volume: 5
Extraction Method: 3546

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-07
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 11/19/19 10:25

8081B Organochlorine Pesticides

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
4,4'-DDD [2C]	0.0088 (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
4,4'-DDE [2C]	0.0059 (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
4,4'-DDT [2C]	0.0050 (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
Aldrin	ND (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
alpha-BHC	ND (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
alpha-Chlordane [2C]	P, LC 0.0072 (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
beta-BHC [2C]	ND (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
Chlordane (Total) [2C]	0.0698 (0.0274)		8081B		1	11/20/19 4:14	C9K0319	CK91810
delta-BHC	ND (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
Dieldrin	ND (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
Endosulfan I	ND (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
Endosulfan II	ND (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
Endosulfan Sulfate	ND (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
Endrin	ND (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
Endrin Ketone	ND (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
gamma-BHC (Lindane)	ND (0.0021)		8081B		1	11/20/19 4:14	C9K0319	CK91810
gamma-Chlordane [2C]	0.0076 (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
Heptachlor	ND (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
Heptachlor Epoxide	ND (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
Hexachlorobenzene	ND (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810
Methoxychlor [2C]	ND (0.0034)		8081B		1	11/20/19 4:14	C9K0319	CK91810

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: Decachlorobiphenyl	44 %		30-150
Surrogate: Decachlorobiphenyl [2C]	53 %		30-150
Surrogate: Tetrachloro-m-xylene	73 %		30-150
Surrogate: Tetrachloro-m-xylene [2C]	69 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-3
Date Sampled: 11/15/19 12:45
Percent Solids: 77
Initial Volume: 30.3
Final Volume: 2
Extraction Method: 3540C

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-07
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 11/19/19 16:05

8082 Polychlorinated Biphenyls (PCB) / Congeners

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
BZ#8	ND (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#18	ND (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#28	ND (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#44	P, LC 0.00038 (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#52 [2C]	ND (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#66	0.00110 (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#101	P, LC 0.00151 (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#105	ND (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#118 [2C]	0.00054 (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#128	ND (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#138	P, LC 0.00065 (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#153	ND (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#170 [2C]	ND (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#180 [2C]	0.00045 (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#187	0.00046 (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#195	ND (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#206	ND (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915
BZ#209	ND (0.00035)		8082A Cong		1	11/21/19 21:25	C9K0364	CK91915

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Tetrachloro-m-xylene</i>	71 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	72 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-3
Date Sampled: 11/15/19 12:45
Percent Solids: 77

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-07
Sample Matrix: Sediment

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Percent Moisture	23 (1)		2540G		1	JLK	11/18/19 20:55	%	CK91815
Total Organic Carbon (Average)	46700 (94.7)		9060		1	CCP	11/20/19 22:53	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-3
Date Sampled: 11/15/19 12:45
Percent Solids: 77
Initial Volume: 25.6
Final Volume: 2
Extraction Method: 3546

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-07
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 11/19/19 13:15

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (25.5)		MADEP-EPH		1	CAD	11/20/19 2:59	C9K0283	CK91910
C19-C36 Aliphatics1	74.7 (25.5)		MADEP-EPH		1	CAD	11/20/19 2:59	C9K0283	CK91910
C11-C22 Unadjusted Aromatics1	41.8 (25.5)		EPH8270		1	VSC	11/20/19 6:04	C9K0300	CK91910
C11-C22 Aromatics1,2	36.3 (25.7)		EPH8270			VSC	11/22/19 21:31		[CALC]
2-Methylnaphthalene	ND (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Acenaphthene	0.029 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Naphthalene	0.012 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Phenanthrene	0.637 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Acenaphthylene	0.022 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Anthracene	0.113 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Benzo(a)anthracene	0.397 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Benzo(a)pyrene	0.368 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Benzo(b)fluoranthene	0.522 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Benzo(g,h,i)perylene	0.240 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Benzo(k)fluoranthene	0.190 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Chrysene	0.466 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Dibenzo(a,h)Anthracene	0.057 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Fluoranthene	1.17 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Fluorene	0.049 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Indeno(1,2,3-cd)Pyrene	0.268 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910
Pyrene	0.962 (0.010)		EPH8270SIM		1	VSC	11/22/19 21:31	C9K0384	CK91910

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	56 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	109 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	106 %		40-140
<i>Surrogate: O-Terphenyl</i>	60 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-3
Date Sampled: 11/15/19 12:45

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-07
Sample Matrix: Sediment

Subcontracted Analysis

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Grain Size	See Attached (N/A)								
Moisture Content	See Attached (1.0)								



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-2
Date Sampled: 11/15/19 12:10
Percent Solids: 57

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-08
Sample Matrix: Sediment
Units: mg/L

Extraction Method: 3005A TCLP

1311 TCLP Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>TCLP Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Lead	0.071 (0.050)		1311/6010C		1	KJK	11/27/19 22:29	50	50	CK92748



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-2
Date Sampled: 11/15/19 12:10
Percent Solids: 57
Initial Volume: 6.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-08
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,1,1-Trichloroethane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,1,2,2-Tetrachloroethane	ND (0.0027)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,1,2-Trichloroethane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,1-Dichloroethane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,1-Dichloroethene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,1-Dichloropropene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,2,3-Trichlorobenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,2,3-Trichloropropane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,2,4-Trichlorobenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,2,4-Trimethylbenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,2-Dibromo-3-Chloropropane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,2-Dibromoethane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,2-Dichlorobenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,2-Dichloroethane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,2-Dichloropropane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,3,5-Trimethylbenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,3-Dichlorobenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,3-Dichloropropane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,4-Dichlorobenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
1,4-Dioxane	ND (0.106)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
2,2-Dichloropropane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
2-Butanone	0.0272 (0.0133)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
2-Chlorotoluene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
2-Hexanone	ND (0.0133)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
4-Chlorotoluene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
4-Isopropyltoluene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
4-Methyl-2-Pentanone	ND (0.0133)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Acetone	0.149 (0.0133)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Benzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Bromobenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Bromochloromethane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-2
Date Sampled: 11/15/19 12:10
Percent Solids: 57
Initial Volume: 6.6
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-08
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Bromoform	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Bromomethane	ND (0.0133)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Carbon Disulfide	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Carbon Tetrachloride	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Chlorobenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Chloroethane	ND (0.0133)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Chloroform	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Chloromethane	ND (0.0133)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
cis-1,2-Dichloroethene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
cis-1,3-Dichloropropene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Dibromochloromethane	ND (0.0027)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Dibromomethane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Dichlorodifluoromethane	ND (0.0133)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Diethyl Ether	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Di-isopropyl ether	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Ethyl tertiary-butyl ether	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Ethylbenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Hexachlorobutadiene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Isopropylbenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Methyl tert-Butyl Ether	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Methylene Chloride	ND (0.0133)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Naphthalene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
n-Butylbenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
n-Propylbenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
sec-Butylbenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Styrene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
tert-Butylbenzene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Tertiary-amyl methyl ether	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Tetrachloroethene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Tetrahydrofuran	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Toluene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: City Hall Ponds Dredging
 Client Sample ID: SS-2
 Date Sampled: 11/15/19 12:10
 Percent Solids: 57
 Initial Volume: 6.6
 Final Volume: 10
 Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
 ESS Laboratory Sample ID: 19K0547-08
 Sample Matrix: Sediment
 Units: mg/kg dry
 Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
trans-1,3-Dichloropropene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Trichloroethene	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Trichlorofluoromethane	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Vinyl Chloride	ND (0.0133)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Xylene O	ND (0.0066)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Xylene P,M	ND (0.0133)		8260B Low		1	11/21/19 19:07	C9K0329	CK92022
Xylenes (Total)	ND (0.0133)		8260B Low		1	11/21/19 19:07		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	126 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	89 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	115 %		70-130
<i>Surrogate: Toluene-d8</i>	107 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: City Hall Ponds Dredging
 Client Sample ID: SS-2
 Date Sampled: 11/15/19 12:10
 Percent Solids: 57
 Initial Volume: 20.2
 Final Volume: 5
 Extraction Method: 3546

ESS Laboratory Work Order: 19K0547
 ESS Laboratory Sample ID: 19K0547-08
 Sample Matrix: Sediment
 Units: mg/kg dry
 Analyst: DMC
 Prepared: 11/19/19 10:25

8081B Organochlorine Pesticides

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
4,4'-DDD [2C]	0.0514 (0.0087)		8081B		2	11/20/19 11:48	C9K0319	CK91810
4,4'-DDE [2C]	0.0243 (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
4,4'-DDT [2C]	P 0.0136 (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
Aldrin	ND (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
alpha-BHC	ND (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
alpha-Chlordane [2C]	P, LC 0.0347 (0.0087)		8081B		2	11/20/19 11:48	C9K0319	CK91810
beta-BHC	ND (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
Chlordane (Total) [2C]	0.227 (0.0347)		8081B		1	11/20/19 1:10	C9K0319	CK91810
delta-BHC	ND (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
Dieldrin	ND (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
Endosulfan I	ND (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
Endosulfan II	ND (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
Endosulfan Sulfate	ND (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
Endrin	ND (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
Endrin Ketone	ND (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
gamma-BHC (Lindane)	ND (0.0026)		8081B		1	11/20/19 1:10	C9K0319	CK91810
gamma-Chlordane [2C]	0.0269 (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
Heptachlor	ND (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
Heptachlor Epoxide	ND (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
Hexachlorobenzene	ND (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810
Methoxychlor	ND (0.0043)		8081B		1	11/20/19 1:10	C9K0319	CK91810

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: Decachlorobiphenyl	49 %		30-150
Surrogate: Decachlorobiphenyl [2C]	71 %		30-150
Surrogate: Tetrachloro-m-xylene	78 %		30-150
Surrogate: Tetrachloro-m-xylene [2C]	75 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-2
Date Sampled: 11/15/19 12:10
Percent Solids: 57
Initial Volume: 30
Final Volume: 2
Extraction Method: 3540C

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-08
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 11/19/19 16:05

8082 Polychlorinated Biphenyls (PCB) / Congeners

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
BZ#8	ND (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#18	ND (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#28	ND (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#44	P, LC 0.00082 (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#52 [2C]	P, LC 0.00096 (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#66 [2C]	0.00285 (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#101	P, LC 0.00290 (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#105	ND (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#118	0.00286 (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#128 [2C]	0.00068 (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#138	P, LC 0.00271 (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#153	P, LC 0.00228 (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#170 [2C]	0.00119 (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#180 [2C]	0.00164 (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#187	0.00147 (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#195	ND (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#206	ND (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915
BZ#209	ND (0.00047)		8082A Cong		1	11/21/19 22:04	C9K0364	CK91915

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Tetrachloro-m-xylene</i>	55 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	55 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-2
Date Sampled: 11/15/19 12:10
Percent Solids: 57

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-08
Sample Matrix: Sediment

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Percent Moisture	43 (1)		2540G		1	JLK	11/18/19 20:55	%	CK91815
Total Organic Carbon (Average)	154000 (93.8)		9060		1	CCP	11/20/19 23:13	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-2
Date Sampled: 11/15/19 12:10
Percent Solids: 57
Initial Volume: 24.3
Final Volume: 2
Extraction Method: 3546

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-08
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 11/19/19 13:15

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (36.0)		MADEP-EPH		1	CAD	11/20/19 3:46	C9K0283	CK91910
C19-C36 Aliphatics1	76.1 (36.0)		MADEP-EPH		1	CAD	11/20/19 3:46	C9K0283	CK91910
C11-C22 Unadjusted Aromatics1	87.4 (36.0)		EPH8270		1	VSC	11/20/19 6:40	C9K0300	CK91910
C11-C22 Aromatics1,2	74.3 (36.3)		EPH8270			VSC	11/22/19 22:19		[CALC]
2-Methylnaphthalene	0.022 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Acenaphthene	0.117 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Naphthalene	0.031 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Phenanthrene	1.72 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Acenaphthylene	0.043 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Anthracene	0.394 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Benzo(a)anthracene	0.968 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Benzo(a)pyrene	0.914 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Benzo(b)fluoranthene	1.24 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Benzo(g,h,i)perylene	0.534 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Benzo(k)fluoranthene	0.368 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Chrysene	1.10 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Dibenzo(a,h)Anthracene	0.136 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Fluoranthene	2.54 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Fluorene	0.154 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Indeno(1,2,3-cd)Pyrene	0.591 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910
Pyrene	2.30 (0.014)		EPH8270SIM		1	VSC	11/22/19 22:19	C9K0384	CK91910

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	60 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	111 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	106 %		40-140
<i>Surrogate: O-Terphenyl</i>	69 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-2
Date Sampled: 11/15/19 12:10

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-08
Sample Matrix: Sediment

Subcontracted Analysis

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Grain Size	See Attached (N/A)								
Moisture Content	See Attached (1.0)								



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-2
Date Sampled: 11/15/19 12:10
Percent Solids: 57
Initial Volume: 100
Final Volume: 2000
Extraction Method: 1311

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-08
Sample Matrix: Sediment
Units: °C
Analyst: BJV
Prepared: 11/26/19 18:30

TCLP Extraction by 1311

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Batch</u>
Temperature (Min C)	19.8 (N/A)		1311		1	BJV	11/27/19 11:25	CK92644
Temperature (Max C)	20.4 (N/A)		1311		1	BJV	11/27/19 11:25	CK92644
Temperature (Range)	Temperature is not within 23 +/-2 °C. (N/A)							



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-1
Date Sampled: 11/15/19 11:50
Percent Solids: 53
Initial Volume: 6.9
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-09
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
1,1,1,2-Tetrachloroethane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,1,1-Trichloroethane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,1,2,2-Tetrachloroethane	ND (0.0028)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,1,2-Trichloroethane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,1-Dichloroethane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,1-Dichloroethene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,1-Dichloropropene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,2,3-Trichlorobenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,2,3-Trichloropropane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,2,4-Trichlorobenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,2,4-Trimethylbenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,2-Dibromo-3-Chloropropane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,2-Dibromoethane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,2-Dichlorobenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,2-Dichloroethane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,2-Dichloropropane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,3,5-Trimethylbenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,3-Dichlorobenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,3-Dichloropropane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,4-Dichlorobenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
1,4-Dioxane	ND (0.110)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
2,2-Dichloropropane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
2-Butanone	0.0228 (0.0138)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
2-Chlorotoluene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
2-Hexanone	ND (0.0138)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
4-Chlorotoluene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
4-Isopropyltoluene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
4-Methyl-2-Pentanone	ND (0.0138)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Acetone	0.143 (0.0138)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Benzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Bromobenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Bromochloromethane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-1
Date Sampled: 11/15/19 11:50
Percent Solids: 53
Initial Volume: 6.9
Final Volume: 10
Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-09
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
Bromodichloromethane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Bromoform	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Bromomethane	ND (0.0138)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Carbon Disulfide	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Carbon Tetrachloride	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Chlorobenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Chloroethane	ND (0.0138)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Chloroform	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Chloromethane	ND (0.0138)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
cis-1,2-Dichloroethene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
cis-1,3-Dichloropropene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Dibromochloromethane	ND (0.0028)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Dibromomethane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Dichlorodifluoromethane	ND (0.0138)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Diethyl Ether	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Di-isopropyl ether	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Ethyl tertiary-butyl ether	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Ethylbenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Hexachlorobutadiene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Isopropylbenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Methyl tert-Butyl Ether	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Methylene Chloride	ND (0.0138)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Naphthalene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
n-Butylbenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
n-Propylbenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
sec-Butylbenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Styrene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
tert-Butylbenzene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Tertiary-amyl methyl ether	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Tetrachloroethene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Tetrahydrofuran	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Toluene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: City Hall Ponds Dredging
 Client Sample ID: SS-1
 Date Sampled: 11/15/19 11:50
 Percent Solids: 53
 Initial Volume: 6.9
 Final Volume: 10
 Extraction Method: 5035

ESS Laboratory Work Order: 19K0547
 ESS Laboratory Sample ID: 19K0547-09
 Sample Matrix: Sediment
 Units: mg/kg dry
 Analyst: MEK

5035/8260B Volatile Organic Compounds / Low Level

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
trans-1,2-Dichloroethene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
trans-1,3-Dichloropropene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Trichloroethene	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Trichlorofluoromethane	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Vinyl Chloride	ND (0.0138)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Xylene O	ND (0.0069)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Xylene P,M	ND (0.0138)		8260B Low		1	11/21/19 19:33	C9K0329	CK92022
Xylenes (Total)	ND (0.0138)		8260B Low		1	11/21/19 19:33		[CALC]

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1,2-Dichloroethane-d4</i>	113 %		70-130
<i>Surrogate: 4-Bromofluorobenzene</i>	98 %		70-130
<i>Surrogate: Dibromofluoromethane</i>	106 %		70-130
<i>Surrogate: Toluene-d8</i>	98 %		70-130



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-1
Date Sampled: 11/15/19 11:50
Percent Solids: 53
Initial Volume: 20.9
Final Volume: 5
Extraction Method: 3546

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-09
Sample Matrix: Sediment
Units: mg/kg dry
Analyst: DMC
Prepared: 11/19/19 10:25

8081B Organochlorine Pesticides

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
4,4'-DDD [2C]	0.0525 (0.0091)		8081B		2	11/20/19 12:18	C9K0319	CK91810
4,4'-DDE [2C]	0.0214 (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
4,4'-DDT [2C]	0.0139 (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
Aldrin	ND (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
alpha-BHC	ND (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
alpha-Chlordane [2C]	P, LC 0.0264 (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
beta-BHC [2C]	ND (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
Chlordane (Total) [2C]	0.191 (0.0364)		8081B		1	11/20/19 2:11	C9K0319	CK91810
delta-BHC	ND (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
Dieldrin	ND (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
Endosulfan I	ND (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
Endosulfan II	ND (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
Endosulfan Sulfate	ND (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
Endrin	ND (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
Endrin Ketone	ND (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
gamma-BHC (Lindane)	ND (0.0027)		8081B		1	11/20/19 2:11	C9K0319	CK91810
gamma-Chlordane [2C]	0.0218 (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
Heptachlor	ND (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
Heptachlor Epoxide	ND (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
Hexachlorobenzene	ND (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810
Methoxychlor	ND (0.0046)		8081B		1	11/20/19 2:11	C9K0319	CK91810

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
Surrogate: Decachlorobiphenyl	50 %		30-150
Surrogate: Decachlorobiphenyl [2C]	57 %		30-150
Surrogate: Tetrachloro-m-xylene	68 %		30-150
Surrogate: Tetrachloro-m-xylene [2C]	67 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
 Client Project ID: City Hall Ponds Dredging
 Client Sample ID: SS-1
 Date Sampled: 11/15/19 11:50
 Percent Solids: 53
 Initial Volume: 30
 Final Volume: 2
 Extraction Method: 3540C

ESS Laboratory Work Order: 19K0547
 ESS Laboratory Sample ID: 19K0547-09
 Sample Matrix: Sediment
 Units: mg/kg dry
 Analyst: DMC
 Prepared: 11/19/19 16:05

8082 Polychlorinated Biphenyls (PCB) / Congeners

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
BZ#8	ND (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#18	0.00323 (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#28	ND (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#44	0.00245 (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#52 [2C]	0.00401 (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#66 [2C]	0.00309 (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#101	0.00548 (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#105	ND (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#118	0.00323 (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#128 [2C]	0.00060 (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#138	0.00267 (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#153	0.00229 (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#170 [2C]	0.00136 (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#180 [2C]	0.00195 (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#187	0.00155 (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#195	ND (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#206	ND (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915
BZ#209	ND (0.00051)		8082A Cong		1	11/21/19 22:41	C9K0364	CK91915

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: Tetrachloro-m-xylene</i>	54 %		30-150
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	57 %		30-150



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-1
Date Sampled: 11/15/19 11:50
Percent Solids: 53

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-09
Sample Matrix: Sediment

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Percent Moisture	47 (1)		2540G		1	JLK	11/18/19 20:55	%	CK91815
Total Organic Carbon (Average)	2330 (93.3)		9060		1	CCP	11/20/19 23:27	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-1
Date Sampled: 11/15/19 11:50
Percent Solids: 53
Initial Volume: 25.9
Final Volume: 2
Extraction Method: 3546

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-09
Sample Matrix: Sediment
Units: mg/kg dry

Prepared: 11/19/19 13:15

MADEP-EPH Extractable Petroleum Hydrocarbons

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Sequence</u>	<u>Batch</u>
C9-C18 Aliphatics1	ND (36.7)		MADEP-EPH		1	CAD	11/20/19 4:33	C9K0283	CK91910
C19-C36 Aliphatics1	84.4 (36.7)		MADEP-EPH		1	CAD	11/20/19 4:33	C9K0283	CK91910
C11-C22 Unadjusted Aromatics1	107 (36.7)		EPH8270		1	VSC	11/20/19 7:17	C9K0300	CK91910
C11-C22 Aromatics1,2	85.2 (37.0)		EPH8270			VSC	11/22/19 23:07		[CALC]
2-Methylnaphthalene	0.064 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Acenaphthene	0.410 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Naphthalene	0.069 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Phenanthrene	4.03 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Acenaphthylene	0.028 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Anthracene	0.707 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Benzo(a)anthracene	1.48 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Benzo(a)pyrene	1.29 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Benzo(b)fluoranthene	1.71 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Benzo(g,h,i)perylene	0.742 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Benzo(k)fluoranthene	0.472 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Chrysene	1.59 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Dibenzo(a,h)Anthracene	0.191 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Fluoranthene	3.67 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Fluorene	0.437 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Indeno(1,2,3-cd)Pyrene	0.836 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910
Pyrene	4.00 (0.015)		EPH8270SIM		1	VSC	11/22/19 23:07	C9K0384	CK91910

	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>
<i>Surrogate: 1-Chlorooctadecane</i>	62 %		40-140
<i>Surrogate: 2-Bromonaphthalene</i>	118 %		40-140
<i>Surrogate: 2-Fluorobiphenyl</i>	112 %		40-140
<i>Surrogate: O-Terphenyl</i>	69 %		40-140



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-1
Date Sampled: 11/15/19 11:50

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-09
Sample Matrix: Sediment

Subcontracted Analysis

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Grain Size	See Attached (N/A)								
Moisture Content	See Attached (1.0)								



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-7 and 6 Dried
Date Sampled: 11/15/19 09:40
Percent Solids: 99

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-10
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	5.59 (0.93)		6010C		1	KJK	11/19/19 23:27	5.45	100	CK91947
Cadmium	0.50 (0.19)		6010C		1	KJK	11/19/19 23:27	5.45	100	CK91947
Chromium	20.2 (0.37)		6010C		1	KJK	11/19/19 23:27	5.45	100	CK91947
Copper	45.2 (0.93)		6010C		1	KJK	11/19/19 23:27	5.45	100	CK91947
Lead	95.8 (1.86)		6010C		1	KJK	11/19/19 23:27	5.45	100	CK91947
Mercury	0.159 (0.008)		7471B		1	MKS	11/20/19 9:41	2.39	40	CK91842
Nickel	11.6 (0.93)		6010C		1	KJK	11/19/19 23:27	5.45	100	CK91947
Zinc	139 (0.93)		6010C		1	KJK	11/19/19 23:27	5.45	100	CK91947



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-5 and 4 Dried
Date Sampled: 11/15/19 10:50
Percent Solids: 95

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-11
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	6.42 (0.94)		6010C		1	KJK	11/19/19 23:44	5.55	100	CK91947
Cadmium	0.62 (0.19)		6010C		1	KJK	11/19/19 23:44	5.55	100	CK91947
Chromium	22.0 (0.38)		6010C		1	KJK	11/19/19 23:44	5.55	100	CK91947
Copper	59.7 (0.94)		6010C		1	KJK	11/19/19 23:44	5.55	100	CK91947
Lead	133 (1.89)		6010C		1	KJK	11/19/19 23:44	5.55	100	CK91947
Mercury	0.171 (0.010)		7471B		1	MKS	11/20/19 9:44	2.18	40	CK91842
Nickel	12.7 (0.94)		6010C		1	KJK	11/19/19 23:44	5.55	100	CK91947
Zinc	183 (0.94)		6010C		1	KJK	11/19/19 23:44	5.55	100	CK91947



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-3 Dried
Date Sampled: 11/15/19 12:45
Percent Solids: 99

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-12
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	2.58 (0.86)		6010C		1	KJK	11/19/19 23:50	5.83	100	CK91947
Cadmium	0.27 (0.17)		6010C		1	KJK	11/19/19 23:50	5.83	100	CK91947
Chromium	14.5 (0.35)		6010C		1	KJK	11/19/19 23:50	5.83	100	CK91947
Copper	21.7 (0.86)		6010C		1	KJK	11/19/19 23:50	5.83	100	CK91947
Lead	49.3 (1.73)		6010C		1	KJK	11/19/19 23:50	5.83	100	CK91947
Mercury	0.035 (0.009)		7471B		1	MKS	11/20/19 9:46	2.31	40	CK91842
Nickel	7.47 (0.86)		6010C		1	KJK	11/19/19 23:50	5.83	100	CK91947
Zinc	98.2 (0.86)		6010C		1	KJK	11/19/19 23:50	5.83	100	CK91947



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-2 Dried
Date Sampled: 11/15/19 12:10
Percent Solids: 99

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-13
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	4.25 (0.97)		6010C		1	KJK	11/19/19 23:54	5.22	100	CK91947
Cadmium	0.32 (0.19)		6010C		1	KJK	11/19/19 23:54	5.22	100	CK91947
Chromium	22.8 (0.39)		6010C		1	KJK	11/19/19 23:54	5.22	100	CK91947
Copper	35.2 (0.97)		6010C		1	KJK	11/19/19 23:54	5.22	100	CK91947
Lead	111 (1.94)		6010C		1	KJK	11/19/19 23:54	5.22	100	CK91947
Mercury	0.081 (0.009)		7471B		1	MKS	11/20/19 9:48	2.21	40	CK91842
Nickel	8.87 (0.97)		6010C		1	KJK	11/19/19 23:54	5.22	100	CK91947
Zinc	110 (0.97)		6010C		1	KJK	11/19/19 23:54	5.22	100	CK91947



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging
Client Sample ID: SS-1 Dried
Date Sampled: 11/15/19 11:50
Percent Solids: 99

ESS Laboratory Work Order: 19K0547
ESS Laboratory Sample ID: 19K0547-14
Sample Matrix: Sediment
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Arsenic	4.94 (0.89)		6010C		1	KJK	11/19/19 23:59	5.69	100	CK91947
Cadmium	0.22 (0.18)		6010C		1	KJK	11/19/19 23:59	5.69	100	CK91947
Chromium	15.6 (0.36)		6010C		1	KJK	11/19/19 23:59	5.69	100	CK91947
Copper	31.9 (0.89)		6010C		1	KJK	11/19/19 23:59	5.69	100	CK91947
Lead	57.7 (1.78)		6010C		1	KJK	11/19/19 23:59	5.69	100	CK91947
Mercury	0.057 (0.010)		7471B		1	MKS	11/20/19 9:50	2.1	40	CK91842
Nickel	9.51 (0.89)		6010C		1	KJK	11/19/19 23:59	5.69	100	CK91947
Zinc	97.3 (0.89)		6010C		1	KJK	11/19/19 23:59	5.69	100	CK91947



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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Total Metals

Batch CK91842 - 7471B

Blank

Mercury	ND	0.033	mg/kg wet							
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LCS

Mercury	8.96	0.600	mg/kg wet	7.760		115	80-120			
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LCS Dup

Mercury	8.61	0.495	mg/kg wet	7.760		111	80-120	4	20	
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Reference

Mercury	0.961	0.162	mg/kg wet	1000		0.1	0-200			
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Batch CK91947 - 3050B

Blank

Arsenic	ND	2.50	mg/kg wet							
Cadmium	ND	0.50	mg/kg wet							
Chromium	ND	1.00	mg/kg wet							
Copper	ND	2.50	mg/kg wet							
Lead	ND	5.00	mg/kg wet							
Nickel	ND	2.50	mg/kg wet							
Zinc	ND	2.50	mg/kg wet							

LCS

Arsenic	188	5.95	mg/kg wet	202.0		93	80-120			
Cadmium	123	1.19	mg/kg wet	149.0		83	80-120			
Chromium	164	2.38	mg/kg wet	182.0		90	80-120			
Copper	223	5.95	mg/kg wet	225.0		99	80-120			
Lead	304	11.9	mg/kg wet	333.0		91	80-120			
Nickel	153	5.95	mg/kg wet	167.0		92	80-120			
Zinc	408	5.95	mg/kg wet	459.0		89	80-120			

LCS Dup

Arsenic	184	7.04	mg/kg wet	202.0		91	80-120	2	20	
Cadmium	118	1.41	mg/kg wet	149.0		79	80-120	5	20	B-
Chromium	159	2.82	mg/kg wet	182.0		87	80-120	3	20	
Copper	213	7.04	mg/kg wet	225.0		95	80-120	5	20	
Lead	298	14.1	mg/kg wet	333.0		90	80-120	2	20	
Nickel	148	7.04	mg/kg wet	167.0		89	80-120	4	20	
Zinc	390	7.04	mg/kg wet	459.0		85	80-120	5	20	

1311 TCLP Metals

Batch CK92748 - 3005A_TCLP

Blank

Lead	ND	0.050	mg/L							
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LCS

Lead	0.482	0.050	mg/L	0.5000		96	80-120			
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LCS Dup

Lead	0.492	0.050	mg/L	0.5000		98	80-120	2	20	
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CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch CK92022 - 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	0.0020	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	0.0800	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0100	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0100	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0100	mg/kg wet							
Acetone	ND	0.0100	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	0.0020	mg/kg wet							



CERTIFICATE OF ANALYSIS

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Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch CK92022 - 5035

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	0.0100	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	0.0050	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	0.0551		mg/kg wet	0.05000		110	70-130			
Surrogate: 4-Bromofluorobenzene	0.0511		mg/kg wet	0.05000		102	70-130			
Surrogate: Dibromofluoromethane	0.0510		mg/kg wet	0.05000		102	70-130			
Surrogate: Toluene-d8	0.0484		mg/kg wet	0.05000		97	70-130			

LCS

1,1,1,2-Tetrachloroethane	0.0436	0.0050	mg/kg wet	0.05000		87	70-130			
1,1,1-Trichloroethane	0.0420	0.0050	mg/kg wet	0.05000		84	70-130			
1,1,2,2-Tetrachloroethane	0.0448	0.0020	mg/kg wet	0.05000		90	70-130			
1,1,2-Trichloroethane	0.0458	0.0050	mg/kg wet	0.05000		92	70-130			
1,1-Dichloroethane	0.0436	0.0050	mg/kg wet	0.05000		87	70-130			
1,1-Dichloroethene	0.0435	0.0050	mg/kg wet	0.05000		87	70-130			
1,1-Dichloropropene	0.0418	0.0050	mg/kg wet	0.05000		84	70-130			
1,2,3-Trichlorobenzene	0.0445	0.0050	mg/kg wet	0.05000		89	70-130			
1,2,3-Trichloropropane	0.0437	0.0050	mg/kg wet	0.05000		87	70-130			
1,2,4-Trichlorobenzene	0.0447	0.0050	mg/kg wet	0.05000		89	70-130			
1,2,4-Trimethylbenzene	0.0439	0.0050	mg/kg wet	0.05000		88	70-130			
1,2-Dibromo-3-Chloropropane	0.0434	0.0050	mg/kg wet	0.05000		87	70-130			
1,2-Dibromoethane	0.0455	0.0050	mg/kg wet	0.05000		91	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch CK92022 - 5035

1,2-Dichlorobenzene	0.0433	0.0050	mg/kg wet	0.05000		87	70-130			
1,2-Dichloroethane	0.0452	0.0050	mg/kg wet	0.05000		90	70-130			
1,2-Dichloropropane	0.0445	0.0050	mg/kg wet	0.05000		89	70-130			
1,3,5-Trimethylbenzene	0.0427	0.0050	mg/kg wet	0.05000		85	70-130			
1,3-Dichlorobenzene	0.0428	0.0050	mg/kg wet	0.05000		86	70-130			
1,3-Dichloropropane	0.0459	0.0050	mg/kg wet	0.05000		92	70-130			
1,4-Dichlorobenzene	0.0438	0.0050	mg/kg wet	0.05000		88	70-130			
1,4-Dioxane	0.851	0.0800	mg/kg wet	1.000		85	70-130			
2,2-Dichloropropane	0.0417	0.0050	mg/kg wet	0.05000		83	70-130			
2-Butanone	0.228	0.0100	mg/kg wet	0.2500		91	70-130			
2-Chlorotoluene	0.0422	0.0050	mg/kg wet	0.05000		84	70-130			
2-Hexanone	0.214	0.0100	mg/kg wet	0.2500		86	70-130			
4-Chlorotoluene	0.0422	0.0050	mg/kg wet	0.05000		84	70-130			
4-Isopropyltoluene	0.0417	0.0050	mg/kg wet	0.05000		83	70-130			
4-Methyl-2-Pentanone	0.240	0.0100	mg/kg wet	0.2500		96	70-130			
Acetone	0.219	0.0100	mg/kg wet	0.2500		87	70-130			
Benzene	0.0427	0.0050	mg/kg wet	0.05000		85	70-130			
Bromobenzene	0.0438	0.0050	mg/kg wet	0.05000		88	70-130			
Bromochloromethane	0.0447	0.0050	mg/kg wet	0.05000		89	70-130			
Bromodichloromethane	0.0457	0.0050	mg/kg wet	0.05000		91	70-130			
Bromoform	0.0456	0.0050	mg/kg wet	0.05000		91	70-130			
Bromomethane	0.0371	0.0100	mg/kg wet	0.05000		74	70-130			
Carbon Disulfide	0.0411	0.0050	mg/kg wet	0.05000		82	70-130			
Carbon Tetrachloride	0.0422	0.0050	mg/kg wet	0.05000		84	70-130			
Chlorobenzene	0.0422	0.0050	mg/kg wet	0.05000		84	70-130			
Chloroethane	0.0377	0.0100	mg/kg wet	0.05000		75	70-130			
Chloroform	0.0439	0.0050	mg/kg wet	0.05000		88	70-130			
Chloromethane	0.0360	0.0100	mg/kg wet	0.05000		72	70-130			
cis-1,2-Dichloroethene	0.0433	0.0050	mg/kg wet	0.05000		87	70-130			
cis-1,3-Dichloropropene	0.0453	0.0050	mg/kg wet	0.05000		91	70-130			
Dibromochloromethane	0.0474	0.0020	mg/kg wet	0.05000		95	70-130			
Dibromomethane	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
Dichlorodifluoromethane	0.0330	0.0100	mg/kg wet	0.05000		66	70-130			
Diethyl Ether	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
Di-isopropyl ether	0.0461	0.0050	mg/kg wet	0.05000		92	70-130			
Ethyl tertiary-butyl ether	0.0437	0.0050	mg/kg wet	0.05000		87	70-130			
Ethylbenzene	0.0418	0.0050	mg/kg wet	0.05000		84	70-130			
Hexachlorobutadiene	0.0426	0.0050	mg/kg wet	0.05000		85	70-130			
Isopropylbenzene	0.0411	0.0050	mg/kg wet	0.05000		82	70-130			
Methyl tert-Butyl Ether	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
Methylene Chloride	0.0442	0.0100	mg/kg wet	0.05000		88	70-130			
Naphthalene	0.0452	0.0050	mg/kg wet	0.05000		90	70-130			
n-Butylbenzene	0.0425	0.0050	mg/kg wet	0.05000		85	70-130			
n-Propylbenzene	0.0414	0.0050	mg/kg wet	0.05000		83	70-130			
sec-Butylbenzene	0.0404	0.0050	mg/kg wet	0.05000		81	70-130			

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CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch CK92022 - 5035

Styrene	0.0438	0.0050	mg/kg wet	0.05000		88	70-130			
tert-Butylbenzene	0.0417	0.0050	mg/kg wet	0.05000		83	70-130			
Tertiary-amyl methyl ether	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
Tetrachloroethene	0.0410	0.0050	mg/kg wet	0.05000		82	70-130			
Tetrahydrofuran	0.0422	0.0050	mg/kg wet	0.05000		84	70-130			
Toluene	0.0425	0.0050	mg/kg wet	0.05000		85	70-130			
trans-1,2-Dichloroethene	0.0424	0.0050	mg/kg wet	0.05000		85	70-130			
trans-1,3-Dichloropropene	0.0466	0.0050	mg/kg wet	0.05000		93	70-130			
Trichloroethene	0.0425	0.0050	mg/kg wet	0.05000		85	70-130			
Trichlorofluoromethane	0.0423	0.0050	mg/kg wet	0.05000		85	70-130			
Vinyl Chloride	0.0349	0.0100	mg/kg wet	0.05000		70	70-130			
Xylene O	0.0430	0.0050	mg/kg wet	0.05000		86	70-130			
Xylene P,M	0.0854	0.0100	mg/kg wet	0.1000		85	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0499		mg/kg wet	0.05000		100	70-130			
Surrogate: 4-Bromofluorobenzene	0.0496		mg/kg wet	0.05000		99	70-130			
Surrogate: Dibromofluoromethane	0.0499		mg/kg wet	0.05000		100	70-130			
Surrogate: Toluene-d8	0.0487		mg/kg wet	0.05000		97	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	0.0499	0.0050	mg/kg wet	0.05000		100	70-130	14	20	
1,1,1-Trichloroethane	0.0491	0.0050	mg/kg wet	0.05000		98	70-130	16	20	
1,1,2,2-Tetrachloroethane	0.0529	0.0020	mg/kg wet	0.05000		106	70-130	17	20	
1,1,2-Trichloroethane	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	17	20	
1,1-Dichloroethane	0.0505	0.0050	mg/kg wet	0.05000		101	70-130	15	20	
1,1-Dichloroethene	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	17	20	
1,1-Dichloropropene	0.0494	0.0050	mg/kg wet	0.05000		99	70-130	17	20	
1,2,3-Trichlorobenzene	0.0510	0.0050	mg/kg wet	0.05000		102	70-130	14	20	
1,2,3-Trichloropropane	0.0522	0.0050	mg/kg wet	0.05000		104	70-130	18	20	
1,2,4-Trichlorobenzene	0.0501	0.0050	mg/kg wet	0.05000		100	70-130	11	20	
1,2,4-Trimethylbenzene	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	11	20	
1,2-Dibromo-3-Chloropropane	0.0556	0.0050	mg/kg wet	0.05000		111	70-130	25	20	D+
1,2-Dibromoethane	0.0544	0.0050	mg/kg wet	0.05000		109	70-130	18	20	
1,2-Dichlorobenzene	0.0482	0.0050	mg/kg wet	0.05000		96	70-130	11	20	
1,2-Dichloroethane	0.0524	0.0050	mg/kg wet	0.05000		105	70-130	15	20	
1,2-Dichloropropane	0.0513	0.0050	mg/kg wet	0.05000		103	70-130	14	20	
1,3,5-Trimethylbenzene	0.0476	0.0050	mg/kg wet	0.05000		95	70-130	11	20	
1,3-Dichlorobenzene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130	10	20	
1,3-Dichloropropane	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	16	20	
1,4-Dichlorobenzene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130	8	20	
1,4-Dioxane	1.10	0.0800	mg/kg wet	1.000		110	70-130	26	20	D+
2,2-Dichloropropane	0.0483	0.0050	mg/kg wet	0.05000		97	70-130	15	20	
2-Butanone	0.273	0.0100	mg/kg wet	0.2500		109	70-130	18	20	
2-Chlorotoluene	0.0466	0.0050	mg/kg wet	0.05000		93	70-130	10	20	
2-Hexanone	0.273	0.0100	mg/kg wet	0.2500		109	70-130	24	20	D+
4-Chlorotoluene	0.0475	0.0050	mg/kg wet	0.05000		95	70-130	12	20	
4-Isopropyltoluene	0.0466	0.0050	mg/kg wet	0.05000		93	70-130	11	20	



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch CK92022 - 5035

4-Methyl-2-Pentanone	0.302	0.0100	mg/kg wet	0.2500		121	70-130	23	20	D+
Acetone	0.275	0.0100	mg/kg wet	0.2500		110	70-130	23	20	D+
Benzene	0.0493	0.0050	mg/kg wet	0.05000		99	70-130	14	20	
Bromobenzene	0.0488	0.0050	mg/kg wet	0.05000		98	70-130	11	20	
Bromochloromethane	0.0520	0.0050	mg/kg wet	0.05000		104	70-130	15	20	
Bromodichloromethane	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	15	20	
Bromoform	0.0539	0.0050	mg/kg wet	0.05000		108	70-130	17	20	
Bromomethane	0.0426	0.0100	mg/kg wet	0.05000		85	70-130	14	20	
Carbon Disulfide	0.0489	0.0050	mg/kg wet	0.05000		98	70-130	17	20	
Carbon Tetrachloride	0.0497	0.0050	mg/kg wet	0.05000		99	70-130	16	20	
Chlorobenzene	0.0479	0.0050	mg/kg wet	0.05000		96	70-130	13	20	
Chloroethane	0.0435	0.0100	mg/kg wet	0.05000		87	70-130	14	20	
Chloroform	0.0511	0.0050	mg/kg wet	0.05000		102	70-130	15	20	
Chloromethane	0.0421	0.0100	mg/kg wet	0.05000		84	70-130	16	20	
cis-1,2-Dichloroethene	0.0502	0.0050	mg/kg wet	0.05000		100	70-130	15	20	
cis-1,3-Dichloropropene	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	15	20	
Dibromochloromethane	0.0562	0.0020	mg/kg wet	0.05000		112	70-130	17	20	
Dibromomethane	0.0558	0.0050	mg/kg wet	0.05000		112	70-130	18	20	
Dichlorodifluoromethane	0.0389	0.0100	mg/kg wet	0.05000		78	70-130	16	20	
Diethyl Ether	0.0543	0.0050	mg/kg wet	0.05000		109	70-130	16	20	
Di-isopropyl ether	0.0528	0.0050	mg/kg wet	0.05000		106	70-130	13	20	
Ethyl tertiary-butyl ether	0.0507	0.0050	mg/kg wet	0.05000		101	70-130	15	20	
Ethylbenzene	0.0478	0.0050	mg/kg wet	0.05000		96	70-130	14	20	
Hexachlorobutadiene	0.0481	0.0050	mg/kg wet	0.05000		96	70-130	12	20	
Isopropylbenzene	0.0460	0.0050	mg/kg wet	0.05000		92	70-130	11	20	
Methyl tert-Butyl Ether	0.0553	0.0050	mg/kg wet	0.05000		111	70-130	17	20	
Methylene Chloride	0.0508	0.0100	mg/kg wet	0.05000		102	70-130	14	20	
Naphthalene	0.0536	0.0050	mg/kg wet	0.05000		107	70-130	17	20	
n-Butylbenzene	0.0476	0.0050	mg/kg wet	0.05000		95	70-130	11	20	
n-Propylbenzene	0.0466	0.0050	mg/kg wet	0.05000		93	70-130	12	20	
sec-Butylbenzene	0.0455	0.0050	mg/kg wet	0.05000		91	70-130	12	20	
Styrene	0.0498	0.0050	mg/kg wet	0.05000		100	70-130	13	20	
tert-Butylbenzene	0.0464	0.0050	mg/kg wet	0.05000		93	70-130	11	20	
Tertiary-amyl methyl ether	0.0539	0.0050	mg/kg wet	0.05000		108	70-130	14	20	
Tetrachloroethene	0.0477	0.0050	mg/kg wet	0.05000		95	70-130	15	20	
Tetrahydrofuran	0.0555	0.0050	mg/kg wet	0.05000		111	70-130	27	20	D+
Toluene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130	14	20	
trans-1,2-Dichloroethene	0.0496	0.0050	mg/kg wet	0.05000		99	70-130	16	20	
trans-1,3-Dichloropropene	0.0540	0.0050	mg/kg wet	0.05000		108	70-130	15	20	
Trichloroethene	0.0491	0.0050	mg/kg wet	0.05000		98	70-130	15	20	
Trichlorofluoromethane	0.0500	0.0050	mg/kg wet	0.05000		100	70-130	17	20	
Vinyl Chloride	0.0412	0.0100	mg/kg wet	0.05000		82	70-130	17	20	
Xylene O	0.0487	0.0050	mg/kg wet	0.05000		97	70-130	12	20	
Xylene P,M	0.0970	0.0100	mg/kg wet	0.1000		97	70-130	13	20	
Surrogate: 1,2-Dichloroethane-d4	0.0536		mg/kg wet	0.05000		107	70-130			



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch CK92022 - 5035

Surrogate: 4-Bromofluorobenzene	0.0503		mg/kg wet	0.05000		101	70-130			
Surrogate: Dibromofluoromethane	0.0515		mg/kg wet	0.05000		103	70-130			
Surrogate: Toluene-d8	0.0490		mg/kg wet	0.05000		98	70-130			

Batch CK92245 - 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	0.0020	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	0.0800	mg/kg wet							
2,2-Dichloropropane	ND	0.0050	mg/kg wet							
2-Butanone	ND	0.0100	mg/kg wet							
2-Chlorotoluene	ND	0.0050	mg/kg wet							
2-Hexanone	ND	0.0100	mg/kg wet							
4-Chlorotoluene	ND	0.0050	mg/kg wet							
4-Isopropyltoluene	ND	0.0050	mg/kg wet							
4-Methyl-2-Pentanone	ND	0.0100	mg/kg wet							
Acetone	ND	0.0100	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							



CERTIFICATE OF ANALYSIS

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Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch CK92245 - 5035

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	0.0020	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	0.0100	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	0.0050	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	0.0591		mg/kg wet	0.05000		118	70-130			
Surrogate: 4-Bromofluorobenzene	0.0514		mg/kg wet	0.05000		103	70-130			
Surrogate: Dibromofluoromethane	0.0524		mg/kg wet	0.05000		105	70-130			
Surrogate: Toluene-d8	0.0479		mg/kg wet	0.05000		96	70-130			

LCS

1,1,1,2-Tetrachloroethane	0.0470	0.0050	mg/kg wet	0.05000		94	70-130			
1,1,1-Trichloroethane	0.0429	0.0050	mg/kg wet	0.05000		86	70-130			
1,1,2,2-Tetrachloroethane	0.0525	0.0020	mg/kg wet	0.05000		105	70-130			
1,1,2-Trichloroethane	0.0571	0.0050	mg/kg wet	0.05000		114	70-130			
1,1-Dichloroethane	0.0457	0.0050	mg/kg wet	0.05000		91	70-130			
1,1-Dichloroethene	0.0435	0.0050	mg/kg wet	0.05000		87	70-130			
1,1-Dichloropropene	0.0430	0.0050	mg/kg wet	0.05000		86	70-130			
1,2,3-Trichlorobenzene	0.0539	0.0050	mg/kg wet	0.05000		108	70-130			



CERTIFICATE OF ANALYSIS

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch CK92245 - 5035

1,2,3-Trichloropropane	0.0528	0.0050	mg/kg wet	0.05000		106	70-130			
1,2,4-Trichlorobenzene	0.0526	0.0050	mg/kg wet	0.05000		105	70-130			
1,2,4-Trimethylbenzene	0.0445	0.0050	mg/kg wet	0.05000		89	70-130			
1,2-Dibromo-3-Chloropropane	0.0510	0.0050	mg/kg wet	0.05000		102	70-130			
1,2-Dibromoethane	0.0551	0.0050	mg/kg wet	0.05000		110	70-130			
1,2-Dichlorobenzene	0.0471	0.0050	mg/kg wet	0.05000		94	70-130			
1,2-Dichloroethane	0.0558	0.0050	mg/kg wet	0.05000		112	70-130			
1,2-Dichloropropane	0.0503	0.0050	mg/kg wet	0.05000		101	70-130			
1,3,5-Trimethylbenzene	0.0423	0.0050	mg/kg wet	0.05000		85	70-130			
1,3-Dichlorobenzene	0.0455	0.0050	mg/kg wet	0.05000		91	70-130			
1,3-Dichloropropane	0.0536	0.0050	mg/kg wet	0.05000		107	70-130			
1,4-Dichlorobenzene	0.0463	0.0050	mg/kg wet	0.05000		93	70-130			
1,4-Dioxane	1.20	0.0800	mg/kg wet	1.000		120	70-130			
2,2-Dichloropropane	0.0433	0.0050	mg/kg wet	0.05000		87	70-130			
2-Butanone	0.284	0.0100	mg/kg wet	0.2500		114	70-130			
2-Chlorotoluene	0.0414	0.0050	mg/kg wet	0.05000		83	70-130			
2-Hexanone	0.282	0.0100	mg/kg wet	0.2500		113	70-130			
4-Chlorotoluene	0.0432	0.0050	mg/kg wet	0.05000		86	70-130			
4-Isopropyltoluene	0.0411	0.0050	mg/kg wet	0.05000		82	70-130			
4-Methyl-2-Pentanone	0.328	0.0100	mg/kg wet	0.2500		131	70-130			B+
Acetone	0.302	0.0100	mg/kg wet	0.2500		121	70-130			
Benzene	0.0450	0.0050	mg/kg wet	0.05000		90	70-130			
Bromobenzene	0.0464	0.0050	mg/kg wet	0.05000		93	70-130			
Bromochloromethane	0.0529	0.0050	mg/kg wet	0.05000		106	70-130			
Bromodichloromethane	0.0532	0.0050	mg/kg wet	0.05000		106	70-130			
Bromoform	0.0539	0.0050	mg/kg wet	0.05000		108	70-130			
Bromomethane	0.0381	0.0100	mg/kg wet	0.05000		76	70-130			
Carbon Disulfide	0.0415	0.0050	mg/kg wet	0.05000		83	70-130			
Carbon Tetrachloride	0.0428	0.0050	mg/kg wet	0.05000		86	70-130			
Chlorobenzene	0.0439	0.0050	mg/kg wet	0.05000		88	70-130			
Chloroethane	0.0382	0.0100	mg/kg wet	0.05000		76	70-130			
Chloroform	0.0480	0.0050	mg/kg wet	0.05000		96	70-130			
Chloromethane	0.0368	0.0100	mg/kg wet	0.05000		74	70-130			
cis-1,2-Dichloroethene	0.0472	0.0050	mg/kg wet	0.05000		94	70-130			
cis-1,3-Dichloropropene	0.0535	0.0050	mg/kg wet	0.05000		107	70-130			
Dibromochloromethane	0.0551	0.0020	mg/kg wet	0.05000		110	70-130			
Dibromomethane	0.0587	0.0050	mg/kg wet	0.05000		117	70-130			
Dichlorodifluoromethane	0.0347	0.0100	mg/kg wet	0.05000		69	70-130			B-
Diethyl Ether	0.0560	0.0050	mg/kg wet	0.05000		112	70-130			
Di-isopropyl ether	0.0521	0.0050	mg/kg wet	0.05000		104	70-130			
Ethyl tertiary-butyl ether	0.0517	0.0050	mg/kg wet	0.05000		103	70-130			
Ethylbenzene	0.0419	0.0050	mg/kg wet	0.05000		84	70-130			
Hexachlorobutadiene	0.0431	0.0050	mg/kg wet	0.05000		86	70-130			
Isopropylbenzene	0.0394	0.0050	mg/kg wet	0.05000		79	70-130			
Methyl tert-Butyl Ether	0.0583	0.0050	mg/kg wet	0.05000		117	70-130			



CERTIFICATE OF ANALYSIS

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch CK92245 - 5035

Methylene Chloride	0.0521	0.0100	mg/kg wet	0.05000		104	70-130			
Naphthalene	0.0565	0.0050	mg/kg wet	0.05000		113	70-130			
n-Butylbenzene	0.0419	0.0050	mg/kg wet	0.05000		84	70-130			
n-Propylbenzene	0.0400	0.0050	mg/kg wet	0.05000		80	70-130			
sec-Butylbenzene	0.0388	0.0050	mg/kg wet	0.05000		78	70-130			
Styrene	0.0467	0.0050	mg/kg wet	0.05000		93	70-130			
tert-Butylbenzene	0.0399	0.0050	mg/kg wet	0.05000		80	70-130			
Tertiary-amyl methyl ether	0.0566	0.0050	mg/kg wet	0.05000		113	70-130			
Tetrachloroethene	0.0407	0.0050	mg/kg wet	0.05000		81	70-130			
Tetrahydrofuran	0.0579	0.0050	mg/kg wet	0.05000		116	70-130			
Toluene	0.0455	0.0050	mg/kg wet	0.05000		91	70-130			
trans-1,2-Dichloroethene	0.0432	0.0050	mg/kg wet	0.05000		86	70-130			
trans-1,3-Dichloropropene	0.0573	0.0050	mg/kg wet	0.05000		115	70-130			
Trichloroethene	0.0439	0.0050	mg/kg wet	0.05000		88	70-130			
Trichlorofluoromethane	0.0426	0.0050	mg/kg wet	0.05000		85	70-130			
Vinyl Chloride	0.0349	0.0100	mg/kg wet	0.05000		70	70-130			
Xylene O	0.0439	0.0050	mg/kg wet	0.05000		88	70-130			
Xylene P,M	0.0853	0.0100	mg/kg wet	0.1000		85	70-130			
Surrogate: 1,2-Dichloroethane-d4	0.0582		mg/kg wet	0.05000		116	70-130			
Surrogate: 4-Bromofluorobenzene	0.0509		mg/kg wet	0.05000		102	70-130			
Surrogate: Dibromofluoromethane	0.0542		mg/kg wet	0.05000		108	70-130			
Surrogate: Toluene-d8	0.0474		mg/kg wet	0.05000		95	70-130			

LCS Dup

1,1,1,2-Tetrachloroethane	0.0475	0.0050	mg/kg wet	0.05000		95	70-130	0.9	20	
1,1,1-Trichloroethane	0.0426	0.0050	mg/kg wet	0.05000		85	70-130	0.7	20	
1,1,2,2-Tetrachloroethane	0.0537	0.0020	mg/kg wet	0.05000		107	70-130	2	20	
1,1,2-Trichloroethane	0.0579	0.0050	mg/kg wet	0.05000		116	70-130	1	20	
1,1-Dichloroethane	0.0456	0.0050	mg/kg wet	0.05000		91	70-130	0.3	20	
1,1-Dichloroethene	0.0436	0.0050	mg/kg wet	0.05000		87	70-130	0.2	20	
1,1-Dichloropropene	0.0429	0.0050	mg/kg wet	0.05000		86	70-130	0.3	20	
1,2,3-Trichlorobenzene	0.0552	0.0050	mg/kg wet	0.05000		110	70-130	2	20	
1,2,3-Trichloropropane	0.0545	0.0050	mg/kg wet	0.05000		109	70-130	3	20	
1,2,4-Trichlorobenzene	0.0534	0.0050	mg/kg wet	0.05000		107	70-130	2	20	
1,2,4-Trimethylbenzene	0.0449	0.0050	mg/kg wet	0.05000		90	70-130	0.7	20	
1,2-Dibromo-3-Chloropropane	0.0517	0.0050	mg/kg wet	0.05000		103	70-130	1	20	
1,2-Dibromoethane	0.0560	0.0050	mg/kg wet	0.05000		112	70-130	2	20	
1,2-Dichlorobenzene	0.0479	0.0050	mg/kg wet	0.05000		96	70-130	2	20	
1,2-Dichloroethane	0.0560	0.0050	mg/kg wet	0.05000		112	70-130	0.3	20	
1,2-Dichloropropane	0.0499	0.0050	mg/kg wet	0.05000		100	70-130	0.8	20	
1,3,5-Trimethylbenzene	0.0426	0.0050	mg/kg wet	0.05000		85	70-130	0.7	20	
1,3-Dichlorobenzene	0.0457	0.0050	mg/kg wet	0.05000		91	70-130	0.5	20	
1,3-Dichloropropane	0.0551	0.0050	mg/kg wet	0.05000		110	70-130	3	20	
1,4-Dichlorobenzene	0.0469	0.0050	mg/kg wet	0.05000		94	70-130	1	20	
1,4-Dioxane	1.29	0.0800	mg/kg wet	1.000		129	70-130	7	20	
2,2-Dichloropropane	0.0428	0.0050	mg/kg wet	0.05000		86	70-130	1	20	



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch CK92245 - 5035

2-Butanone	0.285	0.0100	mg/kg wet	0.2500		114	70-130	0.4	20	
2-Chlorotoluene	0.0419	0.0050	mg/kg wet	0.05000		84	70-130	1	20	
2-Hexanone	0.290	0.0100	mg/kg wet	0.2500		116	70-130	3	20	
4-Chlorotoluene	0.0440	0.0050	mg/kg wet	0.05000		88	70-130	2	20	
4-Isopropyltoluene	0.0411	0.0050	mg/kg wet	0.05000		82	70-130	0.05	20	
4-Methyl-2-Pentanone	0.337	0.0100	mg/kg wet	0.2500		135	70-130	3	20	B+
Acetone	0.316	0.0100	mg/kg wet	0.2500		126	70-130	4	20	
Benzene	0.0453	0.0050	mg/kg wet	0.05000		91	70-130	0.6	20	
Bromobenzene	0.0469	0.0050	mg/kg wet	0.05000		94	70-130	1	20	
Bromochloromethane	0.0530	0.0050	mg/kg wet	0.05000		106	70-130	0.2	20	
Bromodichloromethane	0.0535	0.0050	mg/kg wet	0.05000		107	70-130	0.5	20	
Bromoform	0.0558	0.0050	mg/kg wet	0.05000		112	70-130	3	20	
Bromomethane	0.0381	0.0100	mg/kg wet	0.05000		76	70-130	0.2	20	
Carbon Disulfide	0.0417	0.0050	mg/kg wet	0.05000		83	70-130	0.4	20	
Carbon Tetrachloride	0.0428	0.0050	mg/kg wet	0.05000		86	70-130	0	20	
Chlorobenzene	0.0449	0.0050	mg/kg wet	0.05000		90	70-130	2	20	
Chloroethane	0.0383	0.0100	mg/kg wet	0.05000		77	70-130	0.05	20	
Chloroform	0.0479	0.0050	mg/kg wet	0.05000		96	70-130	0.1	20	
Chloromethane	0.0371	0.0100	mg/kg wet	0.05000		74	70-130	0.6	20	
cis-1,2-Dichloroethene	0.0470	0.0050	mg/kg wet	0.05000		94	70-130	0.3	20	
cis-1,3-Dichloropropene	0.0537	0.0050	mg/kg wet	0.05000		107	70-130	0.4	20	
Dibromochloromethane	0.0562	0.0020	mg/kg wet	0.05000		112	70-130	2	20	
Dibromomethane	0.0592	0.0050	mg/kg wet	0.05000		118	70-130	0.9	20	
Dichlorodifluoromethane	0.0347	0.0100	mg/kg wet	0.05000		69	70-130	0.1	20	B-
Diethyl Ether	0.0569	0.0050	mg/kg wet	0.05000		114	70-130	2	20	
Di-isopropyl ether	0.0521	0.0050	mg/kg wet	0.05000		104	70-130	0.1	20	
Ethyl tertiary-butyl ether	0.0520	0.0050	mg/kg wet	0.05000		104	70-130	0.7	20	
Ethylbenzene	0.0421	0.0050	mg/kg wet	0.05000		84	70-130	0.5	20	
Hexachlorobutadiene	0.0431	0.0050	mg/kg wet	0.05000		86	70-130	0.09	20	
Isopropylbenzene	0.0395	0.0050	mg/kg wet	0.05000		79	70-130	0.1	20	
Methyl tert-Butyl Ether	0.0587	0.0050	mg/kg wet	0.05000		117	70-130	0.7	20	
Methylene Chloride	0.0526	0.0100	mg/kg wet	0.05000		105	70-130	1	20	
Naphthalene	0.0584	0.0050	mg/kg wet	0.05000		117	70-130	3	20	
n-Butylbenzene	0.0421	0.0050	mg/kg wet	0.05000		84	70-130	0.6	20	
n-Propylbenzene	0.0402	0.0050	mg/kg wet	0.05000		80	70-130	0.5	20	
sec-Butylbenzene	0.0388	0.0050	mg/kg wet	0.05000		78	70-130	0	20	
Styrene	0.0473	0.0050	mg/kg wet	0.05000		95	70-130	1	20	
tert-Butylbenzene	0.0400	0.0050	mg/kg wet	0.05000		80	70-130	0.5	20	
Tertiary-amyl methyl ether	0.0570	0.0050	mg/kg wet	0.05000		114	70-130	0.7	20	
Tetrachloroethene	0.0406	0.0050	mg/kg wet	0.05000		81	70-130	0.3	20	
Tetrahydrofuran	0.0603	0.0050	mg/kg wet	0.05000		121	70-130	4	20	
Toluene	0.0457	0.0050	mg/kg wet	0.05000		91	70-130	0.3	20	
trans-1,2-Dichloroethene	0.0436	0.0050	mg/kg wet	0.05000		87	70-130	1	20	
trans-1,3-Dichloropropene	0.0578	0.0050	mg/kg wet	0.05000		116	70-130	0.8	20	
Trichloroethene	0.0440	0.0050	mg/kg wet	0.05000		88	70-130	0.2	20	



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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5035/8260B Volatile Organic Compounds / Low Level

Batch CK92245 - 5035

Trichlorofluoromethane	0.0427	0.0050	mg/kg wet	0.05000		85	70-130	0.2	20	
Vinyl Chloride	0.0351	0.0100	mg/kg wet	0.05000		70	70-130	0.6	20	
Xylene O	0.0449	0.0050	mg/kg wet	0.05000		90	70-130	2	20	
Xylene P,M	0.0862	0.0100	mg/kg wet	0.1000		86	70-130	1	20	
Surrogate: 1,2-Dichloroethane-d4	0.0575		mg/kg wet	0.05000		115	70-130			
Surrogate: 4-Bromofluorobenzene	0.0509		mg/kg wet	0.05000		102	70-130			
Surrogate: Dibromofluoromethane	0.0535		mg/kg wet	0.05000		107	70-130			
Surrogate: Toluene-d8	0.0476		mg/kg wet	0.05000		95	70-130			

8081B Organochlorine Pesticides

Batch CK91810 - 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							



CERTIFICATE OF ANALYSIS

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Quality Control Data

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8081B Organochlorine Pesticides

Batch CK91810 - 3546

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	0.0127		mg/kg wet	0.01250		101	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0125		mg/kg wet	0.01250		100	30-150			
Surrogate: Tetrachloro-m-xylene	0.0133		mg/kg wet	0.01250		107	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0132		mg/kg wet	0.01250		106	30-150			

LCS

4,4'-DDD	0.0129	0.0025	mg/kg wet	0.01250		103	40-140			
4,4'-DDD [2C]	0.0124	0.0025	mg/kg wet	0.01250		99	40-140			
4,4'-DDE	0.0128	0.0025	mg/kg wet	0.01250		103	40-140			
4,4'-DDE [2C]	0.0127	0.0025	mg/kg wet	0.01250		102	40-140			
4,4'-DDT	0.0129	0.0025	mg/kg wet	0.01250		103	40-140			
4,4'-DDT [2C]	0.0122	0.0025	mg/kg wet	0.01250		98	40-140			
Aldrin	0.0123	0.0025	mg/kg wet	0.01250		99	40-140			
Aldrin [2C]	0.0120	0.0025	mg/kg wet	0.01250		96	40-140			
alpha-BHC	0.0124	0.0025	mg/kg wet	0.01250		99	40-140			
alpha-BHC [2C]	0.0122	0.0025	mg/kg wet	0.01250		98	40-140			
alpha-Chlordane	0.0116	0.0025	mg/kg wet	0.01250		93	40-140			
alpha-Chlordane [2C]	0.0114	0.0025	mg/kg wet	0.01250		91	40-140			
beta-BHC	0.0121	0.0025	mg/kg wet	0.01250		97	40-140			
beta-BHC [2C]	0.0116	0.0025	mg/kg wet	0.01250		93	40-140			
delta-BHC	0.0105	0.0025	mg/kg wet	0.01250		84	40-140			
delta-BHC [2C]	0.0099	0.0025	mg/kg wet	0.01250		79	40-140			
Dieldrin	0.0127	0.0025	mg/kg wet	0.01250		102	40-140			
Dieldrin [2C]	0.0124	0.0025	mg/kg wet	0.01250		100	40-140			
Endosulfan I	0.0116	0.0025	mg/kg wet	0.01250		93	40-140			
Endosulfan I [2C]	0.0113	0.0025	mg/kg wet	0.01250		90	40-140			
Endosulfan II	0.0120	0.0025	mg/kg wet	0.01250		96	40-140			
Endosulfan II [2C]	0.0117	0.0025	mg/kg wet	0.01250		94	40-140			
Endosulfan Sulfate	0.0118	0.0025	mg/kg wet	0.01250		95	40-140			
Endosulfan Sulfate [2C]	0.0117	0.0025	mg/kg wet	0.01250		93	40-140			
Endrin	0.0123	0.0025	mg/kg wet	0.01250		99	40-140			
Endrin [2C]	0.0120	0.0025	mg/kg wet	0.01250		96	40-140			
Endrin Ketone	0.0127	0.0025	mg/kg wet	0.01250		102	40-140			
Endrin Ketone [2C]	0.0125	0.0025	mg/kg wet	0.01250		100	40-140			
gamma-BHC (Lindane)	0.0123	0.0015	mg/kg wet	0.01250		99	40-140			
gamma-BHC (Lindane) [2C]	0.0118	0.0015	mg/kg wet	0.01250		95	40-140			



CERTIFICATE OF ANALYSIS

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Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
8081B Organochlorine Pesticides										
Batch CK91810 - 3546										
gamma-Chlordane	0.0120	0.0025	mg/kg wet	0.01250		96	40-140			
gamma-Chlordane [2C]	0.0116	0.0025	mg/kg wet	0.01250		93	40-140			
Heptachlor	0.0120	0.0025	mg/kg wet	0.01250		96	40-140			
Heptachlor [2C]	0.0115	0.0025	mg/kg wet	0.01250		92	40-140			
Heptachlor Epoxide	0.0127	0.0025	mg/kg wet	0.01250		102	40-140			
Heptachlor Epoxide [2C]	0.0122	0.0025	mg/kg wet	0.01250		98	40-140			
Hexachlorobenzene	0.0123	0.0025	mg/kg wet	0.01250		98	40-140			
Hexachlorobenzene [2C]	0.0118	0.0025	mg/kg wet	0.01250		94	40-140			
Methoxychlor	0.0123	0.0025	mg/kg wet	0.01250		98	40-140			
Methoxychlor [2C]	0.0117	0.0025	mg/kg wet	0.01250		94	40-140			
<i>Surrogate: Decachlorobiphenyl</i>	<i>0.0130</i>		mg/kg wet	<i>0.01250</i>		<i>104</i>	<i>30-150</i>			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	<i>0.0128</i>		mg/kg wet	<i>0.01250</i>		<i>103</i>	<i>30-150</i>			
<i>Surrogate: Tetrachloro-m-xylene</i>	<i>0.0130</i>		mg/kg wet	<i>0.01250</i>		<i>104</i>	<i>30-150</i>			
<i>Surrogate: Tetrachloro-m-xylene [2C]</i>	<i>0.0130</i>		mg/kg wet	<i>0.01250</i>		<i>104</i>	<i>30-150</i>			
LCS Dup										
4,4'-DDD	0.0138	0.0025	mg/kg wet	0.01250		110	40-140	7	30	
4,4'-DDD [2C]	0.0134	0.0025	mg/kg wet	0.01250		107	40-140	8	30	
4,4'-DDE	0.0137	0.0025	mg/kg wet	0.01250		110	40-140	7	30	
4,4'-DDE [2C]	0.0137	0.0025	mg/kg wet	0.01250		109	40-140	7	30	
4,4'-DDT	0.0140	0.0025	mg/kg wet	0.01250		112	40-140	8	30	
4,4'-DDT [2C]	0.0137	0.0025	mg/kg wet	0.01250		109	40-140	11	30	
Aldrin	0.0132	0.0025	mg/kg wet	0.01250		105	40-140	6	30	
Aldrin [2C]	0.0129	0.0025	mg/kg wet	0.01250		103	40-140	8	30	
alpha-BHC	0.0132	0.0025	mg/kg wet	0.01250		106	40-140	7	30	
alpha-BHC [2C]	0.0129	0.0025	mg/kg wet	0.01250		103	40-140	6	30	
alpha-Chlordane	0.0123	0.0025	mg/kg wet	0.01250		99	40-140	6	30	
alpha-Chlordane [2C]	0.0122	0.0025	mg/kg wet	0.01250		98	40-140	7	30	
beta-BHC	0.0128	0.0025	mg/kg wet	0.01250		103	40-140	6	30	
beta-BHC [2C]	0.0122	0.0025	mg/kg wet	0.01250		98	40-140	5	30	
delta-BHC	0.0111	0.0025	mg/kg wet	0.01250		89	40-140	6	30	
delta-BHC [2C]	0.0106	0.0025	mg/kg wet	0.01250		85	40-140	7	30	
Dieldrin	0.0136	0.0025	mg/kg wet	0.01250		108	40-140	6	30	
Dieldrin [2C]	0.0134	0.0025	mg/kg wet	0.01250		107	40-140	7	30	
Endosulfan I	0.0124	0.0025	mg/kg wet	0.01250		99	40-140	6	30	
Endosulfan I [2C]	0.0121	0.0025	mg/kg wet	0.01250		97	40-140	7	30	
Endosulfan II	0.0128	0.0025	mg/kg wet	0.01250		102	40-140	6	30	
Endosulfan II [2C]	0.0129	0.0025	mg/kg wet	0.01250		103	40-140	10	30	
Endosulfan Sulfate	0.0126	0.0025	mg/kg wet	0.01250		101	40-140	7	30	
Endosulfan Sulfate [2C]	0.0125	0.0025	mg/kg wet	0.01250		100	40-140	7	30	
Endrin	0.0132	0.0025	mg/kg wet	0.01250		105	40-140	7	30	
Endrin [2C]	0.0130	0.0025	mg/kg wet	0.01250		104	40-140	8	30	
Endrin Ketone	0.0136	0.0025	mg/kg wet	0.01250		109	40-140	7	30	
Endrin Ketone [2C]	0.0134	0.0025	mg/kg wet	0.01250		107	40-140	7	30	
gamma-BHC (Lindane)	0.0131	0.0015	mg/kg wet	0.01250		105	40-140	6	30	



CERTIFICATE OF ANALYSIS

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8081B Organochlorine Pesticides

Batch CK91810 - 3546

gamma-BHC (Lindane) [2C]	0.0127	0.0015	mg/kg wet	0.01250		102	40-140	7	30	
gamma-Chlordane	0.0128	0.0025	mg/kg wet	0.01250		102	40-140	6	30	
gamma-Chlordane [2C]	0.0124	0.0025	mg/kg wet	0.01250		99	40-140	7	30	
Heptachlor	0.0128	0.0025	mg/kg wet	0.01250		102	40-140	6	30	
Heptachlor [2C]	0.0123	0.0025	mg/kg wet	0.01250		98	40-140	7	30	
Heptachlor Epoxide	0.0136	0.0025	mg/kg wet	0.01250		109	40-140	6	30	
Heptachlor Epoxide [2C]	0.0131	0.0025	mg/kg wet	0.01250		105	40-140	7	30	
Hexachlorobenzene	0.0130	0.0025	mg/kg wet	0.01250		104	40-140	6	30	
Hexachlorobenzene [2C]	0.0126	0.0025	mg/kg wet	0.01250		101	40-140	7	30	
Methoxychlor	0.0131	0.0025	mg/kg wet	0.01250		105	40-140	7	30	
Methoxychlor [2C]	0.0127	0.0025	mg/kg wet	0.01250		102	40-140	8	30	

Surrogate: Decachlorobiphenyl	0.0135		mg/kg wet	0.01250		108	30-150			
Surrogate: Decachlorobiphenyl [2C]	0.0134		mg/kg wet	0.01250		107	30-150			
Surrogate: Tetrachloro-m-xylene	0.0134		mg/kg wet	0.01250		107	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.0134		mg/kg wet	0.01250		107	30-150			

8082 Polychlorinated Biphenyls (PCB) / Congeners

Batch CK91915 - 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							
BZ#206 [2C]	ND	0.00027	mg/kg wet							
BZ#209	ND	0.00027	mg/kg wet							



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8082 Polychlorinated Biphenyls (PCB) / Congeners

Batch CK91915 - 3540C

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	0.00242		mg/kg wet	0.003333		72	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.00251		mg/kg wet	0.003333		75	30-150			

LCS

BZ#101	0.00331	0.00027	mg/kg wet	0.003333		99	40-140			
BZ#101 [2C]	0.00358	0.00027	mg/kg wet	0.003333		107	40-140			
BZ#105	0.00350	0.00027	mg/kg wet	0.003333		105	40-140			
BZ#105 [2C]	0.00370	0.00027	mg/kg wet	0.003333		111	40-140			
BZ#118	0.00343	0.00027	mg/kg wet	0.003333		103	40-140			
BZ#118 [2C]	0.00333	0.00027	mg/kg wet	0.003333		100	40-140			
BZ#128	0.00321	0.00027	mg/kg wet	0.003333		96	40-140			
BZ#128 [2C]	0.00333	0.00027	mg/kg wet	0.003333		100	40-140			
BZ#138	0.00331	0.00027	mg/kg wet	0.003333		99	40-140			
BZ#138 [2C]	0.00338	0.00027	mg/kg wet	0.003333		101	40-140			
BZ#153	0.00332	0.00027	mg/kg wet	0.003333		100	40-140			
BZ#153 [2C]	0.00330	0.00027	mg/kg wet	0.003333		99	40-140			
BZ#170	0.00329	0.00027	mg/kg wet	0.003333		99	40-140			
BZ#170 [2C]	0.00340	0.00027	mg/kg wet	0.003333		102	40-140			
BZ#18	0.00322	0.00027	mg/kg wet	0.003333		97	40-140			
BZ#18 [2C]	0.00307	0.00027	mg/kg wet	0.003333		92	40-140			
BZ#180	0.00335	0.00027	mg/kg wet	0.003333		100	40-140			
BZ#180 [2C]	0.00343	0.00027	mg/kg wet	0.003333		103	40-140			
BZ#187	0.00325	0.00027	mg/kg wet	0.003333		97	40-140			
BZ#187 [2C]	0.00331	0.00027	mg/kg wet	0.003333		99	40-140			
BZ#195	0.00327	0.00027	mg/kg wet	0.003333		98	40-140			
BZ#195 [2C]	0.00336	0.00027	mg/kg wet	0.003333		101	40-140			
BZ#206	0.00314	0.00027	mg/kg wet	0.003333		94	40-140			
BZ#206 [2C]	0.00329	0.00027	mg/kg wet	0.003333		99	40-140			
BZ#209	0.00312	0.00027	mg/kg wet	0.003333		93	40-140			
BZ#209 [2C]	0.00318	0.00027	mg/kg wet	0.003333		95	40-140			
BZ#28	0.00349	0.00027	mg/kg wet	0.003333		105	40-140			
BZ#28 [2C]	0.00344	0.00027	mg/kg wet	0.003333		103	40-140			
BZ#44	0.00317	0.00027	mg/kg wet	0.003333		95	40-140			
BZ#44 [2C]	0.00331	0.00027	mg/kg wet	0.003333		99	40-140			



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8082 Polychlorinated Biphenyls (PCB) / Congeners

Batch CK91915 - 3540C

BZ#52	0.00299	0.00027	mg/kg wet	0.003333		90	40-140			
BZ#52 [2C]	0.00308	0.00027	mg/kg wet	0.003333		92	40-140			
BZ#66	0.00338	0.00027	mg/kg wet	0.003333		101	40-140			
BZ#66 [2C]	0.00357	0.00027	mg/kg wet	0.003333		107	40-140			
BZ#8	0.00319	0.00027	mg/kg wet	0.003333		96	40-140			
BZ#8 [2C]	0.00337	0.00027	mg/kg wet	0.003333		101	40-140			

Surrogate: Tetrachloro-m-xylene	0.00256		mg/kg wet	0.003333		77	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.00265		mg/kg wet	0.003333		80	30-150			

LCS Dup

BZ#101	0.00360	0.00027	mg/kg wet	0.003333		108	40-140	8	50	
BZ#101 [2C]	0.00359	0.00027	mg/kg wet	0.003333		108	40-140	0.2	50	
BZ#105	0.00411	0.00027	mg/kg wet	0.003333		123	40-140	16	50	
BZ#105 [2C]	0.00433	0.00027	mg/kg wet	0.003333		130	40-140	16	50	
BZ#118	0.00383	0.00027	mg/kg wet	0.003333		115	40-140	11	50	
BZ#118 [2C]	0.00372	0.00027	mg/kg wet	0.003333		112	40-140	11	50	
BZ#128	0.00375	0.00027	mg/kg wet	0.003333		112	40-140	16	50	
BZ#128 [2C]	0.00385	0.00027	mg/kg wet	0.003333		116	40-140	14	50	
BZ#138	0.00357	0.00027	mg/kg wet	0.003333		107	40-140	8	50	
BZ#138 [2C]	0.00372	0.00027	mg/kg wet	0.003333		112	40-140	10	50	
BZ#153	0.00360	0.00027	mg/kg wet	0.003333		108	40-140	8	50	
BZ#153 [2C]	0.00362	0.00027	mg/kg wet	0.003333		109	40-140	9	50	
BZ#170	0.00372	0.00027	mg/kg wet	0.003333		111	40-140	12	50	
BZ#170 [2C]	0.00399	0.00027	mg/kg wet	0.003333		120	40-140	16	50	
BZ#18	0.00358	0.00027	mg/kg wet	0.003333		107	40-140	11	50	
BZ#18 [2C]	0.00339	0.00027	mg/kg wet	0.003333		102	40-140	10	50	
BZ#180	0.00371	0.00027	mg/kg wet	0.003333		111	40-140	10	50	
BZ#180 [2C]	0.00393	0.00027	mg/kg wet	0.003333		118	40-140	13	50	
BZ#187	0.00355	0.00027	mg/kg wet	0.003333		106	40-140	9	50	
BZ#187 [2C]	0.00366	0.00027	mg/kg wet	0.003333		110	40-140	10	50	
BZ#195	0.00377	0.00027	mg/kg wet	0.003333		113	40-140	14	50	
BZ#195 [2C]	0.00390	0.00027	mg/kg wet	0.003333		117	40-140	15	50	
BZ#206	0.00371	0.00027	mg/kg wet	0.003333		111	40-140	17	50	
BZ#206 [2C]	0.00389	0.00027	mg/kg wet	0.003333		117	40-140	17	50	
BZ#209	0.00362	0.00027	mg/kg wet	0.003333		109	40-140	15	50	
BZ#209 [2C]	0.00374	0.00027	mg/kg wet	0.003333		112	40-140	16	50	
BZ#28	0.00351	0.00027	mg/kg wet	0.003333		105	40-140	0.5	50	
BZ#28 [2C]	0.00358	0.00027	mg/kg wet	0.003333		107	40-140	4	50	
BZ#44	0.00344	0.00027	mg/kg wet	0.003333		103	40-140	8	50	
BZ#44 [2C]	0.00343	0.00027	mg/kg wet	0.003333		103	40-140	4	50	
BZ#52	0.00347	0.00027	mg/kg wet	0.003333		104	40-140	15	50	
BZ#52 [2C]	0.00341	0.00027	mg/kg wet	0.003333		102	40-140	10	50	
BZ#66	0.00352	0.00027	mg/kg wet	0.003333		105	40-140	4	50	
BZ#66 [2C]	0.00384	0.00027	mg/kg wet	0.003333		115	40-140	7	50	
BZ#8	0.00336	0.00027	mg/kg wet	0.003333		101	40-140	5	50	



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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8082 Polychlorinated Biphenyls (PCB) / Congeners

Batch CK91915 - 3540C

BZ#8 [2C]	0.00348	0.00027	mg/kg wet	0.003333		104	40-140	3	50	
Surrogate: Tetrachloro-m-xylene	0.00286		mg/kg wet	0.003333		86	30-150			
Surrogate: Tetrachloro-m-xylene [2C]	0.00297		mg/kg wet	0.003333		89	30-150			

Classical Chemistry

Batch CK91438 - General Preparation

Blank										
Total Organic Carbon (1)	ND	100	mg/kg							
Total Organic Carbon (2)	ND	100	mg/kg							
LCS										
Total Organic Carbon (1)	9200	100	mg/kg	10000		92	80-120			
Total Organic Carbon (2)	10500	100	mg/kg	10000		105	80-120			
LCS Dup										
Total Organic Carbon (1)	9490	100	mg/kg	10000		95	80-120	3	20	
Total Organic Carbon (2)	9610	100	mg/kg	10000		96	80-120	9	20	

MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CK91910 - 3546

Blank										
C19-C36 Aliphatics1	ND	10.0	mg/kg wet							
C9-C18 Aliphatics1	ND	10.0	mg/kg wet							
Decane (C10)	ND	0.5	mg/kg wet							
Docosane (C22)	ND	0.5	mg/kg wet							
Dodecane (C12)	ND	0.5	mg/kg wet							
Eicosane (C20)	ND	0.5	mg/kg wet							
Hexacosane (C26)	ND	0.5	mg/kg wet							
Hexadecane (C16)	ND	0.5	mg/kg wet							
Hexatriacontane (C36)	ND	0.5	mg/kg wet							
Nonadecane (C19)	ND	0.5	mg/kg wet							
Nonane (C9)	ND	0.5	mg/kg wet							
Octacosane (C28)	ND	0.5	mg/kg wet							
Octadecane (C18)	ND	0.5	mg/kg wet							
Tetracosane (C24)	ND	0.5	mg/kg wet							
Tetradecane (C14)	ND	0.5	mg/kg wet							
Triacotane (C30)	ND	0.5	mg/kg wet							
Surrogate: 1-Chlorooctadecane	1.65		mg/kg wet	2.020		81	40-140			
Blank										
C11-C22 Unadjusted Aromatics1	ND	10.0	mg/kg wet							
Surrogate: 2-Bromonaphthalene	54.2		mg/L	50.00		108	40-140			
Surrogate: 2-Fluorobiphenyl	54.9		mg/L	50.00		110	40-140			
Surrogate: O-Terphenyl	1.47		mg/kg wet	2.008		73	40-140			



CERTIFICATE OF ANALYSIS

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Quality Control Data

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MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CK91910 - 3546

Blank

2-Methylnaphthalene	ND	0.004	mg/kg wet							
Acenaphthene	ND	0.004	mg/kg wet							
Acenaphthylene	ND	0.004	mg/kg wet							
Anthracene	ND	0.004	mg/kg wet							
Benzo(a)anthracene	ND	0.004	mg/kg wet							
Benzo(a)pyrene	ND	0.004	mg/kg wet							
Benzo(b)fluoranthene	ND	0.004	mg/kg wet							
Benzo(g,h,i)perylene	ND	0.004	mg/kg wet							
Benzo(k)fluoranthene	ND	0.004	mg/kg wet							
Chrysene	ND	0.004	mg/kg wet							
Dibenzo(a,h)Anthracene	ND	0.004	mg/kg wet							
Fluoranthene	ND	0.004	mg/kg wet							
Fluorene	ND	0.004	mg/kg wet							
Indeno(1,2,3-cd)Pyrene	ND	0.004	mg/kg wet							
Naphthalene	0.005	0.004	mg/kg wet							
Phenanthrene	ND	0.004	mg/kg wet							
Pyrene	ND	0.004	mg/kg wet							

LCS

C19-C36 Aliphatics1	14.5	15.0	mg/kg wet	16.00		91	40-140			
C9-C18 Aliphatics1	9.0	15.0	mg/kg wet	12.00		75	40-140			
Decane (C10)	0.9	0.5	mg/kg wet	2.000		46	40-140			
Docosane (C22)	1.6	0.5	mg/kg wet	2.000		80	40-140			
Dodecane (C12)	1.0	0.5	mg/kg wet	2.000		51	40-140			
Eicosane (C20)	1.6	0.5	mg/kg wet	2.000		78	40-140			
Hexacosane (C26)	1.5	0.5	mg/kg wet	2.000		77	40-140			
Hexadecane (C16)	1.5	0.5	mg/kg wet	2.000		73	40-140			
Hexatriacontane (C36)	1.4	0.5	mg/kg wet	2.000		70	40-140			
Nonadecane (C19)	1.6	0.5	mg/kg wet	2.000		78	40-140			
Nonane (C9)	0.8	0.5	mg/kg wet	2.000		39	30-140			
Octacosane (C28)	1.5	0.5	mg/kg wet	2.000		77	40-140			
Octadecane (C18)	1.6	0.5	mg/kg wet	2.000		78	40-140			
Tetracosane (C24)	1.6	0.5	mg/kg wet	2.000		79	40-140			
Tetradecane (C14)	1.3	0.5	mg/kg wet	2.000		64	40-140			
Triacontane (C30)	1.5	0.5	mg/kg wet	2.000		76	40-140			

Surrogate: 1-Chlorooctadecane 1.70 mg/kg wet 2.020 84 40-140

LCS

C11-C22 Unadjusted Aromatics1	24.5	15.0	mg/kg wet	34.00		72	40-140			
Surrogate: 2-Bromonaphthalene	52.2		mg/L	50.00		104	40-140			
Surrogate: 2-Fluorobiphenyl	54.9		mg/L	50.00		110	40-140			
Surrogate: O-Terphenyl	1.46		mg/kg wet	2.008		73	40-140			

LCS

2-Methylnaphthalene Breakthrough 0.0 % 0-5



CERTIFICATE OF ANALYSIS

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Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
MADEP-EPH Extractable Petroleum Hydrocarbons										
Batch CK91910 - 3546										
Naphthalene Breakthrough	0.0		%				0-5			
LCS										
2-Methylnaphthalene	1.07	0.020	mg/kg wet	2.000		53	40-140			
Acenaphthene	1.30	0.020	mg/kg wet	2.000		65	40-140			
Acenaphthylene	1.31	0.020	mg/kg wet	2.000		65	40-140			
Anthracene	1.37	0.020	mg/kg wet	2.000		69	40-140			
Benzo(a)anthracene	1.27	0.020	mg/kg wet	2.000		63	40-140			
Benzo(a)pyrene	1.32	0.020	mg/kg wet	2.000		66	40-140			
Benzo(b)fluoranthene	1.24	0.020	mg/kg wet	2.000		62	40-140			
Benzo(g,h,i)perylene	1.16	0.020	mg/kg wet	2.000		58	40-140			
Benzo(k)fluoranthene	1.47	0.020	mg/kg wet	2.000		73	40-140			
Chrysene	1.33	0.020	mg/kg wet	2.000		67	40-140			
Dibenzo(a,h)Anthracene	1.11	0.020	mg/kg wet	2.000		56	40-140			
Fluoranthene	1.32	0.020	mg/kg wet	2.000		66	40-140			
Fluorene	1.26	0.020	mg/kg wet	2.000		63	40-140			
Indeno(1,2,3-cd)Pyrene	1.18	0.020	mg/kg wet	2.000		59	40-140			
Naphthalene	1.03	0.020	mg/kg wet	2.000		51	40-140			
Phenanthrene	1.27	0.020	mg/kg wet	2.000		64	40-140			
Pyrene	1.47	0.020	mg/kg wet	2.000		73	40-140			
LCS Dup										
C19-C36 Aliphatics1	14.1	15.0	mg/kg wet	16.00		88	40-140	3	25	
C9-C18 Aliphatics1	9.3	15.0	mg/kg wet	12.00		77	40-140	3	25	
Decane (C10)	1.1	0.5	mg/kg wet	2.000		53	40-140	13	25	
Docosane (C22)	1.5	0.5	mg/kg wet	2.000		76	40-140	6	25	
Dodecane (C12)	1.1	0.5	mg/kg wet	2.000		55	40-140	7	25	
Eicosane (C20)	1.5	0.5	mg/kg wet	2.000		74	40-140	5	25	
Hexacosane (C26)	1.5	0.5	mg/kg wet	2.000		74	40-140	4	25	
Hexadecane (C16)	1.4	0.5	mg/kg wet	2.000		70	40-140	5	25	
Hexatriacontane (C36)	1.3	0.5	mg/kg wet	2.000		67	40-140	4	25	
Nonadecane (C19)	1.5	0.5	mg/kg wet	2.000		73	40-140	6	25	
Nonane (C9)	0.9	0.5	mg/kg wet	2.000		45	30-140	15	25	
Octacosane (C28)	1.5	0.5	mg/kg wet	2.000		74	40-140	4	25	
Octadecane (C18)	1.5	0.5	mg/kg wet	2.000		73	40-140	6	25	
Tetracosane (C24)	1.5	0.5	mg/kg wet	2.000		75	40-140	5	25	
Tetradecane (C14)	1.3	0.5	mg/kg wet	2.000		63	40-140	2	25	
Triacontane (C30)	1.5	0.5	mg/kg wet	2.000		73	40-140	4	25	
Surrogate: 1-Chlorooctadecane	1.53		mg/kg wet	2.020		76	40-140			
LCS Dup										
C11-C22 Unadjusted Aromatics1	26.6	15.0	mg/kg wet	34.00		78	40-140	8	25	
Surrogate: 2-Bromonaphthalene	51.7		mg/L	50.00		103	40-140			
Surrogate: 2-Fluorobiphenyl	55.6		mg/L	50.00		111	40-140			
Surrogate: O-Terphenyl	1.48		mg/kg wet	2.008		74	40-140			
LCS Dup										



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
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MADEP-EPH Extractable Petroleum Hydrocarbons

Batch CK91910 - 3546

2-Methylnaphthalene Breakthrough	0.0		%				0-5		200	
Naphthalene Breakthrough	0.0		%				0-5		200	

LCS Dup

2-Methylnaphthalene	1.27	0.020	mg/kg wet	2.000		64	40-140	18	30	
Acenaphthene	1.50	0.020	mg/kg wet	2.000		75	40-140	14	30	
Acenaphthylene	1.48	0.020	mg/kg wet	2.000		74	40-140	12	30	
Anthracene	1.58	0.020	mg/kg wet	2.000		79	40-140	14	30	
Benzo(a)anthracene	1.39	0.020	mg/kg wet	2.000		69	40-140	9	30	
Benzo(a)pyrene	1.46	0.020	mg/kg wet	2.000		73	40-140	10	30	
Benzo(b)fluoranthene	1.49	0.020	mg/kg wet	2.000		75	40-140	18	30	
Benzo(g,h,i)perylene	1.26	0.020	mg/kg wet	2.000		63	40-140	8	30	
Benzo(k)fluoranthene	1.53	0.020	mg/kg wet	2.000		76	40-140	4	30	
Chrysene	1.48	0.020	mg/kg wet	2.000		74	40-140	10	30	
Dibenzo(a,h)Anthracene	1.23	0.020	mg/kg wet	2.000		62	40-140	10	30	
Fluoranthene	1.55	0.020	mg/kg wet	2.000		77	40-140	16	30	
Fluorene	1.38	0.020	mg/kg wet	2.000		69	40-140	9	30	
Indeno(1,2,3-cd)Pyrene	1.29	0.020	mg/kg wet	2.000		65	40-140	9	30	
Naphthalene	1.22	0.020	mg/kg wet	2.000		61	40-140	17	30	
Phenanthrene	1.47	0.020	mg/kg wet	2.000		73	40-140	14	30	
Pyrene	1.58	0.020	mg/kg wet	2.000		79	40-140	8	30	



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

Notes and Definitions

- Z18 Temperature is not within 23 +/-2 °C.
- Z-08 See Attached
- U Analyte included in the analysis, but not detected
- 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).
- D+ Relative percent difference for duplicate is outside of criteria (D+).
- D Diluted.
- CD+ Continuing Calibration %Diff/Drift is above control limit (CD+).
- CD- Continuing Calibration %Diff/Drift is below control limit (CD-).
- B+ Blank Spike recovery is above upper control limit (B+).
- B- Blank Spike recovery is below lower control limit (B-).
- 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 Probably Number
- TNTC Too numerous to Count
- CFU Colony Forming Units



CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc.
Client Project ID: City Hall Ponds Dredging

ESS Laboratory Work Order: 19K0547

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

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752

<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>



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Let's Build a Solid Foundation

Client Information:
 GZA GeoEnvironmental
 Springfield, MA
 PM: Jennifer Burke
 Assigned By: Jennifer Burke
 Collected By: Client

Project Information:
City Hall Ponds Dredging
 ESS Project Number: 19K0547
 Summary Page: 1 of 1
 Report Date: 11.21.19

LABORATORY TESTING DATA SHEET, Report No.: 7419-L-161

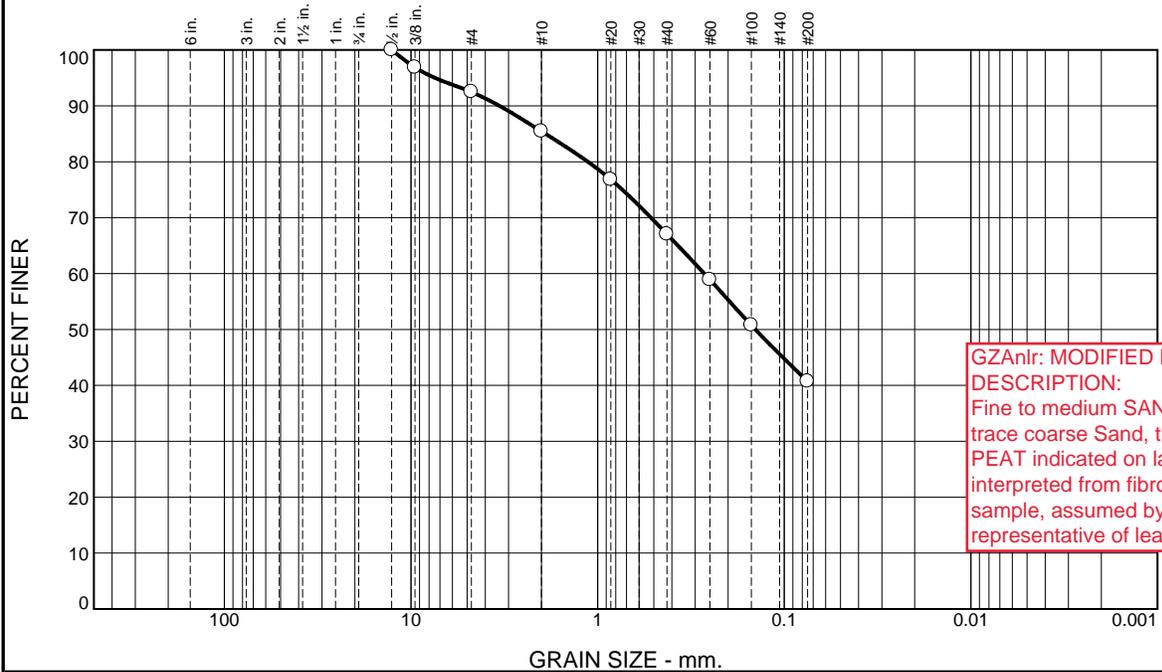
Source	Sample No.	Laboratory No.	Identification Tests								Proctor / CBR / Permeability Tests							Laboratory Log and Soil Description	
			As Received Water Content %	LL %	PL %	Gravel %	Sand %	Fines %	Org. %	G _s	Dry unit wt. pcf	Test Water Content %	γ _d MAX (pcf) W _{opt} (%)	γ _d MAX (pcf) W _{opt} (%) (Corr.)	Target Test Setup as % of Proctor	CBR @ 0.1"	CBR @ 0.2"		Permeability cm/sec
			D2216	D4318		D6913			D2974	D854			D1557						
Composite	SS-7 & 6	19-S-2653	100.8			7.5	51.8	40.7										Very Dark Gray Fibrous PEAT	
Composite	SS-5 & 4	19-S-2654	116.3			14.7	54.1	31.2										Very Dark Gray Fibrous PEAT	
Composite	SS-3	19-S-2655	41.2			19.8	77.2	3.0										Very Dark Gray f-m SAND, little coarse Gravel, trace Silt	
Composite	SS-2	19-S-2656	79.7			3.5	79.2	17.3										Very Dark Gray Fine Grained PEAT	
Composite	SS-1	19-S-2657	76.3			2.8	82.3	14.9										Very Dark Gray Fine Grained PEAT	
																		GZAnlr: SEE COMMENTS ON LABORATORY SOIL DESCRIPTION ON INDIVIDUAL LAB REPORTS ON FOLLOWING PAGES	

Date Received: 11.19.19

Reviewed By: 

Date Reviewed: 11.25.19

Particle Size Distribution Report



GZAnr: MODIFIED BURMEISTER SOIL DESCRIPTION:
 Fine to medium SAND and Clayey SILT, trace coarse Sand, trace fine Gravel.
 PEAT indicated on laboratory report form interpreted from fibrous organics in sample, assumed by GZA to be representative of leaf litter and plant roots.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	7.5	7.0	18.5	26.3	40.7	

Test Results (D6913 & ASTM D 1140)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.5"	100.0		
0.375"	96.9		
#4	92.5		
#10	85.5		
#20	76.8		
#40	67.0		
#60	58.9		
#100	50.8		
#200	40.7		

Material Description

Very Dark Gray Fibrous PEAT

Atterberg Limits (ASTM D 4318)

PL= _____ LL= _____ PI= _____

Classification

USCS (D 2487)= Pt _____ AASHTO (M 145)= A-8

Coefficients

D₉₀= 3.3553 D₈₅= 1.9031 D₆₀= 0.2682
 D₅₀= 0.1428 D₃₀= _____ D₁₅= _____
 D₁₀= _____ C_u= _____ C_c= _____

Remarks

Sample visually classified as plastic. Sample rolled to 1/8".

Date Received: 11.19.19 Date Tested: 11.21.19

Tested By: IA / JM

Checked By: Steven Accetta

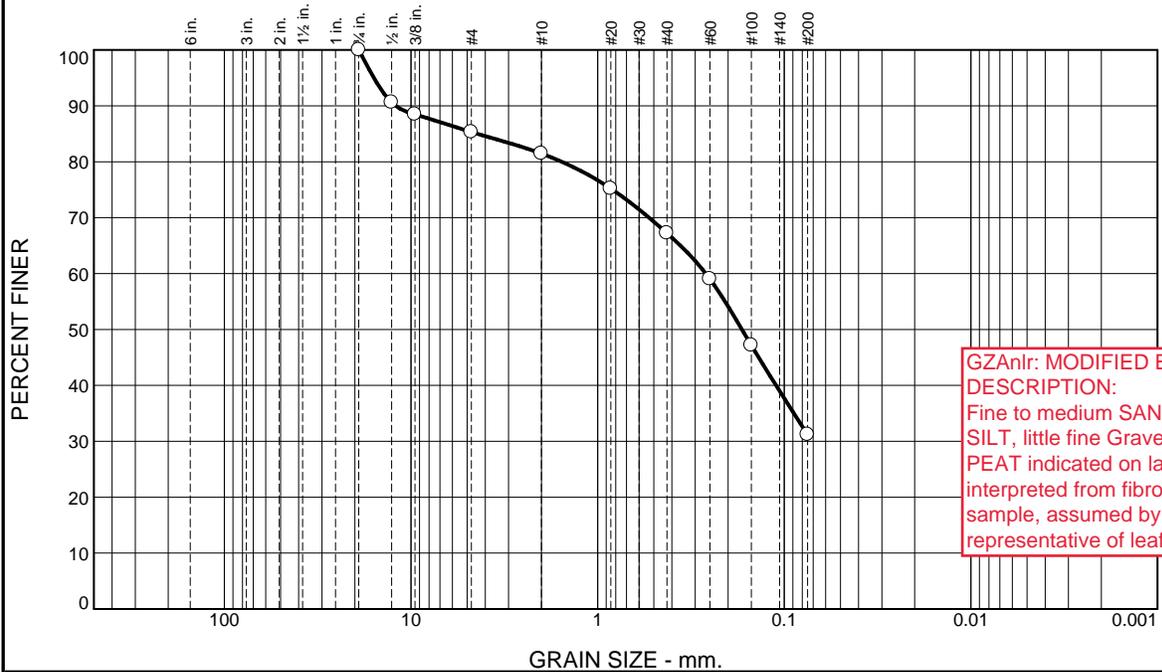
Title: Laboratory Coordinator

* (no specification provided)

Source of Sample: Composites Date Sampled: 11.15.19
 Sample Number: SS-7 & 6

Thielsch Engineering Inc. Cranston, RI	Client: GZA GeoEnvironmental Project: City Hall Ponds Dredging Project No: 19K0547
Figure 19K0547-03	

Particle Size Distribution Report



GZAnr: MODIFIED BURMEISTER SOIL
DESCRIPTION:
 Fine to medium SAND , some Clayey SILT, little fine Gravel, trace coarse Sand PEAT indicated on laboratory report form interpreted from fibrous organics in sample, assumed by GZA to be representative of leaf litter and plant roots.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	14.7	3.8	14.3	36.0	31.2	

Test Results (D6913 & ASTM D 1140)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.75"	100.0		
0.5"	90.6		
0.375"	88.5		
#4	85.3		
#10	81.5		
#20	75.2		
#40	67.2		
#60	59.0		
#100	47.2		
#200	31.2		

Material Description

Very Dark Gray Fibrous PEAT

Atterberg Limits (ASTM D 4318)

PL= LL= PI=

Classification

USCS (D 2487)= Pt AASHTO (M 145)= A-8

Coefficients

D₉₀= 12.0927 D₈₅= 4.4047 D₆₀= 0.2632
 D₅₀= 0.1684 D₃₀= D₁₅=
 D₁₀= C_u= C_c=

Remarks

Sample visually classified as plastic. Sample rolled to 1/8".

Date Received: 11.19.19 Date Tested: 11.21.19

Tested By: IA / JM

Checked By: Steven Accetta

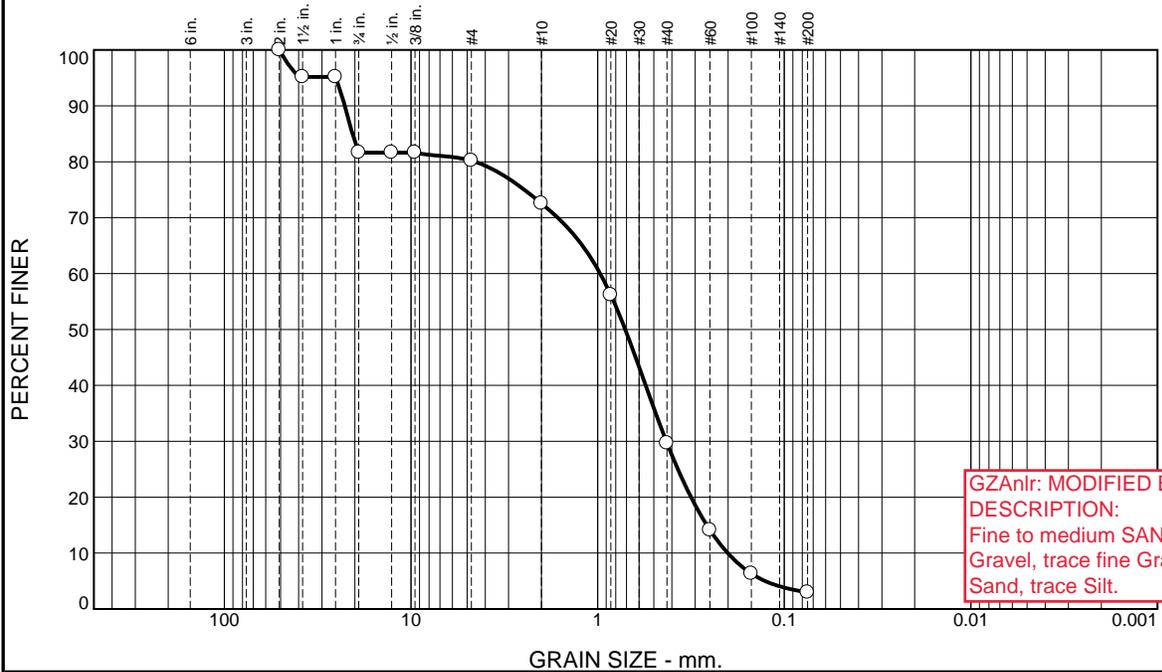
Title: Laboratory Coordinator

* (no specification provided)

Source of Sample: Composites Date Sampled: 11.15.19
 Sample Number: SS-5 & 4

Thielsch Engineering Inc.	Client: GZA GeoEnvironmental
Cranston, RI	Project: City Hall Ponds Dredging
	Project No: 19K0547
	Figure 19K0547-06

Particle Size Distribution Report



GZAnr: MODIFIED BURMEISTER SOIL
DESCRIPTION:
Fine to medium SAND, little coarse
Gravel, trace fine Gravel, trace coarse
Sand, trace Silt.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	18.4	1.4	7.6	42.9	26.7	3.0	

Test Results (D6913 & ASTM D 1140)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
2"	100.0		
1.5"	95.2		
1"	95.2		
0.75"	81.6		
0.5"	81.6		
0.375"	81.6		
#4	80.2		
#10	72.6		
#20	56.2		
#40	29.7		
#60	14.1		
#100	6.3		
#200	3.0		

Material Description

Very Dark Gray f-m SAND, little coarse Gravel, trace Silt

Atterberg Limits (ASTM D 4318)

PL= NP LL= NV PI= NP

Classification

USCS (D 2487)= SP AASHTO (M 145)= A-1-b

Coefficients

D₉₀= 22.6196 D₈₅= 20.5945 D₆₀= 0.9693
D₅₀= 0.7119 D₃₀= 0.4287 D₁₅= 0.2600
D₁₀= 0.2008 C_u= 4.83 C_c= 0.94

Remarks

Sample contained trace Organic material.

Date Received: 11.19.19 Date Tested: 11.21.19

Tested By: IA / JM

Checked By: Steven Accetta

Title: Laboratory Coordinator

* (no specification provided)

Source of Sample: Composites
Sample Number: SS-3

Date Sampled: 11.15.19

Thielsch Engineering Inc.

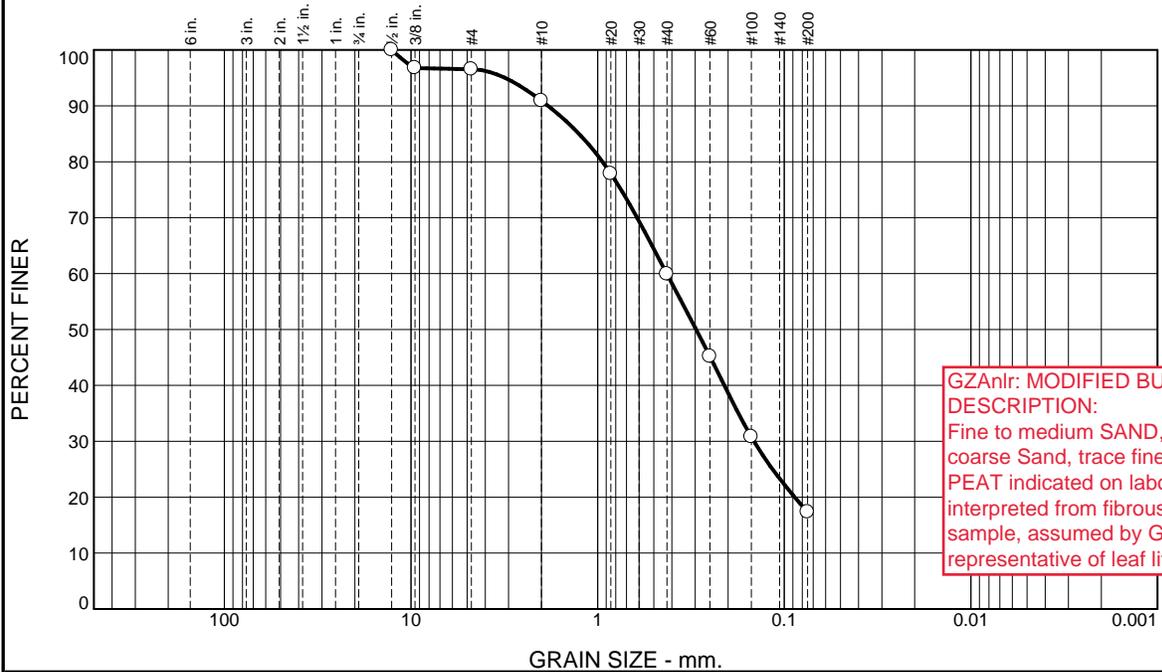
Cranston, RI

Client: GZA GeoEnvironmental
Project: City Hall Ponds Dredging

Project No: 19K0547

Figure 19K0547-07

Particle Size Distribution Report



GZAnr: MODIFIED BURMEISTER SOIL DESCRIPTION:
 Fine to medium SAND, some Silt, trace coarse Sand, trace fine Gravel
 PEAT indicated on laboratory report form interpreted from fibrous organics in sample, assumed by GZA to be representative of leaf litter and plant roots.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	3.5	5.6	31.0	42.6	17.3	

Test Results (D6913 & ASTM D 1140)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.5"	100.0		
0.375"	96.8		
#4	96.5		
#10	90.9		
#20	77.9		
#40	59.9		
#60	45.2		
#100	30.8		
#200	17.3		

Material Description
 Very Dark Gray Fine Grained PEAT

Atterberg Limits (ASTM D 4318)
 PL= LL= PI=

Classification
 USCS (D 2487)= Pt AASHTO (M 145)= A-8

Coefficients
 D₉₀= 1.8423 D₈₅= 1.2576 D₆₀= 0.4264
 D₅₀= 0.2966 D₃₀= 0.1452 D₁₅=
 D₁₀= C_u= C_c=

Remarks

Date Received: 11.19.19 Date Tested: 11.21.19

Tested By: IA / JM

Checked By: Steven Accetta

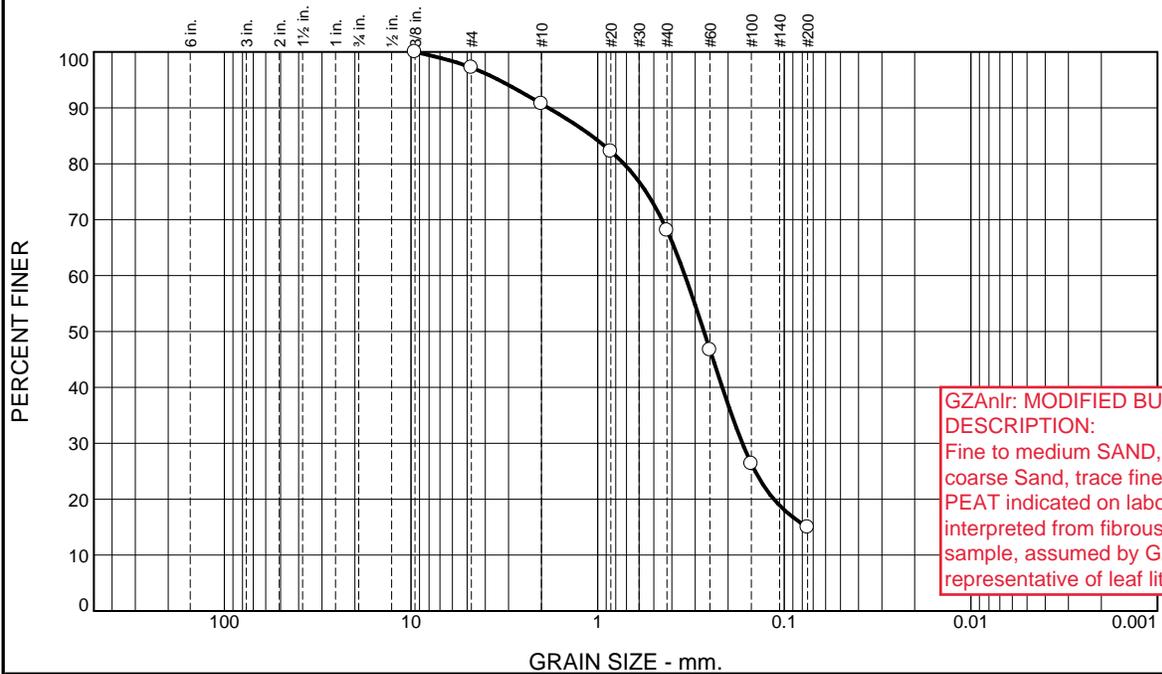
Title: Laboratory Coordinator

* (no specification provided)

Source of Sample: Composites Date Sampled: 11.15.19
 Sample Number: SS-2

Thielsch Engineering Inc. Cranston, RI	Client: GZA GeoEnvironmental Project: City Hall Ponds Dredging Project No: 19K0547
Figure 19K0547-08	

Particle Size Distribution Report



GZAnr: MODIFIED BURMEISTER SOIL DESCRIPTION:
 Fine to medium SAND, some Silt, trace coarse Sand, trace fine Gravel
 PEAT indicated on laboratory report form interpreted from fibrous organics in sample, assumed by GZA to be representative of leaf litter and plant roots.

% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	2.8	6.5	22.6	53.2	14.9	

Test Results (D6913 & ASTM D 1140)			
Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
0.375"	100.0		
#4	97.2		
#10	90.7		
#20	82.2		
#40	68.1		
#60	46.7		
#100	26.4		
#200	14.9		

Material Description

Very Dark Gray Fine Grained PEAT

Atterberg Limits (ASTM D 4318)

PL= _____ LL= _____ PI= _____

Classification

USCS (D 2487)= Pt _____ AASHTO (M 145)= A-8

Coefficients

D₉₀= 1.8343 D₈₅= 1.0765 D₆₀= 0.3404
 D₅₀= 0.2692 D₃₀= 0.1675 D₁₅= 0.0754
 D₁₀= _____ C_u= _____ C_c= _____

Remarks

Sample visually classified as plastic. Sample rolled to 1/8".

Date Received: 11.19.19 Date Tested: 11.21.19

Tested By: IA / JM

Checked By: Steven Accetta

Title: Laboratory Coordinator

* (no specification provided)

Source of Sample: Composites Date Sampled: 11.15.19
 Sample Number: SS-1

Thielsch Engineering Inc. Cranston, RI	Client: GZA GeoEnvironmental Project: City Hall Ponds Dredging Project No: 19K0547
Figure 19K0547-09	

CRS

ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston RI 02910
 Tel. (401) 461-7181 Fax: (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

Company Name: **GZA**
 Contact Person: **Jennifer Burke**
 City: **Springfield** State: **MA**
 Telephone Number: **413 726 2117** FAX Number:
 Project #: **15-01667SB-00** Project Name: **City Hall Ponds Dredging**
 Address: **1350 Main St. Suite 1400** Zip Code: **01103** PO #:
 Email Address: **jennifer.burke@gza.com**

ESS Lab # **19K0547**
 Reporting Limits: **MA WQC (S401); Check SDX Rule for TCLP on metals**
 Electronic Deliverables: Data Checker Excel need client OK to run
 Other (Please Specify -->) **PDF**

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID	Analysis	TAC	THC	GRAIN SIZE (4, 10, 40, 100, 200)	METALS (As, Cd, Cr, Cu, Pb, Zn)	TOC (Aspirator)	DETERMINATION OF PCB (CONDENSATE)	% WATER (2540G)	SOIL (MARBET)	PAH (SIM)
1	11/15/19	9:20	Grab	Sed	SS-7	X	X								
2		9:30	↓		SS-6	X	X								
3		9:40	Comp		SS-7&6			X	X	X	X	X	X	X	X
4		10:25	Grab		SS-5	X	X								
5		10:40	↓		SS-4	X	X								
6		10:50	Comp		SS-5&4			X	X	X	X	X	X	X	X
7		12:45	↓		SS-3	X	X	X	X	X	X	X	X	X	X
8		12:10	↓		SS-2	X	X	X	X	X	X	X	X	X	X
9		11:50	↓		SS-1	X	X	X	X	X	X	X	X	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 **AG/T/V**
 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* **7/8/10**
 Preservation Code: 1-Non Preserved 2-HCl 3-H2SO4 4-HNO3 5-NaOH 6-Methanol 7-Na2S2O3 8-ZnAc2, NaOH 9-NH4Cl 10-DI H2O 11-Other* **1/6/10**
 Number of Containers per Sample: **3/4/17**

Laboratory Use Only
 Cooler Present: Drop Off:
 Seals Intact: Pickup:
 Cooler Temperature: **0.3 °C**

Sampled by: **Nolan Forda**
 Comments: Reserve samples for future testing (may need TCLP) - please contact client if TCLP 401 thresholds exceeded
 Detection limits must meet MA 401 WQC, Air AQ as req'd F-NOTE 9060 for TOC

Relinquished by: (Signature, Date & Time) **Forda 11/18/19 15:03** Received By: (Signature, Date & Time) **[Signature] 11/18/19 15:03**
 Relinquished by: (Signature, Date & Time) **[Signature] 11/18/19 18:13** Received By: (Signature, Date & Time) **[Signature] 11/19/19 14:30**
 Relinquished by: (Signature, Date & Time) **[Signature] 11/18/19 18:13** Received By: (Signature, Date & Time) **[Signature] 11/19/19 14:30**

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GZA - Springfield, MA - GZA/MM

ESS Project ID: 19K0547
 Date Received: 11/18/2019
 Project Due Date: 11/25/2019
 Days for Project: 5 Day

Shipped/Delivered Via: ESS Courier

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: 0.3 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 *with notes*
~~low level vials~~

LL VOA Vials frozen by client not out of hold 11/27/19 LLB

11. Any Subcontracting needed? Yes / No
 ESS Sample IDs: _____
 Analysis: _____
 TAT: _____

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: _____
 b. Low Level VOA vials frozen: _____

Date: 11/15/19 Time: 1920 By: [Signature]
 Date: ~~11/15/19~~ Time: ~~1920~~ By: ~~[Signature]~~
 Client 11/27/19 LLB

Sample Receiving Notes:

~~No indication low level vials frozen~~ N/A 11/27/19 LLB

14. Was there a need to contact Project Manager? Yes / No *with notes*
 a. Was there a need to contact the client? Yes / No
 Who was contacted? Jennifer Burke Date: 11/21/19 Time: _____ By: LLB

LL VOA vials frozen by client on 11/15/19

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
01	413415	Yes	NA	Yes	VOA Vial - Other	Other	
01	413416	Yes	NA	Yes	VOA Vial - Other	Other	
01	413423	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
02	413413	Yes	NA	Yes	VOA Vial - Other	Other	
02	413414	Yes	NA	Yes	VOA Vial - Other	Other	
02	413422	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
03	413536	Yes	NA	Yes	Driller Jar	NP	
03	413549	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
03	413550	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
03	413551	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
04	413411	Yes	NA	Yes	VOA Vial - Other	Other	
04	413412	Yes	NA	Yes	VOA Vial - Other	Other	
04	413421	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
05	413409	Yes	NA	Yes	VOA Vial - Other	Other	
05	413410	Yes	NA	Yes	VOA Vial - Other	Other	
05	413420	Yes	NA	Yes	VOA Vial - Methanol	MeOH	
06	413535	Yes	NA	Yes	Driller Jar	NP	
06	413546	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
06	413547	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
06	413548	Yes	NA	Yes	8 oz. Jar - Unpres	NP	
07	413407	Yes	NA	Yes	VOA Vial - Other	Other	
07	413408	Yes	NA	Yes	VOA Vial - Other	Other	
07	413419	Yes	NA	Yes	VOA Vial - Methanol	MeOH	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: GZA - Springfield, MA - GZA/MM

ESS Project ID: 19K0547

Date Received: 11/18/2019

07	413534	Yes	NA	Yes	Driller Jar	NP
07	413543	Yes	NA	Yes	8 oz. Jar - Unpres	NP
07	413544	Yes	NA	Yes	8 oz. Jar - Unpres	NP
07	413545	Yes	NA	Yes	8 oz. Jar - Unpres	NP
08	413405	Yes	NA	Yes	VOA Vial - Other	Other
08	413406	Yes	NA	Yes	VOA Vial - Other	Other
08	413418	Yes	NA	Yes	VOA Vial - Methanol	MeOH
08	413533	Yes	NA	Yes	Driller Jar	NP
08	413540	Yes	NA	Yes	8 oz. Jar - Unpres	NP
08	413541	Yes	NA	Yes	8 oz. Jar - Unpres	NP
08	413542	Yes	NA	Yes	8 oz. Jar - Unpres	NP
09	413403	Yes	NA	Yes	VOA Vial - Other	Other
09	413404	Yes	NA	Yes	VOA Vial - Other	Other
09	413417	Yes	NA	Yes	VOA Vial - Methanol	MeOH
09	413532	Yes	NA	Yes	Driller Jar	NP
09	413537	Yes	NA	Yes	8 oz. Jar - Unpres	NP
09	413538	Yes	NA	Yes	8 oz. Jar - Unpres	NP
09	413539	Yes	NA	Yes	8 oz. Jar - Unpres	NP

2nd Review

Were all containers scanned into storage/lab?

Initials mm

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: 11/18/19 1908

Reviewed

By: [Signature]

Date & Time: 11-18-19 1918

Delivered

By: [Signature]

Date & Time: 11-18-19 1918

ESS Laboratory

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 185 Frances Avenue, Cranston RI 02910
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time: 5 Days
 Regulatory State: MA
 Is this project for any of the following?:
 CT RCP MA MCP RGP

ESS Lab # 19K0547
 Reporting Limits MA WQC (S401); Check 20x Rule for TCLP on metals
 Electronic Data Checker Excel need client OK to run
 Deliverables Other (Please Specify ->) PDF

Company Name: GZA
 Contact Person: Jennifer Burke
 City: Springfield State: MA
 Project #: 15.016675800 Project Name: City Hall Ponds Dredging
 Address: 1350 Main St., Suite 1400
 Zip Code: 01103 PO #:
 Email Address: jennifer.burke@gza.com

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID
1	11/15/19	9:20	Grab	Sed	SS-7
2		9:30	↓		SS-6
3		9:40	Comp		SS-7&6
4		10:25	Grab		SS-5
5		10:40	↓		SS-4
6		10:50	Comp		SS-5&4
7		12:45	↓		SS-3
8		12:10	↓		SS-2
9		11:50	↓		SS-1

Analysis	VOC - HIGH	VOC - LOW	GRAN SIZE (4, 10, 40, 100, 200)	METALS (As, Cd, Cr, Cu, Pb)	TDC (9060)	PESTICIDES	PCB (CONGENER)	% WATER (2540G)	EPH (MA-DEP)	PAH-SIM
	X	X								
	X	X								
			X	X	X	X	X	X	X	X
	X	X								
	X	X								
			X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X	X	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
 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 Containers per Sample: 3/4/7

Laboratory Use Only
 Cooler Present: Drop Off
 Seals Intact: Pickup
 Cooler Temperature: 0.3 °C

Sampled by: Nolan Forda
 Comments: Reserve samples for future testing (may need TCLP) - please contact client if TCLP 401 thresholds exceeded
 Detection limits must meet MA 401 WQC, air dry as read F-NOTE 9060 for TDC

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
<i>[Signature]</i> 11/18/19 18:13	<i>[Signature]</i> 11/18/19 15:03	<i>[Signature]</i> 11/18/19 15:03	<i>[Signature]</i> 11/18/19 15:03

Dried samples added 11/20/19 - PRB

ESS Laboratory

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 185 Frances Avenue, Cranston RI 02910
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time: 5 Days
 Regulatory State: MA
 Is this project for any of the following?:
 CT RCP MA MCP RGP

ESS Lab # 19K0547
 Reporting Limits MA WQC (S401); Check 20x Rule for TCLP on metals
 Electronic Data Checker Excel need client OK to run
 Deliverables Other (Please Specify -> PDF

Company Name: GZA
 Contact Person: Jennifer Burke
 City: Springfield State: MA
 Telephone Number: 413 726 2117 FAX Number:
 Project # 15.016675800 Project Name: City Hall Ponds Dredging
 Address: 1350 Main St. Suite 1400
 Zip Code: 01103 PO #:
 Email Address: jennifer.burke@gza.com

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID
1	11/15/19	9:20	Grab	Sed	SS-7
2		9:30	↓		SS-6
3	10	9:40	Comp		SS-7&6 Dried
4		10:25	Grab		SS-5
5		10:40	↓		SS-4
6	11	10:50	Comp		SS-5&4 Dried
7	12	12:45	↓		SS-3 Dried
8	13	12:10	↓		SS-2 Dried
9	14	11:50	↓		SS-1 Dried

Analysis	VOC HIGH	VOC LOW	CHLORIDE (4.10-40.00)	DETAILED METALS (Ag, Al, As, Ba, Cd, Cr, Cu, Fe, Pb, Zn)	TDC (9000)	PESTICIDES	NOAA PCB (CUNDEMER)	% WATER (25-400)	EPH (MARDER)	PART SIM
	X	X								
	X	X								
			X	X	X	X	X	X	X	X
	X	X								
	X	X								
			X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X	X	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 A6/V/V
 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* 7/8/10
 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* 1/6/10
 Number of Containers per Sample: 3/4/17

Laboratory Use Only
 Cooler Present: Drop Off
 Seals Intact: Pickup
 Cooler Temperature: 0.3 °C

Sampled by: Nolan Forda
 Comments: Reserve samples for future testing (may need TCLP) - please contact client if TCLP 401 thresholds exceeded
 Detection limits must meet MA 401 WQC, air dry as read F-NOTE 9060 for TDC

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
<i>[Signature]</i> 11/18/19 18:13	<i>[Signature]</i> 11/18/19 15:03	<i>[Signature]</i> 11/18/19 15:03	<i>[Signature]</i> 11/18/19 15:03

Dried samples added 11/20/19 - PRB

ESS Laboratory

Division of Thielsch Engineering, Inc.
 185 Frances Avenue, Cranston RI 02910
 Tel. (401) 461-7181 Fax (401) 461-4486
 www.esslaboratory.com

CHAIN OF CUSTODY

Turn Time: 5 Days
 Regulatory State: MA
 Is this project for any of the following?:
 CT RCP MA MCP RGP

ESS Lab # 19K0547
 Reporting Limits MA WQC (5401); Check 20x Rule for TCLP on metals
 Electronic Data Checker Excel need client OK to run
 Deliverables Other (Please Specify ->) PDF

Company Name: GZA
 Contact Person: Jennifer Burke
 Project #: 15.016675800
 Project Name: City Hall Ponds Dredging
 Address: 1350 Main St., Suite 1400
 City: Springfield, State: MA
 Zip Code: 01103
 PO #:
 Telephone Number: 413 726 2117
 FAX Number:
 Email Address: jennifer.burke@gza.com

ESS Lab ID	Collection Date	Collection Time	Sample Type	Sample Matrix	Sample ID
1	11/15/19	9:20	Grab	Sed	SS-7
2		9:30	↓		SS-6
3		9:40	Comp		SS-7&6
4		10:25	Grab		SS-5
5		10:40	↓		SS-4
6		10:50	Comp		SS-5&4
7		12:45	↓		SS-3
8		12:10	↓		SS-2
9		11:50	↓		SS-1

Analysis	VOC - HIGH	VOC - LOW	GRAIN SIZE (4, 10, 40, 100, 200)	METALS (Hg, Ni, Zn, CAS, Cd, Cr, Cu, Pb)	TDC (9060)	PESTICIDES	PCB (CONGENER)	% WATER (2540G)	EPH (MA-DEP)	PAH-SIM
	X	X								
	X	X								
			X	X	X	X	X	X	X	X
	X	X								
	X	X								
			X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X	X	X	X

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 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* 1/6/10
 Number of Containers per Sample: 3/4/17

Laboratory Use Only
 Cooler Present: Drop Off
 Seals Intact: Pickup
 Cooler Temperature: 0.3 °C

Sampled by: Nolan Forda
 Comments: Reserve samples for future testing (may need TCLP) - please contact client ^{20x} if TCLP 401 thresholds exceeded
 Detection limits must meet MA 401 WQC, air dry as read F-NOTE 9060 for TDC

Relinquished by: (Signature, Date & Time)	Received By: (Signature, Date & Time)	Relinquished By: (Signature, Date & Time)	Received By: (Signature, Date & Time)
<i>[Signature]</i> 11/18/19 18:13	<i>[Signature]</i> 11/18/19 15:03	<i>[Signature]</i> 11/18/19 15:03	<i>[Signature]</i> 11/18/19 15:03

**SECTION 01720
AS-BUILT DOCUMENTS**

PART 1 - GENERAL

1.01 REQUIREMENTS

- A. In addition to the requirements of the General Conditions, the Contractor shall maintain and provide the Engineer with as-built documents as specified below.
- B. As-Built drawings of the dredging and all site restoration/site improvements.
- C. The Contractor shall contract a Massachusetts Professional Land Surveyor to conduct a post-construction bathymetric survey of the post-dredged pond bottom for use with measurement and payment of Sediment Excavation as described in Section 02210. The 2019 bathymetric survey is assumed to be the pre-construction survey of existing conditions. If desired, the Contractor may conduct their own existing conditions survey using a Professional Land Surveyor, at no additional cost to the Owner, with no extension of Project timelines. Such plan will need to be reviewed and accepted by the City prior to construction.
 - a. Contractor shall submit to the Owner the names of at least two qualified land survey firms, including field crew and office rates for the services anticipated for this Project. The City will select the firm to be used for the Project. If both are rejected for any reason by the City, the Contractor shall submit two new firms for review. The land survey firm must have a Land Surveyor with a valid Commonwealth of Massachusetts Registered Professional Land Surveyor License in responsible charge of the services provided. If requested, the land survey firm shall provide additional qualifications and references.
- D. Maintenance of Documents:
 - 1. Maintain in Contractor's field office in clean, dry, legible condition complete sets of the following: Contract Drawings, Specifications, Addenda, approved Shop Drawings, Samples, Photographs, Change Orders, other modifications of Contract Documents, Test Records, Field Orders, and all other documents pertinent to Contractor's Work.
 - 2. Provide files and racks for proper storage and easy access. File in accordance with filing format of Construction Specifications Institute (CSI), unless otherwise approved by Engineer.
 - 3. Make documents available at all times for inspection by the Engineer and Owner.
 - 4. As-built documents shall not be used for any other purpose and shall not be

removed from the Contractor's office without Owner approval.

E. Recording:

1. Keep as-built documents current. Drawings shall be updated at a minimum once per week.
2. Do not permanently conceal any Work until required information has been recorded.
3. Contract Drawings: Legibly mark to record actual construction.
4. Subsurface conditions: Record information on sub-surface conditions encountered at the site, either on the Contract Drawings, on a separate exploration log, or a combination of both.
5. Specifications and Addenda: Legibly mark up each Section.
6. Shop Drawings: Maintain as record documents and legibly annotate drawings to record changes made after review.

1.03 SUBMITTALS

- A. Contractor shall provide information regarding proposed Land Surveyor for bathymetric survey at least ten (10) days prior to procuring services.
- B. At completion of Project, but before final payment, deliver three copies of as-built documents to Engineer and Owner.

PART 2 – PRODUCTS

This Section Not Used

PART 3 – EXECUTION

- A. The Contractor shall update the As-Built Documents as work progresses.
- B. The Contractor shall utilize the land survey services as agreed for a post-construction bathymetric survey to determine the final quantity of sediment excavation, as described in these specifications. The Survey firm shall use standard survey methods from the USACE for hydrographic survey to provide cross sections and calculations for the actual quantities of sediment excavation as compared to the drawings. Survey must also include an estimation of the sediments in the two upgradient culverts within the proposed limits of work. All work shall be done in the specified datum and Mass. State Plane coordinate systems. Bathymetric survey point locations shall be arranged in a grid with a minimum of 80 points collected.

- C. Surveyor shall provide the Engineer and City with PDF and CAD files of the work (compatible with CAD 2022), showing post-construction bathymetry.
- D. Excavation beyond the proposed/original pond bottom limits indicated on the drawings shall not be measured for payment.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT FOR PAYMENT

- A. No measurement will be made of any work performed under this section.

4.02 PAYMENT

- A. Payment for the Post-Construction Bathymetric Survey, including all labor, materials, equipment, and incidentals and mobilization/demobilization costs associated with the work of this item under this Contract will be paid for at the applicable Lump Sum price for Item No. 01720.01 stated on the Form for Bid.

<u>Item No.</u>	<u>Payment Item</u>	<u>Unit</u>
01720.01	Post-Construction Bathymetric Survey	Lump Sum

- B. No separate payment shall be made for any other work performed under this section for As-Built Documents. The cost of any work done or facilities provided under this section, which are not specifically mentioned as pay items under this section, shall be included under other bid items within the Contract.

* * * END OF SECTION * * *

SECTION 01740

SITE RESTORATION

PART 1 - GENERAL

1.01 SCOPE

- A. The Work under this Section consists of all work and operations, including, but not limited to equipment, supplies, material, personnel, and incidentals to restore areas in and around the project sites to pre-construction conditions that were damaged as a result of construction activities in areas not identified for Work and associated restoration.
- B. The intent of the Work of this Section is that areas which are disturbed as a result of the overall Work of this Contract, whether intentionally or unintentionally, planned or unplanned, are restored to at or better than their conditions prior to the start of work. The Scope of Work under this Section includes all work necessary to repair damage to the Site beyond those areas shown as areas to be disturbed on the Contract Drawings. This includes all disturbed/damaged areas not identified for separate restoration and payment.
- C. The Contractor shall avoid and minimize indirect construction impacts to the Site and surrounding areas to the maximum extent possible. The Site and surrounding areas shall be protected, as needed and as provided for under other Sections of the Contract. The Contractor shall develop a plan to protect the Site and inform and educate his forces regarding protective measures to be implemented.

1.02 DOCUMENTATION OF EXISTING CONDITIONS

- A. Site access and allowable work and staging areas are designated on the Drawings.
- B. Underground utilities may exist beneath the pavement, or adjacent to the roads and staging areas, and other areas of the Project Site. Disruption of service will not be permitted without prior approval from the City. Overhead wires are present alongside Stanley Street.
- C. Prior to the start of work, the Contractor, together with the City and the Engineer, shall document the pre-construction conditions of those areas which might be disturbed by the Work of the Contract. This documentation, in the form of photographs, video tapes, and written documentation shall be provided by the Contractor to the City. This documentation will be used to determine the extent to which post-construction site restoration shall be needed. This will be conducted under Section 01900 – Mobilization/Demobilization.

1.03 PROTECTION OF EXISTING FEATURES

The Contractor shall protect the Project Site and adjacent areas from damage by construction activities and thereby minimize the extent of work to be done under this Section. Site protection will be paid for under the Scope of Section 01500 – Temporary Facilities and Controls and Construction Access.

1.04 SUBMITTALS

- A. The Contractor shall submit a pre-construction site documentation package to the City under Section 01900 – Mobilization/Demobilization.
- B. The Contractor shall submit information for all site restoration methods and materials to be used in restoring site conditions.

1.05 RELATED SECTIONS

- A. Construction Facilities and Temporary Controls: Section 01500
- B. Temporary Sediment and Erosion Controls: Section 01560
- C. Temporary Water Control: Section 01565
- D. Mobilization/Demobilization: Section 01900
- E. Site Preparation and Demolition: Section 02065
- F. Construction Access: Section 02080
- G. Temporary Cofferdams: Section 02170
- H. Stone and Rockfill: Section 02270
- I. Paving and Resurfacing: Section 02500
- J. Landscape Work: Section 02970

PART 2 – PRODUCTS

Products used in Site Restoration shall meet the requirements of the applicable Section of the Contract Documents. If work similar to the nature of the necessary site restoration is not specified elsewhere in the Contract Documents, the applicable section of the Standard Specifications shall control. Materials for restoration of utilities shall meet with the standards of the City or the utility to be restored.

PART 3 – EXECUTION

3.01 GENERAL

The Work required and services for site restoration shall be done in a safe workmanlike manner and shall conform to any pertinent local or state laws, regulations or codes. Good housekeeping consistent

with safety shall be maintained. The Contractor shall be responsible for all necessary permits and approvals.

3.02 PRE-CONSTRUCTION SITE DOCUMENTATION

Prior to the start of work at the site, the Contractor shall coordinate with the City and the Engineer to perform a pre-construction site walk for the purposes of documenting conditions prior to disturbance by the Contractor's forces and equipment. A representative from the City and the Engineer shall accompany the Contractor during the site walk, but it shall be the Contractor's sole responsibility to properly document existing conditions in all areas which might be subject to disturbance. The Contractor shall utilize photographs, video, written descriptions, sketches, and any other means to document pre-construction conditions. The Contractor shall supply the City with one copy each of the documentation, including both hard copies and digital files, as appropriate as the Pre-Construction Documentation Package. The City alone shall be empowered to make decisions about the pre-construction condition of areas not covered by the Contractor's documentation. The Pre-Construction documentation is covered under Section 01900 – Mobilization/Demobilization.

3.03 RESTORATION METHODOLOGY

Means of Site Restoration shall meet the requirements of the applicable Section of the Contract Documents. If work similar to the nature of the necessary site restoration is not specified elsewhere in the Contract Documents, the applicable section of the Standard Specifications shall control. Proper sediment, erosion, and water control shall be provided, as needed, at no additional cost.

3.04 RESTORATION OF PAVED AREAS

- A. The Contractor shall repair any damage to paved roadways, driveways, walkways, or parking areas caused during the course of construction, in order to return the pavement to pre-construction condition or better.
- B. Paved areas which may require repair include, but are not limited to areas within the park and all surrounding roadways and sidewalks.
- C. Restoration of paved areas shall be done with similar materials and paving characteristics. Work shall be completed in accordance with the City's applicable requirements or the Standard Specifications.
- D. The City will determine the appropriateness of proposed restorations (e.g. spot patching, full depth repaving, etc.). The level of repair required will be commensurate with the degree of damage caused by the Contractor's actions or omissions. Paving section shall at a minimum be equivalent to the typical paving section shown on the Drawings or City Standards.

3.05 RESTORATION OF VEGETATED AREAS

- A. The Contractor shall restore all disturbed vegetated areas within and beyond the indicated limits of work of this Contract. Restoration shall include, but not be limited to, loam placement, regrading, seeding, re-sodding, mulching, and maintenance.
- B. Contractor restoration of damaged areas shall be to pre-construction condition or better. Loaming, seeding or sodding, and revegetation of areas which are shown on the plans as being filled, excavated, or graded shall be paid for under a separate Section of the Contract (Section 02970). Loaming, seeding, and revegetation of areas disturbed by construction traffic, trailer placement, material stockpiling, etc. or any activity outside designated areas of the Work shall be paid for under the pay item for this Section.
- C. The Contractor shall maintain and care of all restored vegetated areas until establishment.

3.06 TREES AND SHRUBS

- A. The Contractor shall prune and take all other actions necessary to repair construction-related damage to trees and/or shrubs which are shown to remain in place or are outside of the construction areas.
- B. Shrubs or other plantings damaged by the Contractor shall be replaced in-kind.
- C. The Contractor shall consult with a qualified arborist if restoration work on large trees is necessary.
- D. The Contractor shall hire a certified arborist to perform restoration work on large trees, if judged necessary by the City.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT FOR PAYMENT

No separate measurement will be made for Work under this Section.

4.02 PAYMENT

- A. No separate payment will be made for any work performed under this section. The cost of any work or facilities provided under this section shall be included under other bid items within the Contract or shall be considered incidental to the general work of the Contract.

*** * * END OF SECTION * * ***

SECTION 01900
MOBILIZATION/DEMobilIZATION

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. Contractor shall provide all labor, materials, and equipment necessary for the movement of personnel, materials, and equipment to the project site, and for the establishment of all Contractor's field offices and other facilities necessary to the performance of the work and their removal at the completion of work. This Section also includes the costs of Bonds/Fees/Licenses/Insurance, etc. that are required of the Contractor to perform the work.
- B. The Work under this Section consists of the Contractor's preparatory work and operations, including, but not limited to transporting equipment, supplies, personnel and incidentals to and from the work site, and all other operations which must be performed or for costs which must be incurred prior to commencement of the Work.
- C. Work under this Section includes all work, services, equipment, and other incidental items, whether specifically mentioned herein or not, to perform similar tasks at the work site at the conclusion of the Work, in order to restore the site to its intended condition and remove all items which are not a permanent part of the work from the site, and to leave the site in a clean and orderly manner as directed by the Owner.
- D. The Work of this Section includes any potential work, labor, equipment, and other expenses necessary for emergency protection of, demobilization from, and remobilization to the project site in the event of heavy rains, increased flows, and/or high water levels which cause the inundation of the job site or other weather-related conditions which temporarily restrict access to the work areas.
- E. The Work of this Section includes all work, services, equipment materials, supplies, personnel, and other incidental items necessary for the adequate and appropriate documentation of the existing structures and facilities at the site and the condition of said structures and facilities prior to the start of Construction at the site. Prior to the start of work, the Contractor shall document the pre-construction conditions of those areas which might be disturbed by the Work of the Contract. This documentation, in the form of photographs, video tapes, and written documentation shall be provided to the Owner. This Work is intended to establish and document site conditions and provide a basis for restoration requirements.
- F. The Work of this Section includes the provision, installation, inspection, maintenance, and removal of all temporary facilities and controls necessary for the Contractor to successfully complete the Work of this Contract in accordance with the Drawings, Specifications, Permits, and all applicable local, state, and Federal laws and regulations and not specified in other Sections.
- G. The Work of this Section includes all work and operations, including, but not limited

to equipment, supplies, material, personnel, and incidentals for site preparation as well as the dismantling, relocation, demolition, removal, and lawful off-site disposal of certain existing materials at the site.

- H. The Work of this Section includes all work and operations, including, but not limited to equipment, supplies, material, personnel, and incidentals for site restoration work not specified elsewhere to restore all disturbed areas in and around the project site to pre-construction conditions, including all areas disturbed or damaged by the Contractor.
- I. The Work of this Section includes the provision, which may be the services of a Registered Land Surveyor (RLS), or a competent person designated as the surveyor by the Contractor, to provide site layout, control points, temporary and permanent benchmarks, and other similar work, including maintenance and preparation of complete and accurate As-Built Drawings and providing three hard copies of complete As-Builts to the Engineer and Owner at the conclusion of the work. The As-Built Drawings shall be continuously updated by the Contractor's on-site superintendent. The As-Built Drawings shall conform with the specifications described in Section 01720.
- J. The Work of this Section includes any potential work, labor, equipment, materials, labor, and other expenses necessary for emergency protection of, demobilization from, and remobilization to the project site in the event of heavy rains, increased flows, and/or high water levels which cause the inundation of the job site or other weather-related conditions which temporarily restrict access to the work areas.
- K. The Work of this Section shall also include an Engineer's Discretionary Fund Allowance to cover unforeseen circumstances related to the Work. This Allowance will only be used for Work recommended by the Engineer and approved by the City in advance.

1.02 DEMOBILIZATION / REMOBILIZATION DUE TO INCLEMENT WEATHER

The Work of this Contract will take place along and in City Hall Ponds. Portions of this Work will require personnel and equipment to be located in or adjacent to areas typically subject to water flow. This work will require diligent surface water and groundwater control efforts. Certain weather conditions (such as an extended period of heavy rainfall and/or a weather event such as a hurricane) could cause a significant rise in the water level of the river, which may potentially inhibit proposed work.

The Contractor's responses to weather events are the Contractor's responsibility and no extra payment shall be made. The Contractor shall make provision for contingencies to deal with inclement weather, the cost of which shall be incidental to other pay items. In the event of rising waters and increasing flow, the Contractor shall protect their work, including removal of personnel and equipment from potentially affected areas. The Contractor may have to demobilize from the potentially affected areas on a temporary basis. Prior to leaving the area, the Contractor shall protect completed Work and Work in progress and remove all equipment and materials from areas with the potential for inundation. The Contractor shall be solely responsible for any loss or damage to their Work, equipment, or material. After water

levels/flows have receded, the Contractor shall remobilize to the site at no additional cost. Remobilization will include all effort required to restart the Work.

To reduce the chance of high water levels / flows affecting the Work, the Contractor is urged to pay particular attention to weather forecasts for the area and to schedule work in vulnerable areas for periods which are anticipated to be relatively dry. The Contractor shall sequence their work in such a manner as to reduce the potential for inundation of the work areas.

1.03 EXISTING CONDITIONS

Portions of the Project Site are located within the culverts entering City Hall Ponds, which is impounded on the property of the City. The Work of the Contract will involve temporary water control measures installed to protect the Work. The City does not typically control flows entering City Hall Ponds. The Contractor shall design their temporary water control measures or work plan to accommodate for rapid rising of water levels. Appropriate water safety precautions shall be provided by the Contractor as per OSHA regulations as needed for work in and around the brook.

Possible contractor staging areas are noted on the Drawings. The Contractor shall mark and maintain all existing structures and utilities within the staging area and the work areas before, during, and after the course of work. Contractor shall notify Dig Safe® and all appropriate entities required by the permits issued for the project prior to commencing work.

Access into the project area is off public ways. Contractor shall protect the surfaces of the surrounding roadways and existing gravel and paved surfaces used to access the pond and work areas within the surrounding park.

The Contractor shall provide working platforms/ramps, cribbing, shoring, matting, and all other specialized support equipment required to ensure safe access of all personnel, equipment and materials necessary for completion of the work of this Contract in accordance with the Specifications and Drawings.

1.04 SUBMITTALS

A. Contractor shall submit a pre-construction existing conditions documentation package to the Owner.

1.05 RELATED SECTIONS

- A. Summary of Work: Section 01010
- B. Construction Facilities and Temporary Controls: Section 01500
- C. Temporary Erosion and Sedimentation Controls: Section 01560
- D. Temporary Water Control: Section 01565
- E. As-Built Documents: Section 01720
- F. Site Restoration: Section 01740
- G. Earthwork: Section 02200

- H. Paving and Resurfacing: Section 02500
- I. Landscape Work: Section 02970

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

3.01 GENERAL

- A. The work required to provide the above facilities and services shall be done in a safe and workmanlike manner and shall conform with all pertinent local, state, or federal law, regulation, or code. Good housekeeping consistent with safety shall be maintained. Staging area for the Contractor's use has been designated. It is required that the Contractor fence all work areas for safety. All staging areas must be restored at the completion of the project and all Contractor-installed temporary fencing removed.

3.02 PRE-CONSTRUCTION SITE MEETING

- A. A meeting with the City (and/or their Representative) and the Engineer will occur prior to the beginning of any work at the Site. During this meeting, the Contractor will become familiar with the Site, including working conditions, existing access, and access restrictions. During this meeting, the final location of laydown and access will be discussed, and confirmation that the appropriate notifications and clearances (e.g. Dig Safe® and City of Newton, etc., as applicable) have been executed.

PART 4 - COMPENSATION

4.01 MEASUREMENT FOR PAYMENT

- A. No measurement for Mobilization and Demobilization shall be made of any work performed under this section. The bid item for Mobilization and Demobilization is a Lump Sum quantity.
- B. Work for the Engineer's Discretionary Fund will be measured as applicable to individual work items approved by the City under the Allowance.

4.02 PAYMENT

- A. Payment for Mobilization and Demobilization costs associated with the work of the contract will be paid for based on the Lump Sum price stated for Item No. 01900.01 on the Form for Bid. Mobilization/demobilization costs for all work under the Contract not

specifically addressed on the Form for Bid will be considered incidental, and the costs for such will be included as part of the work of that Section (and included in the respective Form for Bid Lump Sum price items) and/or as part of the work of this Contract. The bid price for Mobilization and Demobilization shall not exceed five percent (5%) of the total contract bid price. No payment will be made for any temporary mobilization/demobilization due to inclement weather.

B. Partial payments for Mobilization and Demobilization will be provided as follows: Sixty percent (60%) of lump sum bid price upon completion of mobilization. Following the satisfactory completion of work, forty percent (40%) of lump sum bid price will be paid upon completion of demobilization.

C. Engineer's Discretionary Fund Payment is an Allowance as indicated on the Bid Form. This Allowance shall not be used, except as recommended by the Engineer or City and as approved by the City for unforeseen circumstances. Payment will not be made for any work not approved with a negotiated price in advance of the Work.

<u>Item No.</u>	<u>Payment Item</u>	<u>Unit</u>
01900.01	Mobilization and Demobilization	Lump Sum
01900.01	Engineer's Discretionary Fund	Allowance, up to \$100,000

* * * **END OF SECTION** * * *

**SECTION 01950
MEASUREMENT AND PAYMENT**

PART 1 - GENERAL

1.01 PAY ITEMS AND UNITS

- A. The payment items for the Work of this contract will be as shown on the Bid Form (also referred to as Form of Bid). Pay items will have the corresponding unit of measurement for the Work of that item, as shown on the Bid Form. Payment for all pay items will be at the corresponding price shown on the Bid Form.

1.02 GENERAL

- A. The Bid Form has an entry for each item on which payment will be made. No other allowance of any kind will be made unless specifically provided/stipulated in the Contract.
- B. Each unit and lump sum price stated on the Bid Form will constitute full compensation as specified herein for each item of work complete in accordance with the Contract Drawings and Specifications. The unit and lump sum price will be inclusive of the full scope of the work for each item, including all labor, tools, materials, transportation, equipment, incidentals, mobilization/demobilization, and any other costs necessary to complete the work of the bid item.
- C. The Specifications are arranged in separate divisions which are further broken down into sections. The unit prices for various items include all work in a particular division and shall include all sections of that particular division.

1.03 LUMP SUM QUANTITIES

No measurement will be made of work, materials, or other quantities involved in provision or construction of pay items listed on the Bid Form as being Lump Sum quantities. Payment for the scope of the work specified for each Lump Sum pay item will include all labor, tools, materials, equipment, fuel, supplies, overhead, profit, and incidentals.

1.04 GUARANTEE AND WARRANTY

- A. The Contractor guarantees all equipment against defective materials and workmanship for a period of one year from the date of Final Acceptance, unless otherwise specified, and shall provide in his purchase orders with the suppliers that they agree to guarantee all equipment against defective materials and workmanship for a period of one year from the date of Final Acceptance or such longer period as may be specified. During the maintenance and guarantee period, the suppliers shall be responsible to the Contractor to promptly repair, replace, restore, or rebuild, as the City may determine, any

furnished equipment in which defects of materials or workmanship may appear or to which damage may occur because of such defects. The Contractor shall also submit to the City a certified copy of the Supplier's Guarantee for the equipment furnished against defective materials and workmanship prior to receiving any payment, which Guarantee shall also include the City as a guaranteed party.

1.05 MEASUREMENT OF VOLUMETRIC QUANTITIES

- A. The following methodologies shall be employed in the determination of quantities for the earthwork and other items with unit prices shown as being measured volumetrically (by the cubic yard or cubic foot) for payment. Determination of actual quantities shall be made by the Contractor and reviewed by the City and Engineer. The Contractor shall provide the City and its Engineer with all information, data, documentations, and calculations used to compute quantities. In the event of a discrepancy between the quantity computed by the Contractor and the Engineer, the Contractor and the Engineer shall meet in an effort to resolve the discrepancy. If no resolution is obtained, the dispute will be handled as per the terms of the Contract.
- C. For work subject to unit prices, the Contractor, accompanied by the Engineer shall take measurements of the dimensions (height, width, depth) of the Work. Measurements shall be made using a convenient and accurate method such as tape, level, transit, etc. Measurements shall be made at a minimum of every 50 feet, or more frequently if judged necessary. Excavation volumes shall be measured prior to the start of refill. The volume of excavation shall be determined by geometrically computing the area at each section and using average end area measurement.
- D. Volumes for fill materials shall be computed in a similar manner. Dimensions shall be taken from the top of the subgrade to the top of the material being measured. In the case of material placed in layers of uniform thickness, the volume may be computed based on area coverage multiplied by the layer thickness. Layer thickness used in calculating in-place material volume shall be the lesser of the measured in-place thickness of the specified minimum layer thickness as required in the Drawings and Specifications. No extra payment shall be made for excess materials placed at the Contractor's convenience.
- E. For all materials brought from off-site, the Contractor shall provide copies of all bills of lading from trucks delivering the materials to the site. This information shall not be used for quantity calculations (except as provided above), but may be used to support review of in-place quantity calculations.
- F. For sediment, measurement is as described in Section 02210. Contractor's surveyor shall provide cross sections and a 3D surface in AutoCAD format for comparison to the pre-construction bathymetry surface for calculation of sediment quantities in-place. Dredging quantities are for in-place volume of sediment excavated and removed from the site for offsite sediment management/disposal.

1.07 MEASUREMENT OF WEIGHT QUANTITIES

- A. For all materials brought from off-site or transported offsite for disposal, the Contractor shall provide copies of all Certified weight slips from trucks delivering the materials to the site. The Contractor must also attest that the material having been delivered to the site was actually utilized in the works.

1.08 INCIDENTAL WORK

- A. The Contractor shall perform all work and pay all costs of cutting, protecting, supporting, maintaining, relocating and restoring all surface, sub-surface, or overhead structures, and all other property, including pipes, conduits, ducts, tubes, channels and appurtenances, public or private, in the vicinity and at the site of the work (except such which by law, franchise, permit, contract, consent or agreement the owner thereof is required to protect, support, maintain, relocate or restore), repairing the same if damaged and restoring to their original condition all areas disturbed. The Contractor shall do all work and pay all costs of protecting, supporting, maintaining, relocating, replacing and restoring all property and equipment owned by the City and/or adjacent public and private properties, roads, and structures. No measurement or payment shall be made for incidental work.

1.09 PROGRESS PAYMENTS

- A. Progress payments will be made as per the Payment Provisions of the Contract Provision. Progress payments shall be made monthly, on the basis of work completed and/or the percentage of work completed.

1.10 RETAINAGE

- A. A retainage from each invoice shall be made by the City as per the Payment Provisions of the Contract Provision until final completion and acceptance of all work covered by this contract.

PART 2 - PRODUCTS

Not Used

PART 3 - EXECUTION

3.01 MEASUREMENT OF UNIT PRICE ITEMS

- A. Measurements shall be made jointly by the Contractor and the City/Engineer. The Contractor and Engineer shall together make the relative measurements and jointly record the appropriate quantity. In the event of a discrepancy or disagreement, the

Contractor and Engineer shall immediately take action to reconcile the quantity measurement. Quantity measurements made in the absence of the Engineer may be subject to rejection by the City.

- B. Linear and area measurements shall be made with a tape pulled parallel to the feature being measured.
- C. Volume measurements shall be made with a tape to determine the area and general height (or depth) of the volume being measured. In the event that a shape is irregular, "average end" method shall be used to compute the volume.
- D. All volume measurements, including for excavation and fill placement, shall be made "in place."
- E. All weight measurements shall be based on the net weight of materials delivered to the site or removed from the site and disposed of, as per certified scale slips which accompany the delivery or transport vehicle.

PART 4 - MEASUREMENT AND PAYMENT

- A. No measurement shall be made of any work performed under this section. No separate payment shall be made for any work performed under this section. The cost of any work done or facilities provided under this section shall be included under other bid items within the Contract.

*** * * END OF SECTION * * ***

SECTION 02065

SITE PREPARATION AND DEMOLITION

PART 1 – GENERAL

1.01 DESCRIPTION

- A. This Section describes the general parameters and requirements for the dismantling, relocation, demolition, removal, and lawful off-site disposal of certain existing materials and structures at the Project Site.
- B. The Work of this Section shall also include temporary removal, handling, and storage of existing items which may be re-constructed at the same location or elsewhere as part of the final project configuration.
- C. The Work of this Section shall also include the replacement and/or reconstruction in the original or new location of certain elements which were removed during the work and are to be restored in-kind at the Site such as chain link fencing/posts.
- D. The Work of this Section shall also include all necessary clearing and grubbing operations, stripping and stacking of topsoil, vegetation removal and razing, removal and disposal of all pavements, structures, or other obstructions to the work, except operating utilities and those items for which other provisions have been made for removal/protection at any of the above sites. Unless specified for reuse or delivery to the Owner, all materials shall become property of the Contractor and shall be legally disposed of offsite. Disposal of all trees, branches, snags, brush, stumps, etc. resulting from clearing/grubbing shall be the responsibility of the Contractor and shall be disposed or by removal from the Site to a legal disposal area. Debris removal and disposal for non-sediment materials within the pond is covered under Section 02210 – Sediment Excavation. No onsite burning allowed.
- E. Attention is brought to the requirement for buffer area topsoil to be stockpiled separately from access road topsoil per permit requirements for the Project. Topsoil replaced in buffer areas prior to access to the pond will be replaced with buffer area topsoil only.
- F. The Contractor shall obtain all necessary permits, including local, state, and federal permits, coordinate all required inspections with appropriate agencies and conduct all work in accordance with all local, state, and federal rules, regulations, and guidance.
- G. No soil disturbing or otherwise intrusive work shall be performed prior to the installation of appropriate measures for the control or erosion and sedimentation and applicable approvals.
- H. If necessary, the scope of this item shall also include all Work, materials, labor, and other costs associated with the design, installation, and removal of any temporary earth support

systems, excavation, rigging systems, containment systems, or other means and methods required during dismantling, demolition, and/or removal of existing structures.

- I. Work in this section also includes providing, installing, maintaining, adjusting and removal of temporary traffic and pedestrian access controls as necessary.

1.02 SCOPE OF WORK

The general scope of work shall be to prepare the Site for construction of the project by removing certain existing structures and materials from the site and other incidental site preparation work. Certain identified items shall be removed intact for later replacement or reuse. Erosion and sedimentation controls shall be installed prior to the initiation of demolition activities described herein.

- A. The Contractor shall verify on site, the location and depth (elevation) of all utilities and services before excavation. Contractor shall call Dig Safe[®] a minimum of 72 business hours prior to any excavation operations.
- B. Coordinate with Parks Department regarding irrigation system onsite to identify locations that will be impacted by the Work and require replacement and to identify whether system needs to be shut off during construction. Protect existing irrigation system to extent possible during construction. Repair/replacement of irrigation system components affected by construction is addressed in the Specifications.
- C. Clear trees and vegetation as identified on the Drawings for construction of temporary and permanent access roads and protect existing trees/vegetation from impacts due to construction. Before clearing, mark access route and vegetation to be cleared and coordinate with City and Conservation Commission on materials to be transplanted. Adjust final access location as requested by City or its agents. Perform transplanting prior to other vegetation removal. Section 02970 addresses transplanting.
- D. Buffer area topsoil shall be segregated and stockpiled separately from other access road topsoil and shall be reused in buffer areas post-construction for restoration of these areas.
- E. Install tree protection as shown on Drawings and/or as directed by City or Conservation Commission.
- F. Protect existing pavements, stone dust paths, footbridges, and other walkways that may be disturbed by construction activities and repair/replace to original condition or better at the conclusion of construction activities. Note that footbridges are historical features and no equipment may pass over them during the construction process. Temporary removal, storage, and resetting of boulders for pond access is also included in this work.
- G. Remove existing edging and stone dust from walkways and potential unsuitable sub-grade materials from the Site associated with walkway reconstruction.

1.03 GENERAL

- A. Some portions of the Work of this Section include the careful removal and temporary storage of existing items and subsequent restoration or reuse following the completion of work. In such cases where structures or material are removed for later restoration, the work of this Section includes the safe storage of the items, either on or off site. The Contractor shall provide for the care and protection of the items until they are replaced and the work completed. Existing boulders removed from the pond edge for temporary access roads shall be limited to only those needed for access. They shall be photo documented in place, numbered, and identified on a sketch map and removed and maintained onsite for replacement at the same locations, post-construction. These boulders are historic features of the original Olmsted park and restoring them to their former locations is important to the Work.
- B. For items which are to be preserved, relocated, reset, or reconstructed, the Contractor, with prior approval of the Owner, may elect to demolish the existing item and replace it in-kind with an approved equal item.
- C. The removal and disposal of all miscellaneous debris found at the job site, including timber, trash, wood chips, mulch, and other materials, above and below grade shall be considered incidental to the other pay items in this or other Sections of the Work. Useable materials specifically requested to be salvaged by the Owner shall be relocated within the staging area or elsewhere on site by the Contractor, as requested by the Owner. All other material becomes property of the Contractor and must be lawfully disposed of off-site.

1.04 EXISTING CONDITIONS

- A. The Contractor's attention is brought to the fact that the work of this Contract is located adjacent to, and in wetland resource areas and as such, control and diversion of water and sedimentation protection activities must be coordinated with any demolition activities in order to protect the adjacent waterbodies and wetland resource areas and in accordance with the requirements in Section 01565 – Temporary Water Control.
- B. All construction sites may be subject to flooding at any time. The Contractor shall evacuate the potential flood areas of equipment and materials in anticipation of imminent flooding to avoid damage and loss from flooding.
- C. The Contractor shall acknowledge that the Site has utilities and drain lines along and within the pond that may be encountered and that require protection. Contractor shall replace/repair any utilities damaged during the course of the work.

1.05 DESIGN CRITERIA

- A. All excavations shall be performed in accordance with OSHA requirements.

Excavation support shall be provided as necessary in accordance with the requirements of Section 02200 - Earthwork.

- B. Debris resulting from demolition activities shall be segregated and recycled to the greatest extent possible. Salvage value accrues to the Contractor, except in cases where material is specifically reserved by the Owner. Material that the Owner does not specify to be reused or salvaged for the Owner becomes property of the Contractor.
- C. Material salvaged for the Owner or for later replacement/restoration at the Site by the Contractor shall be handled with care so as not to damage the material. Material salvaged for reuse that is damaged by the Contractor shall be repaired or replaced at no additional cost to the Owner. Material salvaged for use by the Owner shall be transported and placed in a storage location on-site, as designated by the Engineer, at no additional cost to the Owner. Material salvaged for later restoration / reconstruction at the Site shall be transported and placed in a storage location on-site or elsewhere, as selected by the Contractor, at no additional cost to the Owner.

1.06 PROJECT CONDITIONS

- A. Explosives: Blasting and use of explosives is not permitted.
- B. Burning: Burning on site is not permitted.
- C. Protection: The Contractor shall prevent injury to persons and damage to abutting property. The Contractor shall further provide adequate shoring and bracing (excavation support) to prevent uncontrolled collapse and immediately repair damaged property to its condition before being damaged.
- D. The Contractor shall not allow debris to be carried into the downstream culvert.
- E. The Contractor shall carefully examine all the Contract Documents for requirements that affect the Work of this Section.
- F. The Contractor shall immediately repair, to the satisfaction of the City, any damage to Public or Private property directly and indirectly caused by the Contractor's operations at no cost to the City or Owner.
- G. The Contractor shall remove and legally dispose of all clearing debris, demolition debris, and solid waste from the Site. No on-site disposal of stumps shall be allowed. On-site recycling or reuse of demolition debris, including brick, concrete, and asphalt, is not allowed, except where specifically authorized by the Specifications or by the City.

1.07 RELATED WORK SPECIFIED ELSEWHERE

- A. The following is a list of related work items that shall be performed or furnished under

other Sections of these Specifications as indicated.

1. Temporary Water Control: Section 01565
2. Site Restoration: Section 01740
3. Mobilization/Demobilization: Section 01900
4. Construction Access: Section 02080
5. Earthwork: Section 02200
6. Sediment Excavation: Section 02210
7. Sediment Management/Disposal: Section 02260
8. Paving and Resurfacing: Section 02500
9. Landscape Work: Section 02970

1.08 SUBMITTALS

- A. The Contractor shall submit a plan detailing procedures, equipment, sequences of operations, and schedule to perform the dismantling, relocation, demolition, removal, and disposal activities called for in this Work Item. The Work Plan shall include the name, contact information, and qualifications of any subcontractors assisting with or conducting the demolition. Photo documentation of boulder numbering and location (with sketch identifying order) shall also be provided for use in resetting boulders to original locations.
- B. The Contractor shall submit information on the facility to which demolition debris will be taken for disposal. The Contractor shall also designate the area in which salvaged material will be stored.
- C. Contractor shall provide a transplantation plan.

PART 2 - PRODUCTS

This Section Not Used.

PART 3 - EXECUTION

3.01 GENERAL

- A. No removal or demolition work shall begin until the existing conditions documentation work has been completed and the documentation package accepted by the Owner in accordance with these Specifications.
- B. The Contractor shall determine means and methods for all demolition tasks specified as part of the Work, subject to the restrictions contained in this Specification and subject to approval by the Engineer.

- C. Erect, and maintain temporary barriers, excavation support, trench plates and security devices including precast jersey barriers, warning signs and lights, and similar measures, for protection of the traffic, public, City, Contractor's employees, private property, and existing improvements to remain. Maintain traffic thru all work areas within paved parking lots or roadways.
- D. Protect existing landscaping materials, structures, and utilities not indicated to be demolished.
- D. Take all steps necessary to prevent movement or settlement of adjacent structures and embankments.
- E. Work will include vegetation clearing and disposal, stripping of topsoil removal and disposal of pavements, piping, structures, and other obstructions, except operating utilities and those items for which other provisions have been made for removal and/or protection. Unless specified for reuse or delivery to the Owner, all materials shall become the property of the Contractor and shall be legally disposed of at an off-site location. Disposal of all trees, branches, snags, brush, stumps, etc., resulting from the clearing and grubbing shall be the responsibility of the Contractor and shall be disposed of by chipping and grinding and removal from the property to a legal disposal area. No on-site burning will be allowed.
- F. Removed and Salvaged or Stacked Items:
 - 1. Clean salvaged items.
 - 2. Pack or crate items after cleaning. Identify contents of containers.
 - 3. Store items in a secure area until delivery to Owner.
 - 4. Transport items to Owner's storage area designated by Owner.
 - 5. Protect items from damage during transport and storage.
- G. Removed and Reinstalled Items:
 - 1. Clean and repair items to functional condition adequate for intended reuse.
 - 2. Pack, crate, or otherwise store items after cleaning and repairing. Identify contents of containers.
 - 3. Protect items from damage during transport and storage.
 - 4. Reinstall items in same locations as removed or in locations as otherwise indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
- H. Existing Items to Remain:
 - 1. Protect structures indicated to remain against damage and soiling during

demolition. When permitted by Engineer, items may be removed as needed for site access to a suitable, protected storage location during demolition and cleaned and reinstalled in their original locations after demolition is complete.

3.02 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by demolition or selective demolition operations. Return adjacent areas to condition existing before demolition operations began.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT FOR PAYMENT:

- A. No measurement will be made for payment of Site Preparation and Demolition. The bid item for Site Preparation and Demolition shall be a lump sum quantity.

4.02 PAYMENT:

- A. Payment for the scope of the work specified herein, including all labor, materials, equipment and incidentals cost, to conduct the work of Site Preparation and Demolition will be paid for at the Contract lump sum price for Item No. 02065.01 as stated on the Bid Form. Payment up to 100% of the Lump Sum Bid Price will be authorized after the demolition and disposal of all items at all work areas.

<u>Item No.</u>	<u>Payment Item</u>	<u>Unit</u>
02065.01	Site Preparation and Demolition	Lump Sum

*** * * END OF SECTION * * ***

SECTION 02080

CONSTRUCTION ACCESS

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall provide all labor, materials, and equipment necessary to construct, maintain, and remove and dispose of offsite the temporary construction access roads as shown on the Contract Drawings and to otherwise access the Project Site for the required Work.
- B. The Work includes, but is not necessarily limited to, the following as outlined in these specifications or shown on the Contract Drawings:
 - 1. Locate and stake out all construction and underground utilities.
 - 2. Perform all necessary clearing and grubbing operations in accordance with Section 02065 Site Preparation and Demolition and Section 02260 Sediment Management/Disposal.
 - 3. Install and maintain safety fencing as shown on the Drawings and as may be necessary to protect the public and trees from the Work. Remove and dispose of offsite at the conclusion of the Work.
 - 4. Construct, maintain, and remove temporary construction access roads, tire rinsing areas, and stabilized construction entrances to City Hall Ponds.
 - 5. Provide for maintenance and protection of public traffic/access throughout the duration of the project including providing and maintaining all necessary signage as required.
 - 6. Backfill any resulting holes, trenches, or pits in accordance with Section 02200.
 - 7. Install at the beginning of the project, maintain during project, and remove at the end of the project all temporary perimeter access control fencing shown on the plans or as determined by the City. Note that the City intends for other portions of the park to be open during the duration of construction.
 - 8. Remove temporary access ramps from pond area following all in-pond work and prior to refilling of City Hall Ponds.
 - 9. Remove all temporary construction access roads and access controls.

1.02 SCOPE

A. General:

1. Protection: Comply with all applicable regulations and safety orders in effect at the place of construction. Protect this and adjacent properties from all damage due to this operation. Protect open excavations, trenches, etc., with caution tape or other means as required to maintain safe pedestrian and vehicular traffic. Site safety is the Contractor's responsibility
2. Responsibility: The Contractor is responsible for the finished condition of his work. Notify the City promptly in writing if any conditions exist which are contrary to requirements. Restore, without extra cost to the City, street pavements, curbs, gutters, trees, etc., that may be damaged in the performance of work under this Section, in a manner prescribed by any authorities having jurisdiction.
3. Safety: Site clearing work and any required site demolition work shall be conducted in accordance with the applicable safety requirements of the State's Administrative code, the Associated General Contractors' Manual of Accident Prevention in Construction, latest edition, and the applicable requirements of the Building code, latest applicable edition.

B. Permits and Licenses:

1. The Contractor shall secure all local permits required to complete the work and shall pay all charges and fees for same, without cost to the City, and give all notices necessary and incidental to the due and lawful prosecution of the work.

C. Ordinances and Protection:

1. Conform to all federal, state, and local ordinances relating to the protection of the public and Contractor's personnel and the flow of traffic. Provide protection for persons and property throughout the progress of the work.
2. The limits of the Project are indicated on the Contract Documents. The Contractor shall confine his operations within the limits of work as indicated.

1.03 RELATED WORK SPECIFIED ELSEWHERE:

- A. Summary of Work: Section 01010
- B. Maintenance and Protection of Traffic: Section 01041
- C. Construction Facilities and Temporary Controls: Section 01500
- D. Temporary Erosion and Sedimentation Controls: Section 01560
- E. Temporary Water Control: Section 01565
- F. Site Restoration: Section 01740
- G. Mobilization/Demobilization: Section 01900
- H. Site Preparation and Demolition: Section 02065

- I. Earthwork: Section 02200
- J. Sediment Excavation: Section 02210
- K. Sediment Reuse: Section 02260
- L. Stone and Rockfill: Section 02270
- M. Paving and Resurfacing: Section 02500
- N. Landscape Work: Section 02970

1.04 SUBMITTALS:

- A. Proposed Access Plan: At least ten (10) days prior to initiating work, the Contractor shall submit a Proposed Access Plan in writing for review and acceptance by the City.
 - 1. The Access Plan shall outline the timing and sequence of site access as well as methods for materials delivery and trucking routes.
 - 2. The Access Plan must comply with the terms of all environmental permits issued for the Project, including requirements for Invasive Species avoidance (cleaning of all mats, equipment, vehicles, etc.).
 - 3. The Access Plan shall include manufacturer's submittal information for safety fencing, tree protection fencing, etc.

PART 2 - PRODUCTS

2.01 MATERIALS:

- A. Earth and Rock Materials and related items utilized for construction access shall meet the material requirements in Section 02200 Earthwork and 02270 Stone, Rock, and Riprap.
- B. Temporary Pedestrian Safety Fencing: shall be 6-ft minimum height chain link fence panels with 9-gauge wire woven in a 2-inch mesh pattern. Knuckled selvedge at top and bottom.
- C. Tree Protection: Tree protection Fencing shall have a minimum height of four (4) feet. Fence shall be constructed of materials suitable for restricting access. Fence colors and materials shall be highly visible. Product shall be a high-density polyethylene product such as Tenax Algan all-season fence, Conwed Plastics "Light Duty Fence", Geo-Text Fabricators, or equal.
- D. Timber "Swamp" Mats: Timber construction mats shall be used at pond access points to provide reinforced access to the pond lobes from construction access roads. Mats shall be cleaned and in good condition prior to accessing site and shall not have soil or vegetation on them from use at prior sites to avoid invasive species introduction.

PART 3 - EXECUTION

3.01 CONSTRUCTION METHODS:

- A. Cleaning: Before accessing the Site, all vehicles, equipment, and materials shall be thoroughly cleaned by the Contractor offsite. All vehicles, equipment, and materials shall be free of vegetation and soil before being used on the Site. Any boats to be used onsite shall be thoroughly cleaned offsite prior to use and cleaned after use on Site to prevent the spread of invasive species.

- B. Temporary Construction Access: Access roads to the pond shall be constructed as shown on the Drawings. These are the only access points allowed for the Project. Contractor shall ensure that temporary construction access routes into and out of City Hall Ponds are firm stable surfaces capable of supporting the Contractor's trucks and equipment without excessive rutting. Surface shall not create sediment runoff or cause tracking of materials onto public roads. The area designated on the Drawings for the access road shall be cleared of all vegetation, roots, topsoil, and other objectionable material to the dimensions shown on the plans. Contractor shall minimize tree and brush removal at pond bank entry sites in compliance with all other permits issued for the project. The area of the access roads shall be excavated to the grades indicated on the plans. Filter fabric shall be placed on the base of the excavation. Gravel and crushed stone shall be placed on the filter fabric to the minimum depth shown on the drawings.

Access ramps shall be constructed as shown on the Contract Drawings. Contractor shall determine the width, length, and slope needed to suit operations and equipment, but shall minimize bank disturbance to the limits shown on the Drawings.

The Contractor shall rinse truck tires prior to exiting onto roadways and paved surfaces along access roads. Rinsing shall be with clean water with a pressure spray. Truck rinsing operations shall be conducted in such a manner that all drainage will be directed away from paved surfaces and toward areas with erosion and sediment controls in upland areas or shall otherwise ensure that no tracking of dirt sediment, or debris onto public thoroughfares is allowed. Discharges shall not be to waterways, wetlands, or other sensitive areas.

3.02 MAINTENANCE OF ACCESS ROADS:

- A. Temporary construction access roads shall be maintained in a condition that will prevent erosion or sedimentation impacts or the tracking or flowing of sediment onto the public right-of-way. On the access roads, this will require top dressing with additional stone and/or additional length as conditions demand, and clean out of any measures used to trap sediment. Any materials spilled, dropped, washed or tracked onto the public right-of-way shall be immediately removed by the Contractor at no additional cost to the City. Surface condition of the temporary construction access roads shall be maintained throughout the Project for as long as the roads are needed.

- B. In order to reduce the possibility of unauthorized vehicle or pedestrian access to the work area, the Contractor shall barricade or gate the access roads at night or other times when not being actively used.

3.03 REMOVAL OF TEMPORARY CONSTRUCTION ACCESS ROADS:

- A. When all sediments have been removed from the Project Site and when vehicular access to the pond is no longer required for any reason, the temporary construction access roads shall be removed. All materials used in the construction of the access roads shall be removed from the Site and disposed of at no additional cost to the City. Existing conditions shall be restored in accordance with the Project Drawings and in compliance with permit conditions.

3.04 DAMAGE TO PRIVATE AND PUBLIC THOROUGHFARES:

- A. Owner and Contractor shall meet on site to assess and photo-document the structural condition of public and private thoroughfares prior to the start of Contractor activities. At the completion of operations and prior to final acceptance of the work, Contractor shall restore roadways, walkways and all areas to pre-existing conditions.

3.05 TEMPORARY ACCESS CONTROLS:

- A. Pedestrian safety fencing and tree protection fencing shall be installed to the limits shown on the Drawings and as otherwise directed by the City or its representatives. Fencing shall be installed prior to commencing any other work to isolate work areas. Where fencing crosses existing pavements or walkways, posts are to be secured with a suitable base without damaging the surface. Contractor shall maintain the fencing in a safe manner throughout construction. Fence sagging more than six inches between posts will be re-secured or additional posts added as necessary. Fence shall be removed and disposed of by the Contractor at the completion of the work.

3.06 CARE OF EXISTING TREES:

- A. No trees or timber outside of the work area may be cut or damaged. Any tree work in the public right-of-way shall be coordinated with the appropriate authority within the City of Newton and proper permits obtained, at no additional cost to the City.
- B. All trees adjacent to active work areas to remain shall be protected from damage by constructing suitable wood barriers or fences at, or near, the drip line of the tree as shown on the Plans. Vehicles, equipment, materials, and debris shall not be placed or parked in these areas.
- C. The Contractor shall be responsible for implementing tree protection as necessary to ensure against damage to surrounding trees within or adjacent to the construction areas. Any damage discovered to have been caused by the actions of the Contractor shall be corrected by the Contractor at no additional cost to the Owner. Severely damaged trees shall have their value assessed using the ISA method and the Contractor will be liable for these damages.
- D. At the start of the Project, Contractor shall review with the City the location of significant trees in close proximity to the work. These trees shall be protected as detailed herein. Beyond protective fencing, tree protection may also include trunk and root protection with timber and plywood, at no additional cost, if determined to be needed by the City or Conservation Commission.

PART 4 - MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT:

- A. Temporary Construction Access: This work will be measured for payment based on the lump sum unit price for this item, which price shall include all equipment, fuel, tools, transportation and labor incidental to the construction, maintenance and removal of the construction access roads and the access into the pond, as well as for, signage, barricades, caution tape and all other items related to the maintenance and protection of pedestrian and vehicular traffic.
- B. Pedestrian Safety Fencing and Tree Protection: This work will be measured for payment based on the lump sum unit price for this item, which price shall include all labor, materials, equipment, and incidentals, associated with provision, handling, installation, removal, and disposal of Pedestrian Safety Fencing and Tree Protection.

4.02 BASIS OF PAYMENT:

- A. Temporary Construction Access: This work will be paid for at the contract lump sum unit price for item No. 02080.01 - Temporary Construction Access. Up to 50% of this contract lump sum price may be invoiced when all temporary access roads are in place and capable of use. Up to 75% of the contract lump sum (minus prior payments) may be invoiced when all Sediment Excavation is complete, and 100% of the contract lump sum (minus prior payments) may be invoiced when all temporary access roads have been removed. Final dredged materials quantities that exceed the estimated quantity shall not be grounds for an increase in the contract lump sum price for "Construction Access." Nothing herein shall be construed to limit or preclude partial payments otherwise allowed for by the contract.
- B. Pedestrian Safety Fencing and Tree Protection: Payment for the scope of work specified herein, shall be paid for at the applicable lump sum price for item No. 02080.02 – Pedestrian Safety Fencing and Tree Protection stated on the Form for Bid.

4.03 PAYMENT ITEMS:

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
02080.01	Temporary Construction Access	Lump Sum
02080.02	Pedestrian Safety Fencing and Tree Protection	Lump Sum

***** END OF SECTION *****

SECTION 02170

TEMPORARY COFFERDAMS

PART 1 - GENERAL

1.01 SCOPE

- A. This Section includes the installation, maintenance, and removal of temporary cofferdams needed to prevent water intrusion into the work areas and allow work to proceed in the dry. The Work under this Section includes the furnishing of all labor, equipment, supplies, materials and utilities required for the design, installation, relocation, operation, maintenance, repair, replacement, supervision and removal of the temporary cofferdams.
- B. It is expected that temporary cofferdams will be necessary to for the performance of the City Hall Ponds Maintenance Dredging project. The temporary cofferdams shall remain in-service until all Work in the enclosed area is complete and accepted by the City.
- C. It is anticipated that the temporary cofferdams will consist of sand bags, super sacks, or other similar items and materials. Use of loose fill shall not be permitted.
- D. The Contractor shall install and maintain the temporary cofferdams as indicated on the Construction Drawings.
- E. The temporary cofferdam systems shall include furnishing and installing a full system for excluding surface water, runoff, and seepage. The systems shall include all necessary supports, membranes, and other required materials as indicated on the Construction Drawings.
- F. The Work of this Section shall be performed in concert with temporary water control efforts as provided for under Section 01565. Initial and ongoing dewatering within the cofferdams, as well as seepage control measures shall be provided under the Work of temporary water control but shall be specifically implemented to work with the temporary cofferdam systems to keep the work area dry and stable. Water control systems shall be sized by the Contractor to accommodate the expected leakage through and seepage under the cofferdam. The Contractor shall have sole responsibility for water control within the work areas.
- G. The temporary cofferdams shall be placed so as not to interfere with the other components of the Work. All Work shall be performed in accordance with the Contract Drawings and Specifications and to the satisfaction of the Owner. The final alignment of the temporary cofferdams shall be determined by the Contractor, provided it does not exceed the limits of construction shown on the Contract Drawings.

- H. The Contractor shall maintain existing water quality requirements, and the Contractor shall comply with all permits issued for the work. The temporary cofferdams shall provide the required protection for the work areas while meeting requirements regarding siltation and erosion and minimizing disruption to the upstream and downstream aquatic environment.

1.02 RELATED WORK

- A. The following is a list of related work items that shall be performed or furnished under other sections of these specifications as indicated:
1. Regulatory Requirements: Section 01060
 2. Construction Facilities and Temporary Controls: Section 01500
 3. Temporary Erosion and Sedimentation Control: Section 01560
 4. Temporary Water Control: Section 01565
 5. Hydraulic and Hydrologic Data: Section 01566
 6. Site Restoration: Section 01740
 7. Mobilization and Demobilization: Section 01900
 7. Earthwork: Section 02200
 8. Sediment Excavation: Section 02210
 9. Sediment Management/Reuse: Section 02260
 9. Stone and Rockfill: Section 02270

1.03 SUBMITTALS

- A. Not less than two (2) weeks prior to the scheduled installation of the temporary cofferdams, the Contractor shall submit his proposed method of installing, maintaining and removing the temporary cofferdam to the City's consultant for review. The submittal shall include as a minimum the following items:
1. The Contractor's proposed design (including cross section), layout, sequence of installation, sealing, maintenance, supervision and removal of the temporary cofferdams. Maintenance and supervision requirements during non-working hours (i.e., nights, holidays and weekends) should be addressed. Cofferdams greater than 6 feet in height (if applicable) must be designed by a Professional Engineer.
 2. All materials to be used for the work of this section.
 3. Proposed method of initial lowering of water inside temporary cofferdams and subsequent rising of water levels at the completion of the Work, along with siltation control measures for any water that is discharged into the adjacent rivers.

4. Proposed methods of controlling seepage and maintaining stable subgrade conditions inside the cofferdam during both high and low head conditions.
5. Proposed methodology for sealing the ends of the cofferdams.
6. The Contractor's proposed emergency contingency plan for prevention or control of potential flooding of the work area during storm events. The contingency plan should address, but not be limited to: maximum stream/pond level, emergency signaling procedures, health and safety plan, emergency breaching and controlled flooding procedures and leakage/seepage/sand boil control measures.

PART 2 - PRODUCTS

2.01 TEMPORARY COFFERDAM

- A. The temporary cofferdams are anticipated to be Super Sacks and sand bags as shown on the Contract Drawings. Alternative systems may be proposed by the Contractor. No loose materials will be allowed.
- B. Refer to Section 02200 for specifications of any earth products and materials used in the construction of cofferdams.
- C. All temporary cofferdam components shall be clean of contaminants, invasive species, and any other materials that could adversely impact water quality. All materials shall be new or cleaned offsite prior to use onsite. All materials used in the construction of cofferdams shall be clean and free of substances or materials which might lead to contamination of the rivers, wetlands, or other water courses.
- D. Contractor shall be responsible for determining the required height of the temporary cofferdams. However, in no case shall the top elevation of the temporary cofferdam be higher than the height indicated on the Construction Drawings.
- E. Sandbags shall be free of rips or tears which would lead to a loss of sand into the streams, ponds, or wetlands, and bag openings shall be tied to prevent the same.
- G. Loose soil material and dredged material will NOT be an acceptable material for the construction of the temporary cofferdam. All temporary cofferdams must be capable of being overtopped without damage to the unit or to areas upstream or downstream.

PART 3 - EXECUTION

3.01 GENERAL

- A. The Contractor shall maintain a safe, clean and accessible work site at all times. The Contractor shall have full responsibility for the complete and proper diversion of water from the work sites at all stages of the project. The Contractor shall, at no additional cost to the City, repair any damage to any equipment, material or work caused by seepage, flood, overtopping, or other failure of the temporary cofferdam system.
- B. The Contractor shall provide and maintain the temporary cofferdams and other related equipment. The temporary cofferdams shall be maintained and supervised by the Contractor's personnel qualified to do such work.
- C. All OSHA requirements, and all applicable local environmental permit requirements and the Newton Conservation Commission Order of Conditions shall be satisfied.
- D. In the case of overtopping of the cofferdam by waves, settlement, or high waters, means shall be provided for controlled flooding of the work area.
- E. All pumping and water discharge shall be in accordance with Sections 01060, 01560 and 01565.
- F. Temporary cofferdam components which settle, tilt or move laterally shall be righted, reset or enlarged as necessary at no additional expense to the City.

3.02 DESIGN REQUIREMENTS

- A. The temporary cofferdams shall be designed for all expected Site-specific conditions, including, but not limited to variations in stream level and flow rate, including overtopping, bottom conditions and site bathymetry/topography. The Contractor shall determine the minimum required height of the cofferdam.
- B. In the event that inflows from the Hammond Brook and/or Cold Springs Brook cause the water level in City Hall Ponds to rise higher than the limits of the cofferdam during the performance of the Work, the Contractor shall undertake measures to protect existing and new work and the site and downstream areas from flooding.

3.03 REMOVAL

- A. The City shall be informed at least five (5) days prior to removal or relocation of any portion of the temporary cofferdam systems. The work inside the temporary cofferdams must be observed and accepted by the City or the City's Representative prior to removal.
- B. All parts of the temporary cofferdams shall be removed from the site at the end of the Work.

3.04 WATER MANAGEMENT

- A. The Contractor shall manage water within the areas encircled by the cofferdams and shall provide for all necessary bypass flows. Management of surface water and groundwater (seepage, etc) shall be accomplished and paid for under separate Sections of the Contract.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT FOR PAYMENT

- A. No measurement will be made for temporary cofferdams, the bid item under this section is a lump sum quantity.

4.02 PAYMENT

- A. Payment for the scope of the work specified herein, including all labor, materials, equipment and incidentals and mobilization/demobilization costs to provide, install, maintain, repair, replace, move, and remove Temporary Cofferdams associated with the work of this Contract will be paid for at the applicable Lump Sum price for Item No. 02170.01 – Temporary Cofferdams stated on the Form for Bid.

<u>Item No.</u>	<u>Payment Item</u>	<u>Unit</u>
02170.01	Temporary Cofferdams	Lump Sum

*** * * END OF SECTION * * ***

SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Work of this Section applies to all operations involving earthwork and/or soil material. This Specification governs the execution of excavation, fill placement, and all other earthwork tasks. This Specification also governs acceptable soil material properties. The provisions of this Specification shall apply to all such work and materials unless specifically superseded in another Specification.
- B. When earthwork is included as a fundamental or incidental part of the Work of a Pay Item, the Contractor shall provide all equipment, materials, labor, and incidentals and do all work necessary to complete the earthwork shown on the Contract Drawings.
- C. Earthwork tasks governed by this Section include, but are not limited to, the following:
 - 1. Excavation of soil, temporary on-site stockpiling, hauling excess materials to different on-site locations.
 - 2. Handling and placement of fill materials, in lifts, appropriate grading and compacting to specified densities at specified moistures, of fill materials.
 - 3. Supplying and handling of all required fill material.
 - 4. Grading and compaction of sub-grades.
 - 5. Intermediate and temporary grading.
 - 6. Final grading as per Contract Drawings and Specifications.
 - 7. Design and Construction of excavation support systems, if applicable
 - 8. Executing all incidental excavation, filling, and grading for placement of materials, structures, and general site preparation and restoration. This work may include, but is not limited to pip trenching, backfilling, site drainage, dredging, and restoration related work.
 - 9. Testing of imported gravel borrow from offsite for chemical contamination.
- D. The Contractor shall coordinate with the Owner regarding field quality control for all earthwork under all Pay Items, as needed.

- E. Clearing, grubbing, stripping and stockpiling of topsoil shall be performed and paid for under a separate Section – Section 02065 – Site Preparation and Demolition.

1.02 SCOPE OF WORK

The Contractor shall perform all earthwork, including excavation, trenching, filling, compaction, and grading, required for the Project. Any earthwork not specifically covered under this or other Sections of the Contract Documents shall be considered incidental and shall be accomplished at no additional cost to the Owner.

- A. Common Excavation after Stripping: Excavation of earthfill material both by machine and hand after topsoil has been stripped. The work of this item shall also include handling and temporary stockpiling of material. No additional payment will be made for any re-handling of the excavated material once it has been removed from its original position until such time as it becomes Common Borrow.

Excavation work under Common Excavation shall include all materials unless specifically covered by another item in the Contract. Common excavation does not include excavation of sediment, which is addressed under Section 02210.

Excavations shall be made in those areas indicated on the Contract Drawings or as directed by the City.

- B. Placement of Previously Excavated On-Site Common Fill: Handling, placement, compaction, and grading of on-site common soil material which has been previously excavated by the Contractor at the project site under the work of this Contract. The on-site soil material, if judged suitable by the City and Engineer, shall be used for embankment formation or backfilling as approved by the City.
- C. Furnishing and Placement of Gravel Borrow or Other Soil Materials from Off-Site Sources: Provision of materials, testing, transport, handling, placement, compaction, and grading of off-site fill meeting the material specifications. Gravel borrow material from off-site sources shall be used, as directed by the Owner, as embankment formation, for use in temporary construction access roads, or for excavation backfill when on-site material is found to be inappropriate or insufficient.

1.03 RELATED SECTIONS

- A. Construction Facilities and Temporary Controls: Section 01500
- B. Temporary Erosion and Sedimentation Controls: Section 01560
- C. Temporary Water Control: Section 01565
- D. Site Restoration: Section 01740

- E. Mobilization/Demobilization: Section 01900
- F. Site Preparation and Demolition: Section 02065
- G. Construction Access: Section 02080
- H. Temporary Cofferdams: Section 02170
- I. Sediment Excavation: Section 02210
- J. Stone and Rockfill: Section 02270
- K. Paving and Resurfacing: Section 02500
- L. Landscape Work: Section 02970

1.04 FIELD MEASUREMENTS

- A. Verify survey benchmarks and intended elevations for the work prior to commencement of work.
- B. Verify final grades for conformance to design plans.
- C. Make measurements for determination of pay quantities in cooperation with the Owner as per Section 01950 – Measurement and Payment.

1.05 REFERENCE STANDARDS

- A. ASTM C 33 - Standard Specification for Concrete Aggregates
- B. ASTM D422 - 63(2007) Standard Test Method for Particle-Size Analysis of Soils
- C. ASTM D1557 – Modified Proctor
- D. ASTM D1556 - 07 Standard Test Method for Density and Unit Weight of Soil in Place by the Sand-Cone Method
- E. ASTM D6938 - 08a Standard Test Method for In-Place Density and Water Content of Soil and Soil-Aggregate by Nuclear Methods (Shallow Depth)
- F. OSHA Regulations, 29 CFR Part 1926 - Excavations, current revisions.

1.06 SUBMITTALS

Submit to the Owner and its Consultant for review and comment the following:

- A. Submit to the Owner, at least ten (10) days prior to placement, certified sieve analysis reports and Proctor curves for soil materials proposed for use at the site (on-site and off-site materials).
- E. Despite review and comment by the City or Engineer, the Contractor shall remain solely responsible for the adequacy and safety of materials and methods used in construction.

1.07 EXISTING CONDITIONS

Special care shall be taken by the Contractor to preserve the structural integrity of the portions of any stone masonry, riprap, slopes, or structures to remain, and to restore disturbed areas and structures as indicated on the Drawings and directed by the City.

1.08 PROJECT CONDITIONS

- A. The Contractor shall be responsible for any damage to existing roadways, driveways, walkways, buildings, structures, trees and vegetation, utilities including irrigation systems, and other structures caused by construction activities and shall repair any damage to the satisfaction of the City. As may be necessary, routes used as haul roads shall be returned to their original condition or better, before final acceptance of the project.
- B. The Contractor's attention is called to the fact that the Work will be performed within and adjacent to City Hall Ponds and its associated inlet and outlet culverts/watercourses. Water may be a concern in excavations.
- C. The Contractor's attention is called to the fact that portions Work may be in areas adjacent to existing utilities or structures which shall be maintained and remained undamaged during the Work. The Contractor shall protect existing utilities and structures during excavations and placement and compaction of fill. Special methods may be required in some locations.
- D. The Contractor's attention is called to the fact that the Project involves regulated natural resources and that all permit conditions must be met.
- E. The Contractor's attention is called to the fact that construction traffic associated with Earthwork executed under this Section will require coordination with the Contractor's traffic control plan to provide for access (when required) and safety.

1.09 COORDINATION

Contractor shall obtain samples of soil materials proposed to be used (off-site sources) and transport them to an independent testing lab for testing. Materials shall be delivered for testing sufficiently in advance of time planned for incorporating them into the work in accordance with these Specifications. Use of proposed materials by the Contractor prior to testing and approval by the City will not be allowed.

1.10 PERMITS AND CODES

- A. All work shall conform to the Drawings and Specifications and shall comply with applicable codes and regulations.

- B. Comply with all rules, regulations, laws and ordinances of the Commonwealth of Massachusetts, City of Newton and of all other federal, state, and local authorities having jurisdiction. All labor, materials, equipment and services necessary to make the work comply with such requirements shall be provided without additional cost.
- C. Excavation safety and support in accordance and compliance with all applicable OSHA and other regulations shall be the sole responsibility of the Contractor.
- D. The Contractor shall clear the site with Dig Safe® and other utility providers which may maintain utility structures in and around the site. The Contractor shall also coordinate with the City of Newton Departments in charge of the site relative to onsite utilities, including irrigation systems.

1.10 PROTECTION OF EXISTING PROPERTY

- A. The work shall be executed in such manner as to prevent any damage to public or private facilities at the site and adjacent property and any other property and existing improvements, such as but not limited to the City of Newton roads, landscaping outside the work area, service utility lines, overhead wires, other structures, monuments, bench marks, and other public or private property. Protect existing improvements from damage caused by settlement, lateral movements, undermining, washout and other hazards created by earthwork operations.
- B. In case of any damage or injury caused in the performance of the work, the Contractor shall, at his own expense, make good such damage or injury to the satisfaction of, and without cost to, the Owner, except as provided for under the Site Restoration Section. Existing roads and curbs damaged during the project work shall be repaired or replaced to their original condition at the commencement of operations. The Contractor shall replace, at his own cost, existing benchmarks, monuments, and other reference points which are disturbed or destroyed. Repairs to any damage shall be made to the satisfaction of the City.
- C. Buried structures, utility lines, etc., including those that project above grade, which may be subject to damage from construction equipment shall be clearly marked by the Contractor to indicate the hazard. Markers shall indicate limits of dangerous areas by means which will be clearly visible to operators of trucks and other construction equipment and shall be maintained at all times until completion of project.
- D. Known portions of the irrigation system will be marked out by the City in advance of any earthwork upon the Contractor's request. The Contractor will repair any damage to the irrigation system, at no additional cost to the City.

1.11 DRAINAGE

- A. The Contractor shall provide, at his own expense, adequate drainage facilities to complete all Work in an acceptable manner. Drainage shall be done in a manner so that runoff will not adversely affect construction product, construction procedures, nor cause excessive disturbance of underlying natural ground or exacerbate erosion and sedimentation and shall be performed in accordance with the criteria set forth in the applicable Sections of these Specifications.
- B. The Contractor is advised that groundwater levels within the work area may be high and that surface water and groundwater control may be required. Lateral and/or upward seepage through existing and proposed slope faces and subgrades is to be expected. The Contractor shall provide, at his own expense, adequate drainage and/or dewatering methods and facilities such that groundwater seepage will not adversely affect the construction product, procedures, nor cause excessive disturbance of underlying natural ground. These methods shall include but not necessarily be limited to the minimum dewatering requirements given in Specification Section 01565.
- C. The Contractor shall grade and ditch the staging areas and access roads, as necessary, to direct and control surface runoff in working areas, subject to approval of the Engineer, and in accordance with applicable permits.
- D. Water from excavations shall be disposed of in such a manner as will not cause injury to public health, nor to City Hall Ponds or downstream resources water quality, nor to public or private property, nor to existing Work, nor to the Work completed or in progress, nor to the surface of roads, walks and streets, nor cause any undue interference with the use of the same by the public, except in the designated work areas.

1.12 FROST PROTECTION AND SNOW REMOVAL

- A. The Contractor shall, at his own expense, keep the operations under this Contract clear and free of accumulations of ice and snow within the limit of work and elsewhere as needed to carry out the active work.
- B. The Contractor shall not place fill over frozen soils and shall not place frozen fill. All frozen soils shall be removed to the satisfaction of the Engineer prior to fill placement.

1.14 LAYOUT AND GRADES

- A. Lay out all lines and grade work at the site by a Registered Professional Land Surveyor in accordance with the Contract Drawings and Specifications. Establish and maintain permanent benchmarks. Maintain all established

bounds and benchmarks and replace as directed any which are destroyed or disturbed.

- B. The word "subgrade" as used herein means the required surface of existing ground, final prepared ground after excavation, or compacted fill.

1.15 OBSERVATION BY ENGINEER

- A. At the request of the City, the Engineer may perform full or part-time on-site observation and testing during the earthwork operations. The services of the Engineer may include, but not be limited to, the following:
 - 1. Observation during excavation and dewatering.
 - 2. Observation during subgrade preparation, backfilling and compaction operations.
 - 3. Visual or other examination of excavated material to judge suitability for reuse as on-site backfill material.
- B. The presence of the Engineer or the City does not include supervision or direction of the actual work by the Contractor, his/her employees, or agents. Neither the presence of the Engineer or the City, nor any observations and testing performed by them, or any notice or failure to give notice, shall excuse the Contractor from defects discovered in their work.

PART 2 - PRODUCTS

2.01 FILL MATERIALS

- A. **Chemical Testing:** All off-site material brought to the site shall be non-soluble and free of contaminants and vegetation/seeds. The Contractor shall identify the source of the material and provide results of environmental testing performed on a representative sample of the material from each source. Testing shall be required for each 500 CY of each type of material from each source of material.
- B. Off-Site Granular Fill Materials
 - 1. Gravel Borrow

Gravel Borrow shall be inorganic soil free of clay, loam, ice and snow, roots, sod, rubbish, and other deleterious or organic matter; graded within the following limits:

Sieve Size	Percent Finer by Weight Granular Fill
3-inch	100
½ inch	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-10

1. Processed Gravel Borrow (Sub Base)

Processed Gravel Borrow consist of inert material that is hard, durable stone and coarse sand, free from loam and clay, surface coatings and deleterious materials. The coarse aggregate shall have a percentage of wear by the Los Angeles Abrasion Test of nor more than 50% graded within the following limits:

Sieve Size	Percent Finer by Weight Granular Fill
3-inch	100
1 ½ inch	70-100
1 ¼ inch	50-85
No. 4	30-60
No. 200	0-10

C. Loam

Loam shall be defined and paid for under Section 02970- Landscape Work.

D. Other Soil Materials

Other soil materials proposed for use at the site shall meet Massachusetts Highway Department specifications. The Engineer shall have sole authority to authorize the use of alternative soil materials. No additional payment shall be made for substituted materials.

2.02 CRUSHED STONE MATERIAL

A. Bedding stone and crushed stone shall be defined under Section 02700 – Stone and Rockfill.

PART 3 - EXECUTION

3.01 EXAMINATION AND PREPARATION

Grades, both existing and finished, are indicated on the Drawings. The City is not responsible for existing grades shown on the Drawings. The Contractor shall check all areas wherein grades are shown to satisfy themselves as to actual conditions. The Contractor shall be responsible for establishing all control points and marks necessary for the work. Precautions shall be taken to preserve the materials outside the lines of the limit of work in the most undisturbed condition possible. The Contractor shall:

- A. Identify and check all required lines, levels, contours, and datum.
- B. Notify the Owner in writing of unanticipated subsurface conditions and discontinue affected work in area until notified to resume.
- C. Protect plant life, grassed areas and other features remaining as a portion of final landscaping.
- D. Notify appropriate utility company to remove or relocate utilities, if necessary.
- E. Maintain and protect existing utilities remaining which pass through work area.

3.02 PROTECTION OF ADJACENT FACILITIES AND PROPERTIES

- A. Protect all adjacent facilities which may be damaged by excavation work. All construction induced damage shall be repaired by the Contractor at no additional expense to the City.
- B. The work area shall be graded, shaped, and otherwise drained in such a manner as to minimize soil erosion, siltation of drainage channels, damage to existing vegetation and property outside the limits of the work area.

3.03 DISTURBANCE OF EXCAVATED AND FILLED AREAS DURING CONSTRUCTION

The Contractor shall take the necessary steps to avoid disturbance of subgrade during excavation and filling operations. Methods of excavation and filling operations shall be revised as necessary to avoid disturbance of the subgrade, including restricting the use of certain types of construction equipment and their movement over sensitive or unstable materials, dewatering and other acceptable control measures. The Contractor is advised that this will be of particular concern for slope cutting and reconstruction, where extensive zones of the seepage are likely to occur. The Contractor shall cooperate with the Engineer to modify procedures and protect bearing soils.

3.04 EXCAVATION

- A. Perform all work of any nature and description required to accomplish the work as shown on the Drawings as specified. The work shall include, although not be limited, to earth and rock excavation; removing of boulders on-site stockpiling of materials for re-use; and transport of materials to other locations on-site.
- B. Excavations, unless otherwise directed by the City, shall be carried only to the elevations and limits shown on the Drawings. If unauthorized excavation is carried out below required subgrade and/or beyond minimum lateral limits shown on Drawings, it shall be backfilled as specified by the Engineer, at the Contractor's expense. Excavations shall be kept in good condition at all times, and all voids which may endanger existing structures shall be filled to satisfaction of the City.
- C. Excavated material which meets the criteria put forth in the specifications shall be reused at the site. The Contractor is encouraged to reuse excavated material where appropriate.
- D. All excavations shall be performed in accordance with OSHA requirements.
- E. The City shall assess the limits of excavation during and after the completion of the work. The City may, at his discretion, reduce or extend the limits and/or depth of excavations, as judged necessary. It is the intent of this work to remove and replace all material which may have been subject to internal erosion and loss of structure.
- F. All appropriate care shall be taken to avoid damage to existing structures, such as, but not limited to, pedestrian bridges, the pond outlet, and other existing utilities during excavation. If hand excavation around these and other structures is necessary, it shall be performed as required at no additional cost to the City.

3.07 EXCAVATION SUPPORT AND PROTECTION

- A. As necessary, provide shoring, sheeting, and/or bracing of excavations in accordance with approved submittal as required to assure complete safety against collapse of earth at side of excavations. The installation, performance and subsequent removal of any excavation support system shall not result in damage or compromise the performance or integrity of installed Work or any existing structures.
- B. Comply with local safety regulations and/or, in the absence thereof, with the provisions of the Occupational Safety and Health Act (OSHA) for trenching and excavation.

- C. Remove sheeting and shoring, etc., as backfilling operations progress, taking all necessary precautions to prevent collapse of excavation sides. No excavation support elements shall be permanently left in place without approval of the Owner. Any excavation support left in place shall be cut-off or otherwise removed to depth of 4 feet (minimum) below final proposed grade.
- D. The Contractor shall be fully responsible for furnishing, installing, maintaining, reinforcing and removal of all sheeting and bracing and shall be fully responsible for all damages, losses and claims involving the use or non-use of sheeting and bracing despite any orders given or any orders failed to be given by the City. The Contractor shall hold harmless the City and its Consultant from all damages, losses and claims involving the use or non-use of sheeting, shoring and bracing.
- E. The Contractor shall furnish, put in place, and maintain sheeting and bracing to support the vertical side of excavations, to prevent any movement which could in any way diminish the width of the excavation below that necessary for proper construction, and to protect adjacent structures from disturbance, undermining or other damage.
- F. If the Engineer is of the opinion that at any point, sufficient or proper excavation support has not been provided, he/she may order additional support put in at the expense of the Contractor, and compliance with such order shall not relieve or release the Contractor from his responsibility for the sufficiency of such supports. Care shall be taken to prevent voids outside of the sheeting, but if voids are formed, they shall be immediately filled and rammed.
- G. The Contractor is responsible for understanding the subsurface and soil conditions in areas where excavation support is required. The Contractor shall examine available subsurface data and make additional explorations as needed and as approved by the City.
- H. No excavation shall be made which will negatively affect the stability of existing structures.

3.08 FILL PLACEMENT AND COMPACTION

- A. Particular care shall be taken in compacting material adjacent to existing structures including, but not limited to, pedestrian bridges and the pond outlet. Compaction of subgrades and fill material within one-foot of existing structures may require the use of hand tampers, as required by the Specifications or as judged necessary by the Contractor.
- B. Contractor shall dewater to maintain groundwater levels a minimum of one foot (1') below bottom of excavations and/or subgrades. All fill is to be placed "in-the-dry," except as allowed for certain rock material.

- C. The Contractor shall be responsible for efficient placement of fill. Should the extents of the slope require, bench all existing slopes prior to placing horizontal fill layers on existing slopes of greater than 6H to 1V.
- D. Place and compact materials in continuous horizontal layers not exceeding twelve-inch (12") loose (pre-compaction) lift thickness. Loose lift thickness shall be reduced to six-inches (6") when using walk-behind or hand-operated compaction equipment. Do not place frozen material.
- E. The general standard for compaction for all granular soil materials shall be a firm and stable material which, if tested, would achieve a minimum ninety-five percent (95%) of the maximum dry density as determined by Modified Proctor Test, with a water content between plus or minus two percent ($\pm 2\%$) of optimum moisture content. Contractor shall be responsible for moisture conditioning fill materials as required. If fill is too wet or dry to be adequately compacted, remove and replace with properly conditioned fill.
- F. Fill that is too wet for proper compaction, as determined by testing or the Resident Engineer's judgment, shall be disced, harrowed, or otherwise dried to a proper moisture content for compaction to the required density, specified herein. If the fill material cannot be dried within forty-eight (48) hours of placement, it shall be removed and replaced with drier fill at the Contractor's expense.
- G. Fill that is too dry for proper compaction, as determined by testing or the Engineer's judgment, shall receive water uniformly applied over the surface of the loose layer. Sufficient water shall be added to allow compaction to the required density.
- H. Compaction of granular material shall be done to meet the above stated density criteria, but at minimum six (6) passes of an approved compactor weighing at least 5,000 lbs (static) and providing at least 10,000 lbs of dynamic force. Hand operated vibratory compactors shall be used in confined areas. Make additional passes as necessary to achieve a degree of compaction of at least 98% of its maximum dry density as determined by ASTM D698 unless otherwise specified.
- I. When compacting behind or adjacent to structures, place and compact fill in loose layers not more than six inches (6") thick. Compact with a powered tamping compactor to the required in-place density.
- J. Fill which becomes disturbed after compaction shall be removed and replaced or re-compacted to the specified degree of compaction at the Contractor's expense.

- K. Placement and compaction of soil material on the embankments shall be in a direction parallel to the top of the embankment, when possible.
- L. General common fill materials shall be on-site backfill material judged suitable by the Engineer or imported common fill material.
- M. In cases where prior excavation has not been made, the Contractor shall strip all organic topsoil from along the length and breadth of all areas which are to have fill material placed on top. This work shall be paid for under other Sections of the Contract.
- N. Rough and fine grade the surface of embankment and fill as shown on the Contract Drawings. All surfaces shall be appropriately graded to drain and provided with a firm and stable surface which is resistant to erosion.

3.09 FIELD QUALITY CONTROL

- A. The Engineer may observe the placement of fill material. The Engineer will be provided with the results of tests by the Contractor's Independent Testing Agency or make such observations as are judged necessary to render an opinion as to whether the materials used and compaction effort provided are appropriate to meet the intent of the specifications.
- B. The Engineer will judge achievement of the compaction standards by either visual observation of compaction effort and success or through the Contractor's Independent Testing Lab's use of in-place density tests including, but not be limited to, in-place compaction (density and moisture) testing performed in accordance with ASTM D1556 (sand cone) or ASTM D6938 (nuclear density meter). The frequency of testing will be at the Engineer's sole discretion with a minimum of one test for each lift of material placed in a discrete area, at a minimum frequency of one (1) test for every 4,000 square feet of fill and/or one (1) test for every area of less than 4,000 square feet placed in one (1) day.
- C. If compaction is judged by the Engineer to be inadequate, the Contractor shall provide additional compaction or otherwise correct the problem at no additional cost to the City.
- D. The Contractor shall be responsible for providing to the Engineer and City the results of geotechnical testing of proposed on-site and off-site fill materials. All the results shall be provided less than five (5) days prior to Delivery or placement of material. Test results to be provided are as follows:
 - 1. Particle size (sieve) analysis for each off-site material in accordance with ASTM D422.
 - 2. Maximum dry densities and optimum moisture contents, as per the Modified Proctor Test Methodology for each off-site material.

3. Supplemental particle size and Proctor tests shall be performed by the Contractor at no additional cost to the City whenever the properties of a certain material are judged by the Engineer to have substantially changed.
- E. The Contractor shall coordinate with the Engineer. No fill shall be placed if the Engineer or City is not available to observe the Work. Fill placed in the absence of the Engineer or City may be required to be excavated and replaced at the Contractor's expense.
- F. The Contractor shall provide the City and their representative, and the Engineer free and safe access to work at all times. Provide for safe observation of bottom of excavation and of bearing surfaces.

3.11 EARTHWORK UNDER OTHER SECTIONS

Unless specifically contradicted, all earthwork executed under other Sections of the Contract shall be governed by the Methods specifications detailed in this Section.

3.12 STOCKPILING

- A. Stockpile materials on site in such a manner so as to maintain the segregation of different types of material.
- B. The Contractor shall provide, at no additional cost, temporary signage which identifies the type of soil or rock material in each stockpile.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT FOR PAYMENT

- A. No separate measurement will be made for any work under this Section.

4.02 PAYMENT

- A. No separate payment will be made for any work performed under this section. The cost of any work or facilities provided under this section shall be included under other bid items within the Contract or shall be considered incidental to the general work of the Contract.

*** * * END OF SECTION * * ***

SECTION 02210

SEDIMENT EXCAVATION

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Contractor shall furnish all labor, materials, equipment, supervision, and shall perform all operations required to complete the work shown on the Drawings, as directed by the City, as herein specified, and as required to properly complete the work.
- B. The work includes, but is not necessarily limited to the following, as outlined in these specifications or shown on the Contract Drawings:
 - 1. Excavation of sediments from City Hall Ponds to the elevations and grades as shown on the Construction Drawings or as otherwise directed by the City. No overexcavation will be allowed and the clay liner of City Hall Ponds must be protected from disturbance. This includes all work necessary for excavation, stockpiling within the pond, dewatering, rehandling, and loading of the sediment for transport.
 - 2. Installation, maintenance, and removal of temporary access roads and ramps within the pond bottom, timber mats, and specialized equipment as may be required for all sediment excavation (Access roads covered under Section 02080 – Construction Access).
 - 3. Protection of utilities, structures, and stonework within the pond or along the banks.
 - 4. Disposal of all excess or unsuitable non-sediment materials excavated or otherwise removed from within the pond limits including man-made and natural products not suitable for disposal as sediments. Such materials shall be removed from the site and legally disposed of by the Contractor.
 - 5. Managing sediment materials during the project to ensure that the material is sufficiently dewatered for loading and transport to the ultimate management/disposal site.

1.02 SCOPE

- A. General:
 - 1. Perform Sediment Excavation in compliance with applicable requirements of governing authorities having jurisdiction and project permits. This includes all necessary work for excavation, stockpiling, dewatering, rehandling, and loading of sediment for transport.
 - 2. Install and maintain erosion and sediment controls in accordance with Section 01560 – Temporary Erosion and Sedimentation Controls.

B. Special Requirements:

1. Protection: Comply with all applicable regulations and safety orders in effect at the place of construction. Protect this and adjacent properties from all damage due to this operation. Protect open excavations as required to maintain safe pedestrian and vehicular traffic.
2. Responsibility: The Contractor is responsible for the finished condition of their work. Notify the City promptly in writing if any conditions exist which are contrary to requirements. Without extra cost to the City, restore street pavements, curbs, gutters, walking paths, trees, etc., that may be damaged in the performance of work under this section, in a manner prescribed by any authorities having jurisdiction.
3. Setting and Establishing Finish Elevation Lines: All elevations, grades, lines, etc., required to complete the work under this Section shall be arranged and paid for by the Contractor, or performed by a qualified employee of the Contractor. It is the Contractor's sole responsibility to establish elevations, and to set and protect stakes during operations.
4. Unusual Conditions:
 - a.) The Contractor shall not work in excessively wet or other unfavorable weather. No work under this Section may be conducted when, in the opinion of the City or the Engineer, the work cannot be conditioned in such a manner that downstream areas are protected from excessive turbidity and siltation.
 - b) The Contractor shall maintain flow downstream of City Hall Ponds at all times in accordance with Section 01565 – Temporary Water Control and all Project permits.

C. Codes and Standards:

1. All work and materials shall conform to the latest applicable sections under the state's various jurisdictions; the Standard Specifications for Highways and Bridges, Massachusetts Highway Department, hereinafter referred to as the "Standard Specifications"; as well as the codes and standards referenced in the individual sections. In case of conflict, the codes and standards referenced in the individual sections shall govern.
2. All work and materials shall comply with the latest rules, regulations, and safety orders of the State's Division of Industrial Safety, Occupational Safety and Health Administration (OSHA), A.N.S.I. - A10.1 Safety Code for Building Construction, and all other state, county, city/town, municipality, and the utility laws rules, and regulations. Nothing in these Drawings and Specifications shall be construed to permit work not conforming to the above.

1.03 REQUIREMENTS

- A. Data on indicated subsurface conditions are not intended as representations or warranties of accuracy or continuity. It shall be expressly understood that City will not be responsible for interpretations or conclusions drawn therefrom by Contractor. Data is made available for convenience of Contractor.
- B. Locate existing underground utilities. Contact Dig Safe® (1-888-344-7233) a minimum of 72 hours prior to any excavation work. Should uncharted or incorrectly charted utilities be encountered, consult utility company and City immediately for directions. Coordinate with City relative to locations of utilities onsite, including irrigation systems. Cooperate with City and utility companies in keeping respective services and facilities in operation. Repair damaged utilities to the satisfaction of utility company and City. Provide minimum 48-hour notice to the City and utility company prior to interruption.
- C. The Contractor shall determine construction means, methods, techniques, sequences and procedures. The Contractor shall assume full responsibility for their actions and shall be responsible for adequately insuring against all claims which may arise from any construction procedure. The Contractor shall indemnify and hold harmless the City and/or any of their Agents from any claim arising from the Contractor's (or Subcontractor's) actions.
- D. Protect open excavations and delineate fall hazards with caution tape or other effective means of deterring unauthorized entry. Protect all existing structures during construction.
- E. All excavations shall conform with all applicable laws and regulations. In particular, all excavations shall be in conformance with the regulations of the U.S. Department of Labor, OSHA. These regulations are the Occupational Safety and Health Standards - Excavations found in 29 CFR Part 1926 Subpart P - Excavations, as amended.
- F. All excavated sediments shall be managed/disposed of in accordance with the requirements of Section 02260 – Sediment Management/Disposal.
- G. Contractor shall schedule the work such that the commencement of Sediment Excavation begins at the upstream culverts for Hammond Brook and Cold Springs Brook and then progresses from upstream to downstream through the pond lobes. Contractor must follow approved dewatering and control of water drawings and sequences. Any deviations must be approved by the City and applicable permitting agencies. No accommodation will be made in the total length of contract to account for any needed permitting review and changes if the Contractor chooses to request a different sequence of work or control of water plan.

1.04 RELATED SECTIONS

- A. Temporary Erosion and Sedimentation Controls: Section 01560
- B. Temporary Water Control: Section 01565
- C. Sediment Sampling Technical Data: Section 01567
- D. Site Restoration: Section 01740
- E. Earthwork: Section 02200

F. Sediment Management/Disposal: Section 02260

1.05 SUBMITTALS

- A. Prior to initiating sediment excavation, the Contractor shall submit in writing a Proposed Sediment Excavation Plan for review and acceptance by the City. This proposal shall outline the timing and sequence of excavation procedures as well as methods for sediment control, dewatering of sediment, sediment removal and trucking of materials, along with recordkeeping and reporting. The sequence of all excavation operations shall be such as to insure the efficient removal of materials in a timely manner with a minimum impact on existing drainage patterns. The sequence of operations shall comply with the terms of any environmental permits issued for this project.
- B. Prior to commencing any drawdown, control of water, or excavation work, the Contractor shall establish an approved disposal site and have all approvals and proof of material acceptance in hand and provided to the Engineer and City for review.
- C. If, in the opinion of the City, any work planned does not meet the technical or design requirements stipulated and planned for the work, the Contractor shall make all necessary adjustments to the plan prior to continuing with the work under this Section at no additional cost to the City.

PART 2 - PRODUCTS

Not Applicable to this Section.

PART 3 - EXECUTION

3.01 PREPARATION

- A. The Contractor shall provide for the phased diversion of water as specified in the Construction Drawings and Section 01565 – Temporary Control of Water.
- B. Contractor shall not refuel equipment or perform equipment maintenance within the limits of City Hall Ponds, Cold Springs Brook, or Hammond Brook or within the 100 ft buffer or near drainage structures. No equipment shall be left within the pond limits when Contractor personnel are not on site to move it.

3.02 EXCAVATION OF SEDIMENTS:

- A. Excavation of sediments shall be conducted in conformity with the requirements of the Contract Drawings.
 - 1. Sediments to be excavated and loaded into trucks for transport to the sediment management/disposal site shall be sufficiently dewatered within the pond to allow for the sediments to be properly handled and contained fully within the containers used for transport. No sediments shall be transported to the sediment management/disposal site

unless the materials are sufficiently dry for acceptance of the sediments at the management/disposal site. Sediments shall not be transferred to trucks and/or transported offsite unless they meet the standards of the Paint Filter Test, EPA Method No. 9095.

2. When these conditions cannot be met due to the sediments containing excessive moisture, the Contractor shall further dry the sediments by stacking, harrowing, pre-treating, or other effective method within the pond basin area such that the sediment moisture content is reduced to suitable levels and sediments are suitable for transport.
- B. Bedrock within the pond is not to be excavated. If bedrock is encountered, the City shall be notified immediately. If bedrock is encountered at an elevation higher (shallower) than the design bottom of excavation shown on the Contract Drawings, excavation shall be made to the top of the bedrock where encountered within the limits of grading.
 - C. The Contract Drawings indicate the extents and grades to which City Hall Ponds is to be excavated which represents the original pond bottom. The extents and grades found on the Contract Drawings indicate the boundary of Sediment Excavation.
 - D. Sediment excavation beyond the lines and grades shown on the plan drawings and the limits indicated on the cross-section drawings or disturbance of the clay liner shall not be permitted without the written approval of the City.
 - E. The excavation of sediments may reveal existing drainage pipes or other materials that are underneath the sediments and are not shown on the Contract Drawings. Before excavation can commence, the Contractor shall walk the perimeter of the pond to locate any visible utilities. If any utilities are subsequently discovered during excavation, the Contractor shall notify the City before continuing work in the area of the utility. All utilities determined to be abandoned shall be removed within the grades shown on the Contract Drawings. Active utilities are to be maintained in place and shall not be disturbed unless otherwise directed by the City.
 - F. Debris Removal and Disposal: Any large manmade or natural objects found within the pond not suitable for management/disposal as sediments under Section 02260 shall be collected and legally disposed of offsite by Contractor. Such objects would include, but are not limited to, the following: tires and other car parts, appliances, pipe, concrete, tree stumps, trees which have fallen into the pond, tree limbs, or other unsuitable materials. At no additional cost to the City, the Contractor shall dispose of these materials offsite consistent with all local, state, and federal regulations.

PART 4 – MEASUREMENTS AND PAYMENT

4.01 MEASUREMENT FOR PAYMENT

- A. It is the intent of this project to excavate and remove sediments from City Hall Ponds and portions of the upgradient culverts to the lines and grades shown on the Contract Drawings. The City reserves the right to increase or decrease the quantity of Sediment Excavation by 25% of

the estimated quantity without altering the accepted unit price per cubic yard. The final quantity of Sediment Excavation shall be verified by survey in accordance with Sections 01720 and 01950.

- B. Sediment excavation beyond the lines and grades shown on the Contract Drawings and the limits indicated on the cross-section drawings shall not be measured for payment unless approved by the City prior to the over-excavation taking place.
- C. Sediment Excavation will be measured for payment by the in-place cubic yard prior to excavation based on a comparison of the 2019 bathymetry and post-construction bathymetry.
- D. Debris Removal and Disposal will be measured for payment by the ton, based on actual weight tickets from the Contractor’s selected disposal facility.

4.02 PAYMENT

- A. Excavation of pond sediments will be paid for at the contract unit price per cubic yard for "Sediment Excavation" for the volume of sediments removed. This price shall include all equipment, fuel, tools, transportation and labor incidental to the completion of the excavation, dewatering, stockpiling within the pond, rehandling, conditioning, and loading of the material into trucks for transport to the sediment management/disposal site in accordance with the provisions of the Contract Drawings and these specifications. No separate payment will be made for rehandling of excavated sediment or for additional de-watering resulting from any re-wetting or inundation during or after excavation.
- B. Debris Removal and Disposal will be paid for at the Contract unit price per ton, for the actual weight of such materials lawfully disposed of. This price shall include all equipment, fuel, tools, transportation, and labor incidental to the excavation and loading of debris into trucks for transport to the Contractor’s selected disposal facility, and transportation and lawful disposal, including any fees charged by the receiving facility, in accordance with the provisions of the Contract Drawings and these specifications.

<u>Item</u>	<u>Description</u>	<u>Pay Unit</u>
02210.1	Sediment Excavation	Cubic Yard
02210.02	Debris Removal and Disposal	Ton

***** END OF SECTION *****

SECTION 02260

SEDIMENT MANAGEMENT/DISPOSAL

PART 1 - GENERAL

1.01 DESCRIPTION

- A. Contractor shall furnish all labor, materials, equipment, supervision, and shall perform all operations required to complete the work shown on the Contract Drawings, as directed by the City, as herein specified, and as required to properly complete the work.
- B. The work includes, but is not limited to, the following as outlined in these specifications or shown on the Contract Drawings:
 - 1. Contractor shall provide a plan for the management/disposal of sediments which includes confirmation of acceptance from a Licensed Solid Waste Landfill prior to any dewatering and sediment excavation. No dewatering, in-pond work or excavation may occur until a disposal site is determined and accepted by the City.
 - 2. Managing sediment for transportation to the disposal site, and any management of sediments at the disposal site as may be required by the landfill owner. This item covers all hauling and lawful offsite disposal, as well as all recordkeeping and reporting required for the Work and all permits. This item also includes all testing and Licensed Site Professional (LSP) and Professional Engineer (PE) services that may be needed for the work.
 - 3. Sediment materials shall be reused or disposed of at a Licensed Solid Waste Landfill, preferably in Massachusetts, in accordance with the Water Quality Certification issued for the project (as amended), the Massachusetts Department of Environmental Protection's policy COMM-94-007 and all other applicable permits and regulations.
- C. The Contractor is responsible for payment of all required tipping and disposal fees at the approved management/disposal site which will receive the sediments. The Contractor is also responsible for obtaining all necessary approvals for management/disposal, for all applicable documentation and recordkeeping and providing such records to MassDEP and the City, and for procuring and payment for all necessary sediment testing that may be required for sediment management/disposal at an approved facility and all review and documentation by a Licensed Site Professional or Professional Engineer associated with such management/disposal.

1.02 SCOPE

- A. Work shall be conducted in accordance with all applicable permit application and permit approval requirements.

- B. Work shall include all sampling, testing, and Licensed Site Professional (LSP) and Professional Engineer (PE) services that may be needed for the work.
- C. Work shall consist of transporting, managing and management/disposal of the excavated sediments at an approved landfill in accordance with all permits.
- C. Comply with all applicable regulations and safety orders in effect at the place of construction. Protect this and adjacent properties from all damage due to this operation. Protect open excavations, trenches, etc., with fences, covers or railings as required to maintain safe pedestrian and vehicular traffic.
- E. Manage transport and tracking of excavated sediments to the landfill in accordance with all permits issued for the Project and local, state, and federal requirements.

1.03 RELATED SECTIONS

- A. Summary of Work: Section 01010
- B. Regulatory Requirements: Section 01060
- C. Temporary Erosion and Sedimentation Controls: Section 01560
- D. Sediment Sampling Technical Data: Section 01567
- E. Site Restoration: Section 01740
- F. Construction Access: Section 02170
- G. Earthwork: Section 02200
- H. Sediment Excavation: Section 02210

1.04 SUBMITTALS

- A. Contractor shall submit a written narrative plan for transportation and management/disposal of the sediments at a Licensed Solid Waste Landfill, including qualifications and information relative to the LSP and PE for the work. This shall include testing results and documentation provided to the landfill, as well as approvals and a confirmation of acceptance by an approved facility, which shall at a minimum include the landfill name, location, operator, and other information needed for permit approval compliance, with a contact person for the facility. This information must also be submitted to MassDEP for approval prior to dewatering and sediment excavation.
- B. The Contractor shall submit for approval a trucking route plan for all sediment transport offsite. Sediments shall be accompanied to the landfill by a DEP Material Shipping Record (MSR) to be completed by the Contractor and signed in accordance with the applicable regulations. All documents shall be provided to the City and to DEP as required by permits.

PART 2 - PRODUCTS

Not applicable to this Section.

PART 3 - EXECUTION

3.01 SEDIMENT TRANSPORT AND REUSE

- A. Vehicle Restrictions: The vehicles used in the transport of sediment from City Hall Ponds to the landfill shall be of a type appropriate for the project and shall be safe and maneuverable while operating within the site. The maximum dimensions, weight, and configuration of the vehicles shall comply in all regards with the requirements of all applicable authorities and jurisdictions. All sediments shall be covered by a tarpaulin or other means during transport. Water-tight trailers, bed liners or similar measures shall be employed as needed to prevent the leakage of liquids from trailers during transport.
- B. Site Access: The Contractor shall access the site for sediment transport only from the construction access roads.
- C. Compliance: The Contractor shall comply with all applicable laws, regulations, codes, permit conditions, and any other applicable requirements for the operation of the sediment transport vehicles. The Contractor shall be responsible for obtaining all necessary permits, approvals, etc. for said compliance.
- D. Dewatering: Sediments shall be dewatered onsite prior to trucking. Sediments shall contain no free draining liquids and shall pass the EPA Paint Filter Test, EPA Method No. 9095 prior to transport.
- E. Street Cleaning: The Contractor shall immediately sweep, wash, or otherwise cleanse any sediments tracked or spilled onto the public or private thoroughfares or walkways. If the City requests removal of tracked sediments due to this project from any public pavement surface, Contractor shall comply and clean noted areas to the satisfaction of the City within 24 hours or cease all further trucking operations until such cleaning is satisfactorily performed.
- F. Documentation: The Contractor shall provide completed copies of shipping records to the City and Engineer within 10 calendar days of final transport and placement of excavated sediments to the disposal facility.

PART 4 - COMPENSATION

4.01 MEASUREMENT FOR PAYMENT

- A. No separate measurement will be made for Sediment Management/Disposal. The

quantity of Sediment Management/Disposal shall be the same quantity as measured by the in-place cubic yard for payment under Bid Item No. 02210.01 - Sediment Excavation.

4.02 PAYMENT

- A. Payment for the scope of work specified herein, including all labor, materials, equipment and incidentals, including sampling, testing, LSP services, transport, tipping and disposal fees, receiving facility requirements, handling, placement, permit documentation and reporting, etc. for Sediment Management/Disposal shall be paid for at the applicable unit price for Item 02260.01 stated on the Bid Form.

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
02260.01	Sediment Management/Disposal	Cubic Yard

******* END OF SECTION *******

**SECTION 02270
STONE AND ROCKFILL**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall furnish all equipment, materials and labor and do all work necessary to place stone materials, including crushed stone, crushed stone screenings, stone bedding, and underlying geotextile filter fabric.
- B. Crushed stone, and rock shall be sized as indicated on the Contract Drawings or as indicated in the Specifications. The Contractor shall be responsible for all testing, furnishing, processing, transportation, and placement necessary to achieve stone with quality and gradations meeting the specifications. Where specified, filter fabric shall be provided and placed under or around stone material, as shown on the Contract Drawings or as indicated in the Specification.
- D. Placement, intermediate grading and final grading of areas of stone, rock, and riprap placement shall be included in the Work of this Section at no additional cost to the City. Such work may involve handling and placement of individual stones to achieve a stable slope at the lines and grades shown on the Contract Drawings. The cost of such work shall be included in the price bid for items which involve stone, rock, and riprap placement.
- E. Adherence to the lines, grades, and slopes shown on the Contract Drawings is critical so as to meet permit requirements. Stone and rock placed by the Contractor shall not exceed the limits shown on the Plans unless authorized by the City.
- F. Stone and rock placed as incidental work shall conform to the requirements of this Section, except as specified elsewhere.

1.02 SCOPE

- A. Work involving stone and rock shall include, but not be limited to the following materials specified in this Section, but paid for elsewhere or as may be incidental to the Project:
 - 1. Furnishing and placement of Crushed Stone for stabilized construction entrances, access roads, access ramps, and other temporary water control and erosion and sedimentation control measures.
 - 2. Furnishing and placement of Crushed Stone for pipe bedding where pipes are encountered, backfill behind boulders and elsewhere on site.

3. Furnishing and placement of Crushed Stone for pavement and sidewalk restoration/improvements.
4. Furnishing and placement of Crushed Stone Screenings for stone dust walkway restoration and improvements.
5. Furnishing and placing of geotextile filter fabric under and around crushed stone, riprap, and elsewhere as shown on the Contract Drawings.

1.03 RELATED WORK

- A. The following is a list of related work items that shall be performed or furnished under other Sections of these Specifications as indicated:
1. Construction Facilities and Temporary Controls: Section 01500
 2. Temporary Erosion and Sedimentation Controls: Section 01560
 3. Temporary Water Control: Section 01565
 4. Site Restoration: Section 01740
 5. Construction Access: Section 02080
 6. Temporary Cofferdams: Section 02170
 7. Earthwork: Section 02200
 8. Paving and Resurfacing: Section 02500
 9. Landscape Work: Section 02970

1.04 PERMITS AND CODES/REFERENCE STANDARDS

- A. All work shall conform to the Contract Drawings and Specifications and shall comply with applicable codes and regulations and with the Commonwealth of Massachusetts Department of Transportation Standard Specifications for Highways and Bridges.
- B. The Contractor shall comply with all rules, regulations, laws and ordinances of the Commonwealth of Massachusetts, City of Newton and of all other local authorities having jurisdiction. All labor, materials, equipment and services necessary to make the work comply with such requirements shall be provided without additional cost.

1.05 SUBMITTALS

- A. Two (2) weeks prior to the delivery of any stone material to the site, the Contractor shall provide the City with the name and location of the proposed quarry(s) to be used to supply the stone products. The Contractor shall provide the City with information regarding the type and physical characteristics of the stone, as required below. The Contractor shall also provide copies of any certifications or approvals of the quarry products from other agencies.
- B. Two (2) weeks prior to the delivery of any crushed stone, stone, rock, or riprap to the site, the Contractor shall submit a description of the material, the source of the material,

a gradation analysis, density/specific gravity test results, and samples of the materials as required by the City. All material data submittals shall be provided to the Engineer.

- C. Five days prior to the delivery of any geotextile filter fabric to the site, the Contractor shall submit a description of the material, the source of the material, manufacturer's specifications, and samples of the material as required by the City.

PART 2 - PRODUCTS

2.01 3" CRUSHED STONE FOR ACCESS ROADS

- A. Crushed Stone for Access Roads shall consist of sound, tough, and durable angular material, free from soft, thin, elongated, or laminated pieces. Material shall not contain organic matter or other deleterious material. Material shall be close-graded and exhibit the following gradation:

Sieve Size	Percent Finer by Weight
3 inch	100
1 ½ inch	24-40
¾ inch	0-10
No. 16	0-5

- B. All crushed stone shall be underlain by Type 1 geotextile filter fabric per M9.50.0 of the Standard Specifications, unless shown otherwise on the Contract Drawings.

2.02 CRUSHED STONE FOR BEDDING AND SUBGRADE

- A. Crushed stone shall consist of hard, durable, and sound angular stone which is resistant to weathering and angular in shape. Rounded stones, boulders, elongated, thin or flat pieces whose breadth or thickness is less than one-third its length will not be allowed. The material shall have a gradation meeting the following requirements:

Sieve Size	Percent Finer by Weight
1 inch	100
¾ inch	90-100
½ inch	10-50
3/8 inch	0-20
No. 4	0-5

- B. The thickness of the crushed stone bedding material layer below stonework shall be as indicated on the plans, but in no case shall the layer thickness be less than 6 inches.
- C. All crushed stone bedding material below stonework shall be underlain by Type 1

geotextile filter fabric per M9.50.0 of the Standard Specifications, except where shown on the Contract Drawings.

2.03 CRUSHED STONE SCREENINGS (STONE DUST)

A. Stone dust shall conform to the requirements for Crushed Stone Screenings as described in M2.05.0 of the Standard Specifications and shall meet the following gradation requirements:

Sieve Size	Percent Finer by Weight
No. 4	100
No. 8	40-100

2.04 GEOTEXTILE FABRIC

B. Geotextile filter fabric for use under the bedding of onsite materials shall be a woven geotextile product.

C. Woven geotextile filter fabric shall be composed of high-tenacity monofilament polypropylene yarns, which are woven into a stable network such that the yarns retain their relative position. Filter fabric shall be inert to biological degradation and resists naturally encountered chemicals, alkalis, and acids.

D. Woven filter fabric shall conform to the following properties, or as shown on the Construction drawings.

Mechanical Properties	Test Method	Unit	Minimum Average Roll Value (MD / CD)
Wide Width Tensile Strength	ASTM D 4595	kN/m (lbs/ft)	40 (2700) 26 (1740)
Grab Tensile Strength	ASTM D 4632	kN (lbs)	1.65 (370) 1.11 (250)
Grab Tensile Elongation	ASTM D 4632	%	16 15
Trapezoid Tear Strength	ASTM D 4533	kN (lbs)	0.45 (100) 0.27 (60)
Mullen Burst Strength	ASTM D 3786	kPa (psi)	3304 (480)
Puncture Strength	ASTM D 4833	kN (lbs)	0.6 (135)
Apparent Opening Size (AOS)	ASTM D 4751	mm (U.S. Sieve)	0.212 (70)
Percent Open Area	COE-22125-86	%	4 - 6
Permittivity	ASTM D 4491	sec-1	0.28
Permeability	ASTM D 4491	cm/sec	0.01
Flow Rate	ASTM D 4491	l/min/m ² (gal/min/ft ²)	733 (18)
UV Resistance (at 500 hours)	ASTM D 4355	% strength retained	90

Physical Properties	Test Method	Unit	Typical Value
Mass/Unit Area	ASTM D 5261	g/m ² (oz/yd ²)	190 (5.6)
Thickness	ASTM D 5199	mm (mils)	0.38 (15)

- E. Woven filter fabric for use at the site shall be Mirafi Woven Filter Weave (FW) 700 or approved equivalent.

PART 3 EXECUTION

3.01 EXAMINATION AND PREPARATION

Grades, both existing and finished, are indicated on the Contract Drawings. The Contractor shall check and verify all areas wherein grades are shown to satisfy themselves and the City as to actual conditions. The Contractor shall be responsible for establishing all control points and marks necessary for the work. Precautions shall be taken to preserve the materials outside the lines of the limit of work in the most undisturbed condition possible. The Contractor shall:

- A. The Contractor's RLS to Identify and verify all required lines, levels, contours, and datum as necessary to assure installation in compliance with the plans.
- B. Notify the City in writing of unanticipated subsurface conditions and discontinue affected work in area until notified to resume.
- C. Verify fill materials to be reused are acceptable to the City and Engineer.

3.02 BACKFILL FOR TRENCHES AND STRUCTURES

- A. Bedding for Pipes: Place pipe on minimum 6 inches of specified pipe bedding material in trench (minimum 8 inches in rock), fill simultaneously on either side of the pipe, for the full width of the trench to provide complete crushed stone bedding for bottom quadrant of pipe.
- B. Bedding for Structures: Place utility structures on minimum 12 inches crushed stone. Place and compact as specified. Crushed stone thicker than 6 inches or as noted on the Drawings (whichever is more stringent) shall have geotextile installed below.
- C. Compaction: Compact each layer of fill, backfill and granular materials to not less than the following percentages of the maximum dry density as described by ASTM D1557 (Modified Proctor): 95% beneath structural components and in all trenches. Use power-driven hand tampers for compacting materials adjacent to structures and in trenches. Provide equipment capable of adding moisture to the soil or aerating the soil

as determined by moisture-density tests. Apply water uniformly in such manner as to prevent free water appearing on the surface, either during or subsequent to compaction operations.

D. Refill, regrade, and refinish any area that becomes unsatisfactory due to settling.

E. See Excavation – Section 02200.

PART 4 - MEASUREMENT AND PAYMENT

4.01 MEASUREMENT FOR PAYMENT

A. No separate measurement will be made of any work performed under this Section. The cost of any work done or facilities or materials under this Section shall be included under other bid items within the Contract.

4.02 PAYMENT

A. There will be no separate payment for the scope of work specified herein. All labor, materials, equipment and incidentals associated with Stone and Rockfill shall be included in the cost of pay items to which Stone and Rockfill are incidental.

*** * * END OF SECTION * * ***

**SECTION 02500
PAVING AND RESURFACING**

PART 1 - GENERAL

1.01 DESCRIPTION

- A. The Contractor shall provide all labor, materials, and equipment necessary to complete the work of this Section, including, but not limited to the following:
 - 1. Repair bituminous concrete roadways, walkways, or driveways disturbed as a consequence of this project.
 - 2. Repair Portland cement sidewalks, aprons, pads, or features damaged during construction. Reset boulders in concrete.
 - 3. Installation of replacement of curbing (Precast Concrete Curbing, Granite Curbing, or other) disturbed as a consequence of this project.
 - 4. Installation of new stone dust walkway edging and replacement of stone dust within existing walkways as well as repair of areas damaged by construction.
 - 5. Other concrete, paving, and surfacing work as may be required to ensure completion of this project.

1.02 SUBMITTALS

- A. Provide copies of materials certificates signed by material producer and Contractor, certifying that each material item complies with, or exceeds, specified requirements.
- B. For bituminous concrete base and pavement sections and for Portland cement concrete sections, submit design mix and test reports prepared by a professional testing laboratory acceptable to the City with all submittals and mix design signed by a Professional Engineer licensed in the State of Massachusetts.
- C. Submit walkway steel edging manufacturer's literature and sample to City, along with color choices.

1.03 QUALITY ASSURANCE

- A. Bituminous and Portland cement concrete materials shall not be placed until the City has inspected and approved the sub-base.
- B. Weather Conditions: Bituminous or Portland cement concrete material shall not be placed when the ambient temperature is below 40° Fahrenheit, or when there is frost in the base, or at any other time when weather conditions are unsuitable.

C. Codes and Standards:

1. All work and materials shall conform to the latest applicable sections of the Massachusetts Highway Department (MHD) Standard Specifications for Highways and Bridges, hereinafter referred to as the “Standard Specifications”, as well as the codes and standards referenced in the individual sections of this specification. In case of conflict, the codes and standards referenced in the individual sections shall govern.
2. All work shall be in full accordance with the latest rules, regulations and safety orders of OSHA. and all other local, state and federal worker safety laws. Nothing in the Contract Documents shall be construed to permit work not in accordance with the above.
3. When the Contract Documents call for material or construction of better quality or larger size than required by the above codes and standards, then the provisions of the Contract Documents shall take precedence.

1.04 CONTROL AND TESTING

- A. The services of qualified material testing personnel shall be engaged and paid for by the Contractor for the making of tests to determine the strength and quality of the Portland cement concrete.
- B. The Contractor shall cooperate with the testing personnel so as to permit proper observation and testing of the work without unnecessary delays.
- C. Perform concrete testing as specified in the Standard Specifications.

1.05 RELATED SECTIONS

- A. Temporary Erosion and Sedimentation Controls: Section 01560
- B. Site Restoration: Section 01740
- C. Site Preparation and Demolition: Section 02065
- D. Construction Access: Section 02080
- E. Earthwork: Section 02200
- F. Stone and Rockfill: Section 02270
- G. Landscape Work: Section 02970

PART 2 - PRODUCTS

2.01 BITUMINOUS CONCRETE

- A. Pavement: Bituminous concrete pavement shall be Class I and conform to Materials Standard M3.11.03-Table A-Binder and Top Course of the Standard Specifications.

2.02 TACK COAT

- A. Emulsified asphalt CRS-1, CRS-1H or CSS-1H; diluted with equal parts water.

2.03 PORTLAND CEMENT CONCRETE

- A. Portland cement concrete shall meet the requirements for “Portland cement concrete (Air-entrained 4,000 psi, ¾”, 610 lb/cy)”, as specified in Subsection M4.02.00 of the Standard Specifications.
- B. Preformed Expansion Joint Filler shall conform to Subsection M9.14.0 of the Standard Specifications.

2.04 PRECAST CONCRETE CURBING

- A. All precast concrete curb units shall utilize concrete with a minimum 28-day strength of 5,000 psi. Standard length of precast curb shall be 6 feet with height and thickness to match adjacent areas. Curved sections of curbing shall be cast to the radii shown on the plans. Precast curbing shall match the shape and size of existing curbing to be replaced.

2.05 GRANITE CURBING

- A. Any new granite curbing shall conform to Subsections M9.04.0-1 of the Standard Specifications for Type VB curb.
- B. Granite curb inlets, where required, shall conform to Subsection M9.04.5 of the Standard Specifications.
- C. Granite curb corners shall conform to Subsection M9.04.6 of the Standard Specifications.

2.06 STONE DUST WALKWAYS AND EDGING

- A. Stone Dust material specification is identified in Section 02270.
- B. Subgrade replacement materials shall be Processed Gravel Borrow as identified in Section 02270.
- C. Walkway edging shall be powder coated, baked on enamel steel, 4” minimum height for edging thickness (not including staking portion), 3/16” minimum thickness, with interlocking system and stake punch outs fabricated with each strip. City to select color.

2.07 PAINT

- A. Traffic Paint shall be low V.O.L. traffic marking paint meeting requirements of MHD Standard Specifications M7.01. 10 Fast Drying White Traffic Paints. Color to be white. Paint shall be as manufactured by Sherwin-Williams, Pittsburgh Paint, Benjamin Moore, or an approved equal.

2.08 POLYURETHANE JOINT SEALANT

- A. Joint sealant for concrete surfaces shall consist of a cold-applied, two component, elastomeric joint sealing compound suitable for use as a joint sealer on joints in Portland cement concrete, and shall meet the requirements of Subsection M9.14.3 of the Standard Specifications. The joint sealant shall be compatible with the color coating system.

PART 3 - EXECUTION

3.01 SAW CUTTING

- A. Contractor shall layout the limits of the existing pavement, sidewalks, and curbing to be cut in the field and shall saw cut in a neat, clean, uniform manner and review with the Owner prior to proceeding.
- B. Jack hammer cutting is not a substitute for saw cutting.

3.02 REMOVAL

- A. Contractor shall remove existing damaged paving, sidewalks, and curbing as agreed to be the Owner and within the saw cut limits. All removed material shall become the property of the Contractor and shall be removed off site and lawfully disposed of properly by the Contractor.
- B. Removal limits are shown on the plans and may be revised by the Owner upon field review.

3.03 BITUMINOUS CONCRETE

- A. Preparation:
 - 1. Contractor shall place processed gravel borrow subbase and gravel base as shown on the Drawings. Gravel shall be compacted to 95% of the maximum dry density as described by ASTM D1557 (Modified Proctor).
 - 2. Contractor shall tack coat the vertical saw cut edge where new bituminous pavement will abut existing pavements. Tack coat shall be applied by brush or spray to contact bituminous surfaces at a rate between 0.05 and 0.15 gallons per square yard of sur-

face.

3. After subbase has been prepared, the Contractor shall check all frames, covers, boxes, and other miscellaneous castings located in proposed pavement to ensure they are accurately positioned and set to the proper slope and elevation. All covers and grates shall be set flush with finished pavement surface.

B. Paving

1. General: Place bituminous concrete mixture on prepared surface free from standing water. The minimum surface temperature of the base shall be 60°F when only one roller is used for breakdown rolling (15 minutes) or 40°F when two rollers are used (8 minutes). Spread mixture at minimum temperature of 275°F. Place inaccessible and small areas by hand. Avoid excessive raking and segregation of aggregate particles prior to compaction when hand placing bituminous materials. Place each course to required grade, cross-section, and appropriate thickness to yield required minimum depth after rolling.
2. Place bituminous concrete in widest strip practical. After first strip has been placed and rolled, place succeeding strips and extend rolling to overlap previous strips. Courses shall be placed in approximately equal layers not exceeding 3 inches in depth after compaction. Care shall be taken to match abutting pavements in elevation and grade with a smooth transition.
3. Joints: Make joints between old and new pavements, or between successive days' work, to ensure continuous bond between adjoining work. Construct joints to have same texture, density and smoothness as other sections of bituminous concrete course. Clean contact surfaces and apply tack coat. The longitudinal joint in one layer shall offset the joint in the layer immediately below by 12 inches.
4. Begin rolling with a steel-wheeled roller when mixture will bear roller weight without excessive displacement. Compact mixture with hot hand tampers or vibrating plate compactors in areas inaccessible to rollers.
5. Breakdown Rolling: Accomplish breakdown or initial rolling immediately following rolling of joints and outside edge. Check surface after breakdown rolling, and repair displaced areas by loosening and filling with hot material.
6. Second Rolling: Follow breakdown rolling as soon as possible, while mixture is still hot. Continue second rolling until mixture has been thoroughly compacted.
7. Finish Rolling: Perform finish rolling while mixture is still warm enough for removal of roller marks. Continue rolling until roller marks are eliminated and course has attained 95 percent maximum density as measured by the density test specified in the applicable Project Drawings and Specifications.
8. Remove and replace paving areas mixed with foreign materials or otherwise defective. Cut-out such areas and fill with fresh, hot bituminous concrete. Compact by rolling to maximum surface density and smoothness.
9. After final rolling, do not permit vehicular traffic on pavement until it has cooled and hardened. Erect barricades to protect paving from traffic until mixture has cooled enough not to become marked.

3.04 CEMENT CONCRETE SIDEWALKS, PADS, AND FEATURES

- A. In general, all cement concrete paving work shall be performed in compliance with Section 476 of the Standard Specifications
- B. Subgrade and Foundation
 - 1. The subgrade for sidewalks, ramps, and pads shall be shaped parallel to the proposed finished surface and shall be thoroughly compacted. All depressions occurring shall be filled with suitable material and again compacted until the surface is smooth and hard.
 - 2. A foundation of compacted gravel shall be placed upon the prepared subgrade. The foundation shall be at least 8 inches in depth and parallel to the proposed surface.
- C. Forms shall comply with Subsection 701.41 of the Standard Specifications.
- D. Placing and finishing of concrete shall conform to Subsection 701.41 of the Standard Specifications.
- E. Note that concrete sidewalks shall be 4 inches in depth except for at driveways where the depth shall be increased to 8 inches.

3.05 PRECAST CONCRETE AND GRANITE CURBING

- A. Foundation:
 - 1. A trench for the curbing shall be excavated to a width of 18 inches. The subgrade of the trench shall be a depth below the proposed finish grade of the curb equal to 6 inches plus the depth of the curbstone.
 - 2. The foundation for the curb shall consist of gravel borrow spread upon the subgrade and after being thoroughly compacted by tamping shall be 6 inches in depth.
 - 3. Foundations for curb inlets shall be a full bed of Portland cement mortar on the supporting back wall of the catch basin or other suitable drainage structure and sufficient gravel borrow on each side to support the curb overhang. The trench for the foundation shall be at least 6 inches in depth and 18 inches wide. This trench shall be filled with gravel thoroughly tamped to the required grade.
- B. Setting Curbing:
 - 1. Curbing and corners shall be set on additional gravel borrow spread upon the foundation.
 - 2. All spaces under the curb shall be filled with cement concrete so that the curb will be completely supported throughout its length, front, back, and underneath, as shown on the drawings.
 - 3. The curb shall be set to the line and grade required to match existing surrounding grades or as otherwise directed.

4. Curb sections shall be fitted together as closely as possible

C. Filling About Trench:

1. After the curbing has been set, the space between it and the wall of the trench shall be backfilled with gravel borrow thoroughly tamped to the depth indicated, with care being taken not to affect the line or grade of the set curbing.

D. Pointing:

1. The joints between curbstones (front & back) shall be carefully filled with cement mortar and neatly pointed on top and front exposed portions. After pointing the curbstones shall be satisfactorily cleaned of all excess mortar that may have been squeezed out of the joints.

E. Transition Curb for Wheelchair Ramps:

1. Transitions from normal curbs to wheelchair ramps shall be accomplished with transition curb as directed. Transitions shall be of the same type curbing and of the same radius, if curved.

3.06 REPLACEMENT OF STONE DUST WALKWAY

A. Stone dust walkways replacement work will include replacement of existing walkway edging with steel landscaping edging and replacement of approximately 4-inch compacted thickness stone dust cross section. In areas where unsuitable subgrade exists, as judged by the City or the Engineer during proof compaction of the subgrade, work will also include over-excavation and replacement of up to a maximum of 12 inches of subgrade thickness with Gravel Borrow, as directed as directed by the City. Work will also include removal of existing stone dust, unsuitable subgrade materials, and edging from the site for offsite management and lawful disposal by the Contractor in accordance with all applicable regulations and permits per Site Preparation and Demolition – Section 02065.

B. Contractor shall identify existing walkway limits based on survey and existing field conditions for confirmation by City before any work commences.

C. No construction equipment will be permitted outside the existing pathway limits to protect adjacent park areas except as specifically indicated in the Contract Drawings and Specifications or with prior written approval of the City. No equipment will be allowed on pedestrian footbridge areas. All walkway work shall be completed by vehicles and equipment which are capable of being operated within the confines of the existing walkway layouts.

D. Initial work will include cutting sod/turf flush with existing walkway edging/walkway limits where it has overgrown walkway extents (assumed to be 8 ft wide typical dimension, with plazas and or other locations that may widen or narrow).

E. Existing edging shall be removed being careful to protect surrounding pavements, vegetation and structures. Contractor shall remove existing stone dust walkway materials and underlying soils to a depth of 4 inches. In the presence of the Engineer and City, Contractor shall proof compact the exposed subgrade using a vibratory roller or large plate compactor. Any areas of subgrade observed to be wet, soft (pumping/weaving) or other-

wise unsuitable shall be over excavated and replaced as described herein.

- F. Unsuitable subgrade shall be over-excavated and replaced with Gravel Borrow to a maximum depth of 12 inches, placed and compacted in accordance with the requirements of Section 02200.
- G. Once subgrade has been accepted by the City, Contractor shall install new steel landscaping edging per manufacturer's instructions and install stone dust materials and 95% compact such that the edging and walkway is flush with surrounding grades.
- H. Turf areas alongside walkways damaged during construction shall be restored per the Project Specifications, at no additional cost to the City.

PART 4 – MEASUREMENT AND PAYMENT

4.01 METHOD OF MEASUREMENT

- A. Measurement for Stone Dust Walkways shall be made on the area of installed walkways which the Contractor has replaced with new edging and stone dust per the Drawings and Specifications.
- B. Measurement for the Replacement of Unsuitable Subgrade shall be made on the volume of unsuitable subgrade materials removed from the Site as agreed upon with the City, as measured in the field by the City and Engineer.
- C. No measurement shall be made of any other work performed under this Section.

4.02 PAYMENT

- A. Payment for Stone Dust Walkways associated with the reconstruction of the stone dust walkways with edging, including all labor, materials, equipment, and incidentals, shall be paid for at the applicable unit price for Item No. 02500.01 stated on the Form for Bid.
- B. Payment for Replacement of Unsuitable Subgrade, including all labor, materials, equipment and incidentals, shall be paid for at the applicable unit price for Item No. 02500.02 stated on the Form of Bid.
- C. There will be no separate payment for other work required under this Section for restoration/repair of areas damaged by construction. The cost of any work or facilities herein shall be included under other bid items within the Contract or considered incidental to the Work of the Contract.

<u>Item No.</u>	<u>Payment Item</u>	<u>Unit</u>
02500.01	Stone Dust Walkways	Square Feet
02500.02	Replacement of Unsuitable Subgrade	Cubic Yard

*******END OF SECTION*******

**SECTION 02970
LANDSCAPE WORK**

PART 1 - GENERAL

1.01 DESCRIPTION OF WORK

- A. All areas disturbed during construction and not otherwise surfaced (with the exception of bank restoration areas) shall be rough graded, restored with topsoil, sodded, and maintained until a satisfactory stand of grass, as determined by the City, is established.
- B. Transplant trees/shrubs identified by City and Conservation Commission in buffer area prior to buffer disturbance.
- C. Perform all lawn construction (preparation and sodding) of specified areas as shown on the Contract Drawings.
- D. Furnish and install all shrubs, trees, and other plantings as specified and shown on the Contract Drawings.
- E. Topsoil and mulch or seed all plant beds/buffer areas as detailed and shown on the Contract Drawings.
- F. Replace boulders along pond edges in original locations.
- G. Maintain all seeded and planted areas, including weeding, watering and mowing, as specified herein until acceptance by the City.
- H. In order to receive a Certificate of Substantial Completion, the Contractor must establish an acceptable and satisfactory stand of grass at all lawn areas and complete and document all required plantings.

1.02 QUALITY ASSURANCE

- A. General:
 - 1. Perform restoration work in compliance with applicable requirements of governing authorities having jurisdiction.
- B. Qualification of Landscape Contractor: The work of this Section shall be performed by a landscape contracting firm which has successfully installed work of a similar quality, schedule requirement, and construction detailing with a minimum of five years experience. Proof of this experience shall be submitted per SUBMITTALS paragraph of this Section.
- C. Qualification of Foreman or Crew Leader: All work of unloading, stockpiling, storing, transporting on-site, planting, staking and guying, fertilizing, and maintenance of trees, shrubs, vines, groundcover, and perennials shall be supervised by a foreman or crew leader who is a certified landscape professional or a certified horticulturist in the Com-

monwealth of Massachusetts.

1. Landscape professional shall be a Massachusetts Certified Landscape Professional certified by the Associated Landscape Contractors of Massachusetts.
 2. Horticulturist shall be a Massachusetts Certified Horticulturist as certified by the Massachusetts Nursery and Landscape Association.
 3. Certification shall be current. Proof of certification shall be submitted per SUBMITTALS paragraph of this Section.
- D. Certified Landscape Professional or Certified Horticulturist shall be on the project site throughout the day-to-day performance of the work described in this Section.
- E. Qualification of Arborist: an arborist certified by the Massachusetts Arborists Association or the International Society of Arboriculture shall perform all work of pruning.
- F. All plants are the full responsibility of the Contractor between the time of digging at the nursery and until the end of the guarantee period and final acceptance by the City. As a basis of this Contract, the Contractor will be assigned full responsibility for any decline or damage to the plant material from the time the plants are dug until the plants have gone through their guarantee period.
- G. Plants and planting shall conform to American Association of Nurserymen's Standards for Nursery Stock (ANSI Z601) for size, shape, number of leaders, branching patterns, health, etc. Plants shall be nursery grown under similar climatic conditions to those of the project locality for a minimum of two (2) years.
- H. Source Quality Control:
1. General: Ship landscape materials with Certificates of Inspection as required by governing authorities. Comply with regulations applicable to landscape materials.
 2. Do not make substitutions. If specified landscape material is not obtainable, submit proof to City of non-availability and proposal for use of equivalent material.
 3. Plant names indicated comply with the latest edition of Hortus III. Names of varieties not listed conform generally with names accepted by the nursery trade. Provide stock true to botanical name.
 4. Comply with sizing and grading standards of the latest edition of "American Standard for Nursery Stock" ANSI Z60.1.
 5. Plants shall be at least the minimum size indicated. Larger stock is acceptable if approved by the City, at no additional cost. When larger plants are used, increase the spacing proportionally, as appropriate.
- I. Inspection: City reserves the right to inspect and approve trees and shrubs at the place of growth for compliance with specification requirements for name, variety, sizes, and quality.

J. Special Requirements:

1. Protection: Comply with all applicable regulations and safety orders in effect at the place of construction. Protect this and adjacent properties from all damage due to this operation. Protect open excavations, trenches, etc., with fences, covers or railings as required to maintain safe pedestrian and vehicular traffic.
2. Responsibility: The Contractor is responsible for the finished condition of his work. Notify the City's Representative promptly in writing if any conditions exist which are contrary to requirements. Without extra cost to the City, restore street pavements, walks, curbs, gutters, trees, etc., that may be damaged in the performance of work under this section, in a manner prescribed by any authorities having jurisdiction.
3. Setting and Establishing Finish Elevation Lines: All elevations, grades, lines, etc., required to complete the work under this Section shall be arranged and paid for by the Contractor, and performed by a qualified employee of the Contractor. It is the Contractor's sole responsibility to establish elevations, and to set and protect stakes during operations.

K. Codes and Standards:

1. All work and materials shall conform to the latest applicable sections under the state's various jurisdictions; the Standard Specifications for Highways and Bridges, Massachusetts Highway Department, hereinafter referred to as the "Standard Specifications"; as well as the codes and standards referenced in the individual sections. In case of conflict, the codes and standards referenced in the individual sections shall govern.
2. All work and materials shall also be in full accordance with the latest rules, regulations, and safety orders of the State's Division of Industrial Safety OSHA, A.N.S.I. - A10.1 Safety Code for Building Construction, and all other state, county, city, municipality, and the utility laws rules, and regulations. Nothing in these Plans and Specifications shall be construed to permit work not conforming to the above.

1.03 REFERENCES

A. The following standards shall apply to the work of this Section.

1. Dirr: Manual of Woody Landscape Plants: Their Identification, Ornamental Characteristics, Culture, Propagation and Uses, Michael Dirr et al, latest edition: standardized plant names.
2. ASNS: American Standard for Nursery Stock, latest edition, published by American Nursery & Landscape Association, (ANLA): standards for growing and harvesting plant material. American National Standards Institute (ANSI): Z60.1.
3. American National Standards Institute (ANSI): A300 Tree Care Operations; Tree, Shrub, and Other Woody Plan Maintenance, Standard Practices, Part 1, Pruning, lat-

est edition.

1.04 JOB CONDITIONS

- A. Coordination: Coordinate all work of this section with related work of other sections. Failure to coordinate properly will not reduce the obligation to meet the standards of acceptance of the various elements of work contained herein.
- B. Sequencing and Scheduling:
 - 1. No sod, seed, or plantings shall be placed until acceptance of fine grading by the Owner.
 - 2. No permanent planting, seeding or sodding shall be done in areas where construction operations may still damage the work.
 - 3. All existing or new grass areas damaged by construction operations or other causes shall be repaired to the City's satisfaction, at no additional cost to the City.
 - 4. If seasonality does not allow for permanent sod/seed, temporary vegetative and non-vegetative stabilization shall be installed and maintained by the Contractor at no additional cost to the City, until such time that permanent landscaping can commence.
- C. Existing Conditions: All work that the work of this section is contingent upon shall be examined and any deficiencies shall be reported to the City. Commencement of work will be construed to mean complete acceptance of the preparatory work. No adjustment will be made for discrepancies brought to the attention of the City after work has begun. All areas to be planted shall be inspected by the Contractor before starting work and any defects such as subgrade elevations that will require additional excavation to insure adequate volumes of planting soil, incorrect grading or inadequate drainage shall be reported to the City prior to beginning this work.
- D. Extent of Work: Areas to be loamed, seeded, sodded, planted, and mulched include all areas disturbed by the Contractor's activities which are not scheduled for other surfaces. All areas disturbed by the work and not otherwise covered or protected by other surfacing shall be dressed, sodded, and or planted and mulched.
- E. Planting Time: Plant grasses, flowers, trees, shrubs and live cuttings during recognized normal planting seasons.
- F. Trees and Shrubs:
 - 1. Provide freshly dug trees and shrubs. Do not prune prior to delivery. Do not bend, bind or tie trees or shrubs in such manner as to damage bark, break branches, or destroy natural shape. Provide protective covering during delivery.
 - 2. Deliver trees and shrubs after preparation for planting has been completed and plant immediately. If planting is delayed more than six (6) hours after delivery, set trees

and shrubs in shade, protect from weather and mechanical damage, and keep roots moist.

3. Label at least one tree and one shrub of each variety with a securely attached waterproof tag bearing legible designation of a botanical and common name. Tag shall remain legible a minimum of 60 days.

1.05 SUBMITTALS

- A. Chemical analysis of the loam by an approved testing laboratory to be utilized with recommended rates of fertilization and liming based upon the analysis. Contractor shall submit the test results to the City's Representative prior to application of soil amendments.
- B. Submit written confirmation that the plant materials shown on the PLANT LIST are available for Genus, species, variety, size, form and Fall Hazard designation. Provide list of nurseries from which the plant material will be provided.
- C. Submit to the City proof of certification of Foreman or Crew Leader as Massachusetts Certified Landscape Professional or Massachusetts Certified Horticulturist in accordance with QUALITY ASSURANCE paragraph of this Section.
- D. Submit proof of landscape contractor's experience to the City in accordance with QUALITY ASSURANCE paragraph of this Section.
- E. Submit to the City samples and manufacturer's product data as specified below. No materials shall be ordered or delivered until the required submittals have been reviewed and approved by the City. Delivered materials shall closely match the approved samples. Approval shall not constitute final acceptance. The City and Engineer reserve the right to reject, on or after delivery, any material which does not meet these Specifications, regardless of whether the plant material was approved in the nursery or by photograph. Provide the following as applicable:
 1. Planting Mulch: Submit a one-quart sample.
 2. Antidesiccant: manufacturer's product data.
 3. Mycorrhizal Fungal Inoculant: manufacturer's product data
 4. Biostimulants: manufacturer's product data
 5. Soil Additives: manufacturer's product data
- F. Planting and Planting Soil Sequence Plan: Submit a detailed, written sequencing narrative supplemented by marked-up plans showing the sequence of the planting program and how it will proceed so that plant material and planting soil are installed simultaneously.
- G. As-Built Planting Soil Placement Plan: Following the installation of plant material, submit As-Built drawings showing the extent, limits and depths of planting soil for lawns, planting beds and trees. Volumes of planting soil will be field verified by the

City and Engineer.

- H. As-Built Plan from Landscaper/Landscape Architect showing all planting/transplanting locations and certifying compliance with the approved planting scheme, submitted to and approved by the Conservation Commission.

1.06 SPECIAL PROJECT WARRANTY

- A. Lawns: Provide a uniform stand of grass by watering, mowing, and maintaining lawn areas until acceptance. Replant areas which fail to provide a uniform stand of grass with specified materials, until all affected areas are accepted by the City.
- B. Acceptance:
 - 1. In order to receive a Certificate of Substantial Completion, the Contractor must establish an acceptable and satisfactory stand of grass at all seeded and sodded lawn areas.
 - 2. The City's Representative shall have final authority on the acceptance of lawn areas and the determination of an acceptable and satisfactory stand of grass. To be acceptable, all areas of grass shall be well-rooted, thick in growth, uniformly healthy in color, texture, and growth pattern, and shall meet the following criteria:
 - a. A minimum germination rate of 90% for all seeded areas. Areas and spots not showing a prompt "catch" shall be scarified, re-fertilized, and re-seeded at two-week intervals until 90% germination is attained,
 - b. No bare spots or thin spots shall be evident,
 - c. No annual, perennial, or noxious weeds shall be evident.
 - d. Sod shall be free of diseases, soil borne insects, and nematodes,
 - e. Criteria as listed in other paragraphs of this Section.

1.07 RELATED SECTIONS

- A. Temporary Erosion and Sedimentation Controls: Section 01560
- B. Site Restoration: Section 01740
- C. Site Preparation and Demolition: Section 02065
- D. Construction Access: Section 02080
- E. Earthwork: Section 02200
- F. Stone and Rockfill: Section 02270

PART 2 - PRODUCTS

2.01 PLANT MATERIALS

A. General Qualifications:

1. The Contractor shall furnish all plants shown on the Contract Documents, as specified, and in quantities listed on the PLANT LIST. No substitutions will be permitted, without written approval by the City. All plants shall be nursery grown unless specifically authorized to be collected as noted on the PLANT LIST.
2. Plants shall be true to the species and variety specified and shall be nursery grown in accordance with good horticultural practices. Unless approved by the City, plants shall have been grown at a latitude not more than 200 miles (325 km) north or south of the latitude of the project unless the provenance of the plant can be documented to be compatible with the latitude and cold hardiness zone of the planting location.
3. If proof is submitted in writing that a plant specified is not obtainable, consideration will be given to the nearest available size or similar variety, with a corresponding adjustment of the contract price.
4. Plants shall be dug during the most recent favorable harvest season.
5. Plants shall be in accordance ASNS except as noted in this Section. Botanical plant names shall be in accordance with plant designations in Dirr's Manual of Woody Plants.
6. Plants shall conform to the measurements specified on the PLANT LIST, except that plants larger than those specified may be used if approved by the City. When so approved, larger plants shall be provided and installed at no additional cost to the City. Root balls of larger plants shall be increased in proportion to the size of the plant.
7. Trees and shrubs shall be specimen quality in accordance with requirements of ASNS, and shall have exceptionally heavy branching, be symmetrical, and so trained or favored in development and appearance as to be unquestionably superior in form, shape and compactness.
8. Plants shall show no signs of frost or winter damage to the foliage. Foliage shall not be in a state of drought stress. Leaves or needles shall show no signs of wilt or desiccation due to weather stress at any season of the year.
9. Plants shall be free of disease and insects, eggs, or larvae. They shall be free from physical damage, sun-scald, frost cracks, injuries and abrasions of the bark, broken branches, damaged leaders, included bark, v-shaped crotches, or other conditions that would prevent, long-term, vigorous growth and aesthetic appeal as determined by the City.
10. If, at any time during the performance of the Contract, any plant shows signs of graft incompatibility, as determined by the City, then the tree or shrub and all other similarly grafted plants of the same Genus/Species/Variety shall be rejected and removed from the site.

11. Plant material shall be sound, healthy, and vigorous of growth, free of disease, insect pests, eggs or larvae. All parts shall be moist and show active green cambium when cut.

2.02 PLANT MATERIAL STANDARDS

A. All deciduous and evergreen trees shall meet the following standards:

1. Main leader and branches:

- a. Unless otherwise designated as multi-stemmed on the PLANT LIST, trees shall have single, strong, straight central leaders, well-formed and sturdy, with no lateral branches greater than 2/3 the caliper of the main leader.
- b. Branches shall not have included bark at their unions with the main
- c. Branching of all deciduous trees shall be best quality representatives of the species, cultivar or variety. Trees shall have branches equally spaced around the central leader at least 6-inches apart.
- d. Branches shall occupy their own space and not cross, intertwine or touch.
- e. All branches on deciduous trees shall meet the trunk at angles no less than 30 degrees and no greater than 90 degrees from the vertical.

2. Foliage:

- a. All trees shall have healthy, vigorous leaves or needles of normal size, color, shape, and texture for the particular species and variety.
- b. Terminal and top whorl buds of all evergreen trees shall be in healthy and whole condition at the time of harvest.
- c. Deciduous shade trees and deciduous flowering trees shall have fall color typical for their species and variety.

3. Pruning Scars:

- a. All pruning wounds shall show vigorous bark on all edges at the time of harvest.
- b. Pruning scars within the crown of any tree shall be clean cut and shall leave no protrusion beyond the branch collar.
- c. No tree shall be pruned after the Landscape Architect has tagged the plant in the nursery except as directed by the Landscape Architect.

4. Size:

- d. Unless otherwise indicated on the PLANT LIST, the height and spread of deciduous shade trees shall be the minimum requirements.
- e. Take caliper measurements for deciduous trees 6 inches above ground level up to and including 4 inches caliper size and 12 inches above ground for larger sizes.

- f. Unless otherwise noted on the PLANT LIST, shade trees for use in paved areas shall have no branches lower than 6.5 feet from finish grade and no higher than 7.5 feet from finish grade.
 - g. Flowering trees for use in areas away from pedestrian traffic shall have the first branch of their crowns no higher than 4 feet from finish grade
 - h. The height of the evergreen trees (measured from the trunk flare at the natural ground line of the tree to the midpoint of the terminal leader) shall be not less than the minimum size designated on the PLANT LIST.
5. When proposed for planting in rows, trees shall be matched in form, height and shape.
6. Nursery Culture:
- a. Collected from the Wild: Trees collected from native stands will not be accepted unless so specified on the PLANT LIST.
 - b. Trees collected from wild or native stands may be considered nursery grown when they have been successfully reestablished in the nursery row and grown under regular nursery cultural practices for a minimum of two growing seasons and have attained adequate root and top growth to indicate full recovery from transplanting into the nursery row.

B. Shrubs shall meet the following standards:

- 1. Deciduous shrubbery shall be in accordance with the requirements of ASNS for all shrub Types for size, spread and height requirements, habit and root ball sizes and minimum number of canes unless designated otherwise on the PLANT LIST.
- 2. Coniferous shrubbery and broadleaf evergreen shrubbery shall be in accordance with the requirements of ASNS for all Types for size, spread and height requirements, habit and root ball sizes unless designated otherwise on the PLANT LIST.
- 3. Coniferous and broadleaf evergreen shrubbery shall have Shearing Designation of Natural in accordance with ASNS standards unless designated otherwise on the PLANT LIST.
- 4. All shrubs shall be healthy and vigorous plants which are very well shaped and symmetrical, heavily branched and budded, densely foliated, and true to form for their variety.
- 5. Blemishes, scars and irregularities:
 - a. Scars shall be free of rot and not exceed 1/4 the diameter of the wood beneath in greatest dimension unless completely healed (except pruning scars).
 - b. Pruning scars shall be clean cut and shall leave little or no protrusion from the trunk or branch.
 - c. Graft unions shall be completely healed.
 - d. No suckers or water sprouts.

- e. Contain no dead wood.
 - f. Free of cracks, splits, or cambium peeling.
6. Collected from the Wild:
- a. Shrubs collected from native stands or established plantings will not be accepted unless so specified on the PLANT LIST.
 - b. The spread of roots, bare root collected, shall be one-third greater than the spread of roots of nursery grown shrubs for the same size plant.
- C. Herbaceous Perennials, Ornamental Grasses, Groundcovers and Vines:
- 1. In accordance with the requirements of ASNS and as follows.
 - 2. Plants shall be container grown unless otherwise designed on the PLANT LISTS.
 - 3. Plants shall have deeply colored foliage exceptional for their species and variety. They shall be of dense, full and compact growth, showing exceptional vigor and health in the pot or container.
 - 4. If so designated on the PLANT LIST then plants may be grown in flats or cell-packs, from which they shall be readily removed without damage to stem and runner.
 - 5. All container grown plants shall have a well-established root system reaching the sides of the container to maintain a firm root ball, but shall not have excessive root growth encircling the inside of the container.
 - 6. Plants shall be healthy, vigorous and well cared for.

2.03 ROOT SYSTEMS FOR ALL PLANTS

A Requirements:

- 1. Each plant shall have an extensive, symmetrically balanced fibrous root system. Root balls shall encompass the fibrous and root feeding system necessary for the healthy recovery of the plant.
- 2. Any root ball that shows signs of asymmetry, girdling, injury, or damage to the root system will be rejected.
- 3. All parts of the fibrous root system of all plants shall be moist and fresh.
- 4. The root systems of all plants shall be free of disease, insect pests, eggs, or larvae.

B Balled and Burlapped Root Balls:

- 1. Root ball diameters for field grown stock shall be in accordance with the diameter and depth requirements in ASNS and as follows. Field grown stock may be dug by hand or by digging machines.

2. For those plants having a coarse or wide-spreading root system because of natural habit of growth, soil condition, infrequent transplanting practice, or plants that are moved out of season, root balls of field grown stock shall be larger than the ASNS recommended sizes.
3. Conversely, if the nursery grower can demonstrate to the satisfaction of the Landscape Architect nursery cultural practices that increase root density of a tree or shrub, smaller root ball sizes may be accepted.
4. All balled and burlapped trees and shrubs shall be moved with the root systems as solid units with balls of earth firmly wrapped with untreated 8 ounce natural, biodegradable fabric burlap, firmly laced with stout, natural biodegradable cord or twine.
5. The base of the deciduous tree trunks shall be wrapped with a protective burlap layer, surrounded by a cardboard trunk protector extending no less than 36 inches upward from the root flare, and loosely tied with twine.

C Container Grown Plants:

1. All container-grown nursery stock shall be healthy, vigorous, well rooted, and established in the container in which it is growing. Container grown nursery stock shall have a well-established root system reaching the sides of the container to maintain a firm ball when the container is removed, but shall not have excessive root growth encircling the inside of the container.
2. Containers shall be the appropriate size for the plants growing in them, in accordance with ASNS standards for Type of plant.
3. Curling or spiraling of the roots along the walls of rigid containers will not be accepted. Curling, spiraling or girdling roots within balled and burlapped material will not be accepted. Specially designed containers or chemically treated containers intended to retard circling roots are acceptable.
4. The container shall be sufficient rigid to hold the ball shape and to protect the root mass during shipment.
5. No plants shall be loose in the container.
6. When container grown and the plant is removed from the container, the visible root mass shall be healthy with white root tips.
7. Container grown plants that have roots growing out of the container will be rejected.

2.02 SOIL AMENDMENTS

- A. Follow recommendations from soil test reports. Contractor shall be responsible for all soil testing.
- B. Ground Limestone: Ground Limestone shall contain not less than 85% of total carbonates, ground to such fineness that 90% passes through a 20-mesh sieve and 50% passes through a 100-mesh sieve.

- C. **General Fertilizer:** Commercial type approved by Owner's Representative of neutral character, with some elements derived from organic sources and containing following percentages of available plant nutrients.
1. Use 5-10-5 50% organic or other approved formulation for planting mixes.
 2. Use granular non-burning product for lawn areas. Provide material composed of not less than 50% organic, slow acting, guaranteed analysis fertilizer. Use a percentage of nitrogen to provide not less than one (1) pound of actual nitrogen per 1,000 square feet of lawn area. Provide nitrogen in a form that will be available to lawn during initial period of growth.

2.03 MISCELLANEOUS LANDSCAPE MATERIALS

- A. **Water:** Shall be free of substances harmful to plant growth. Source, hoses, pumps, or other methods of transportation shall be furnished by Contractor. Watering shall be done in a manner that will 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. The Contractor shall furnish sufficient watering equipment to maintain required water levels in the soil.
- B. **Sod:**
1. Sod shall be strongly rooted, at least eighteen (18) months old, fresh cultivated turf grass sod, weed, disease, and insect free. Sod shall be composed of 90 percent Kentucky Bluegrass in variety. Submit USDA certification for purity and seed blend.
 - a. Bluegrass: two or more of these varieties: Merion, Fylking, Windsor.
 - b. Thickness of cut: ½ inch to ¾ inch, exclusive of top growth and thatch.
 - c. Pad size: supplier's standard.
 - d. Broken, torn, or uneven pads will not be acceptable. Standard sections shall be strong enough to support their own weight when suspended vertically from a firm grasp on the upper ten percent of the section.
- C. **Mulch:**
1. Mulch shall be double-shredded hardwood hemlock bark processed to yield fibrous, pliable slices not exceeding one half (1/2) inch in width and/or three inches in length. It shall have a ninety-eight (98) percent organic mater with pH range of 3.5 to 4.5. Moisture content of packaged material is not exceed thirty-five (35) percent. Mulch shall not contain an excess of wood fiber or an admixture of their materials as determined by the Owner. Sample of mulch must be submitted to owner prior to application, for Owner's approval.
- D. **Seed:**
1. Seed for Bank Restoration Areas not receiving shrubs shall be New England Ero-

sion/Restoration Mix for Detention Basins and Moist Sites (or approved equal), applied at 35 lbs/ac (or increased rate per manufacturer for dormant seeding). Mix shall be appropriate for moist disturbed sites where quick vegetation growth is desired, including ecologically sensitive restorations that require native vegetation.

2. Species must include only native species, with a mix including Riverbank Wild Rye (*Elymus riparius*), Creeping Red Fescue (*Festuca rubra*), Little Bluestem (*Schizachyrium scoparium*), Big Bluestem (*Andropogon gerardii*), Switch Grass (*Panicum virgatum*), Upland Bentgrass (*Agrostis perennans*), Nodding Bur Marigold (*Bidens cernua*), Hollow-Stem Joe Pye Weed (*Eupatorium fistulosum*/Eutrochium fistulosum), New England Aster (*Aster novae-angliae*), Boneset (*Eupatorium perfoliatum*), Blue Vervain (*Verbena hastata*), Soft Rush (*Juncus effusus*), Wool Grass (*Scirpus cyperinus*).
3. Installation shall be per manufacturer's instructions.

E. Off-Site Loam:

1. If onsite soil is not sufficient, off-site loam may be used.
2. Off-site loam, to be furnished from sources outside of the project limits, shall consist of loose, friable, sandy loam, or loam topsoil, free of admixture of subsoil, refuse, stumps, rocks, brush, weeds and other materials which will prevent the formation of a suitable seed bed. No stones in excess of one and one-quarter inch (1-1/4") in diameter will be tolerated. The soils shall conform to the following gradation:

Sieve Size	Percent Finer by Weight Loam Borrow
1-inch	90-100
No. 4	70-95
No. 40	30-85
No. 100	25-50
No. 200	20-40

(No more than 15 percent of loam shall be clay)

3. The Contractor shall notify the City of the location of the source of supply for the loam at least ten days prior to delivery of the loam to the project site. Any imported materials which do not meet the above requirements shall be rejected and removed from the site.
4. The loam shall contain at least 5%, but not more than 20%, organic material as determined by the loss during ignition of oven-dried samples. Test samples shall be dried to a constant weight at a temperature of 221°F ± 5°F. Loam shall be amended with well-cured compost as necessary to achieve minimum 10% organic content.
5. Loam shall not have greater than 500 ppm salt.
6. All topsoil and/or loam shall, at the Contractor's expense, be subjected to a Standard

Soil Test with Organic Matter which shall include reporting of the following parameters: pH, Buffer pH, Extractable Nutrients, Extractable Heavy Metals (e.g. Lead), Cation Exchange Capacity, Percent Base Saturation, Percent Organic Matter, and Total Soil Nitrogen. The laboratory test results shall provide recommendations for nutrient and pH adjustments.

7. A minimum of one test shall be performed on each distinct on-site topsoil or off-site loam source. A standard soil test shall be performed for every 500 CY of topsoil or loam used at the site.
8. Soil testing shall be performed at the University of Massachusetts Soil and Plant Tissue Testing Laboratory or other approved accredited testing laboratory.

PART 3 - EXECUTION

3.01 RATES OF APPLICATION

- A. Chemical controls and weed preventatives and grass seed shall be applied at the following rates:

<u>Material</u>	<u>Per 1,000 Sq. Ft.</u>
Initial Soil Amendments	Soil Test Recommendations
Grass Refertilizing	Per manufacturer and sod providers recommendations
Weed Preventatives	Per manufacturer's recommendations

3.02 TRANSPLANTATION

- A. Transplantation shall be conducted in accordance with standard landscaping practices with materials as indicated herein. Methods shall be as for new planting installation.
- B. Transplantation shall be as directed by the Conservation Commission and City.
- C. No guarantee period applies to transplanted materials, unless required by the City.

3.03 INSTALLATION

- A. Soil Preparation:

1. Soil Preparation of New Grass Areas or Areas Disturbed by Contractor's Operations:

- a. Where grass is to be planted in areas that have been altered or disturbed by excavating, grading, or stripping operations, prepare soil as follows:

Limit soil preparation to areas to be planted within 7 days.

Loosen topsoil within lawn areas by tilling to a minimum depth of 4 inches. Remove by mechanical raking all stones over 1" in any dimension, sticks, weeds, clods, lumps, roots, rubbish, and other extraneous matter.

- b. Protect existing grass areas and create a smooth transition between them and new work. Repair any damage done to the satisfaction of the Owner's Representative.
- c. Fine grade as necessary to achieve a smooth even surface true to line and grade. Match grades smoothly with existing grass areas to remain.
- d. Secure acceptance of fine grading by the Owner prior to the commencement of sodding operations.
- e. Soil testing shall be conducted and fertilizers shall be used to supplement site soils to meet required parameters for sod installation.

B. Sod

1. Sod shall not be harvested or delivered when excessively wet or dry. Sod shall be harvested, delivered and installed within a period of 36 hours.
2. Areas to be sodded shall be fertilized at the rates specified in Section 2406.3. The sod-bed shall be free of any irregularities in the surface resulting from fertilizing or other operations and shall be corrected in order to prevent the formation of water pockets.
3. The first row of sod should, if possible, be laid in a straight line with subsequent rows placed parallel and tightly against one another. Lateral joints shall be staggered as in brick laying to promote more uniform growth and strength. Care shall be exercised to ensure that the sod is not stretched or overlapped and that all joints are butted tight in order to prevent voids which would otherwise cause air drying of the roots. Where new sod meets existing grassed areas, a straight, vertical edge shall be cut to allow smooth match. Sod shall be watered and firmed in accordance with Section 2406.3.D.5. If it is necessary to walk excessively on newly laid sod or soil, walking boards should be laid for this purpose.
4. Sod shall be laid with staggered joints and at right angles to direction of slope. Sod shall be secured by tamping or rolling. On slopes 1 in 3 or steeper, all sod shall be pegged with ½ inch square by 8 inch long wooden pegs, or approved equal, driven to the top of the sod. Four pegs per square yard shall be required.
5. The Contractor shall be responsible for having adequate water available at the site prior to and during the installation of the sod and the areas to be seeded. The sod shall be watered immediately after installation to prevent drying during progress of the work. As sodding is completed on any one section, the entire area shall be thoroughly irrigated to a one inch depth below the new sod pad. After a short drying period, the sod shall be rolled with a roller weighing not less than 60 or more than 90 pounds per linear foot to firm the sod pad and smooth minor surface irregularities. Subsequent watering should maintain moisture to a depth of at least four inches.
6. The sodded areas will be inspected for the acceptable grass coverage and will be acceptable when grasses designated are growing and are in good conditions, and no area more than ½ of one percent of the total area shall be bared or dead, of which no single area shall be more than one foot square in area. Any bare or dead area larger than this will not be acceptable, and shall be replaced with new sod from the same

source.

C. Existing Grass:

1. All existing grassed or vegetated areas shall be protected from unnecessary damage due to construction operations.
2. Existing grassed or vegetated areas within the project site shall be maintained by the Contractor.

D. Trees and Shrubs in Bank Restoration Areas

1. Topsoil set aside from bank areas shall be reset in those areas at the commencement of restoration. Mulch in these areas shall only be hemlock mulch, as specified. All trees and shrubs are to be installed according to nursery provider recommendations. They shall be planted according to the planting schedule on the plans. All materials and products necessary for the proper planting of shrubs shall be supplied by the Contractor at no additional cost to the Owner including but not limited to: topsoil, mulch, fertilizer, etc.
2. Excavate pits, beds, and trenches with vertical sides and with bottom of excavation slightly raised a center to provide proper drainage. Loosen hard subsoil in bottom of excavation.
3. Bare Root Shrubs: Make excavations at least 10 inches wider than root spread and deep enough to allow for setting of roots on a layer of compacted backfill and with collar set at same grade as in nursery.
4. Balled and Burlapped Trees and Shrubs: Make excavations at least two (2) feet wider than the ball diameter and equal to the ball depth.
5. Notify Owner in writing of all soil or drainage conditions which Contractor considers harmful to growth of plant material. State condition and submit proposal for correcting condition, including additional cost, if any.
6. Test drainage of plant beds and pits by filling with water. Conditions permitting the retention of water for more than 24 hours shall be brought to the immediate attention of the Owner. State condition and proposal or correcting condition including additional costs for correction. obtain approval from Architect before proceeding.

E. Planting:

1. Balled and Burlapped Stock: Set plant plumb and in center of pit or trench with top of ball at same elevation as adjacent finished landscape grades. Remove burlap from sides of ball. Remove all metal baskets when set, place additional backfill around base and sides of ball, and work each layer to settle backfill and eliminate voids and air pockets. When excavation is approximately 2/3 full, water thoroughly before plac-

ing remainder of backfill. Repeat watering until no more is absorbed. Water again after placing final layer of backfill.

2. Bare Root Stock: Cut injured roots clean; do not break. Set roots on cushion of planting soil mixture. Spread roots and carefully work backfill around roots by hand and puddle with water until backfill layers are completely saturated. Plumb before backfilling and maintain plumb while working backfill around roots and placing layers above roots. Set collar at same grade as to finish landscape grades. Spread out roots without tangling or turning up to surface.
3. Dish top of backfill to allow for mulching.
4. Prune, thin out and shape trees and shrubs in accordance with standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise directed by Architect, do not cut tree leaders, and remove only injured or dead branches from flowering trees, if any. Prune shrubs to retain natural character and accomplish their use in the landscape design.
5. Remove and replace excessively pruned or misformed stock resulting from improper pruning.
6. Inspect tree trunks for injury, improper pruning and insect infestation, and take corrective measures before wrapping.
7. Wrap tree trunks of two (2) inch caliper and larger. Start at ground and cover trunk to height of first branches, and securely attach.
8. Guy and stake trees immediately after planting, as indicated.
9. Space plants in accordance with indicated dimensions or Owner's Representative's instruction. Adjust spacing as necessary to evenly fill planting bed with indicated quantity of plants.
10. Dig holes large enough to allow for spreading of roots and backfill with planting soil. Work soil around roots to eliminate air pockets and leave a slight saucer indentation around plants to hold water. Water thoroughly after planting, taking care not to cover crowns of plants with wet soils.

F. Boulders:

1. Boulders shall be reset in their original locations, per the Contract Drawings.

3.04 PROTECTION

- A. Erect barricades and warning signs as required to protect newly seeded and sodded areas and existing grass areas to remain from traffic. Maintain barricades until acceptance.

3.05 MAINTENANCE

A. Specific Operations:

1. Maintenance shall consist of the following elements:
2. Watering, fertilizing, weed control, disease control, insect control, mowing, trimming, and other operations such as rolling, regrading, replanting, as required to establish a smooth, acceptable lawn, free of eroded or bare areas.
3. Remulch with new mulch in areas where the mulch has been displaced by wind or maintenance operations. Anchor as required to prevent displacement. Remove all weeds on a weekly basis from all mulch beds by hand-pulling.
4. Sod shall be replaced if a suitable stand of grass is not maintained in a specific area.
5. Suitable signs and barricades shall be erected to protect the seeded areas.
6. Watering: If irrigation has not been installed, the Contractor shall be responsible for the watering of all seeded and sodded areas, which shall be kept moist. The Owner's opinion will prevail in the event that a dispute develops with the Contractor as to whether or not the seeded and grassed areas are moist. Seeded areas on which growth has started shall be watered to a minimum depth of 2 inches to assure continuing growth. Watering shall be done in a manner which will provide uniform coverage, prevent erosion due to application of excessive quantities over small areas, and prevent damage to the finished surfaces due to the watering equipment. The Contractor shall furnish sufficient watering equipment to apply one complete coverage to the seeded areas in an 8 hour period. In areas where plans indicate that others will be installing irrigation, Contractor shall assume that this new irrigation will not be operational and that the Contractor will need to supply temporary irrigation to all areas.
7. Initial grass mowing shall occur when grass reaches a height of 4 inches. Time the subsequent mowings to maintain the grass at a 2" to 3" height. Do not mow lower than 2 inches. Do not delay mowing until grass blades bend over and become matted.
8. Apply fertilizer after first mowing and when the grass is dry. Use fertilizer which will provide not less than 1.0 lb of actual nitrogen per 1,000 sq. ft. of grass area.
9. The Contractor shall care for all of the sodded areas until the work has been accepted. Care shall include any re-grading, re-fertilizing, re-seeding, and mowing which may be necessary.

3.06 ACCEPTANCE OF PLANTINGS AND GRASS

A. General:

1. Liquidated Damages as specified will apply if Substantial Completion is not obtained by the specified dates.

2. In order to receive a Certificate of Substantial Completion, the Contractor shall establish an acceptable and satisfactory stand of grass at all seeded and sodded lawn areas.
3. The City will have final authority on the acceptance of lawn areas and the determination of an acceptable and satisfactory stand of grass. To be acceptable, all areas of grass shall be well-rooted, thick in growth, uniformly healthy in color, texture, and growth pattern, and shall meet the following criteria:

The sodded areas will be inspected for the acceptable grass coverage and will be acceptable when grasses designated are growing and are in good conditions, and no area more than ½ of one percent of the total area shall be bared or dead, of which no single area shall be more than one foot square in area. Any bare or dead area larger than this will not be acceptable, and shall be re-sodded.

4. Plantings will be acceptable provided requirements, including maintenance, have been complied with.
5. Grass may not be accepted prior to 60 days from its installation and 3 mowings minimum.

B. Inspections:

1. Preliminary Inspection and Acceptance:

After the completion of planting and all other related operations the Contractor shall make a written request to the City for a formal inspection of the work. If plant materials and workmanship are acceptable upon inspection, written notice will be given to the Contractor stating that the work has received Preliminary Acceptance and that the establishment period has commenced from the date of the notice. Establishment period shall be one (1) year.

2. Final Inspection for Acceptance:

- a. A final inspection for acceptance of all grass and plantings will be held after all adjustments required by the preliminary inspection for acceptance have been made. The Contractor shall notify the City in writing requesting a final inspection to grant acceptance.
- b. At the discretion of the City's Representative, acceptance may be granted to individual areas.
- c. At time of final inspection plant material shall be sound, healthy, and vigorous of growth, free of disease, inspect pests, eggs or larvae. All parts shall be moist and show active green cambium when cut.
- d. Following acceptance, the City shall assume responsibility for all lawn maintenance. Where acceptance of partial areas has been made by the City, Contractor shall provide for access by City personnel as necessary for maintenance of such accepted areas.

3.07 GUARANTEE PERIOD

- A. Following completion of the establishment period, (1-year), the plants shall be guaranteed for a period of two (2) years. At the end of the guarantee period, a Final Inspection with the Contractor and City will be held to determine whether any plant material replacements are required.
- B. During the guarantee period the Contractor shall provide care as required to produce an acceptable planting at the final inspection. To be found acceptable at that time each plant shall have been established in place for at least two (2) years, shall show at least 80% healthy growth and shall have the natural character of its species as determined by the City. Conditions set by the Conservation Commission shall rule if more stringent than those established in this Specification.
- C. Plants found unacceptable or dead shall be removed promptly from the site and replaced during the specified planting season. Replacements shall be of the same species and size and shall conform in all respects to the specifications for furnishing and installing new plants. Replacements shall be maintained and guaranteed as specified for the original plantings. If, at the end of the guarantee period for the replacement planting, the replacement is not in acceptable condition, the City may elect to accept a credit in lieu of a second replacement.
- D. Cost of replacement shall be borne by the Contractor, except when such replacement is required due to vandalism or neglect by others.
- E. At the end of the guarantee period the Contractor shall remove and dispose of all stakes and guys, as a condition of final acceptance and release of retainage.

PART 4 – COMPENSATION

4.01 METHOD OF MEASUREMENT:

- A. No measurement will be made for payment for Landscape Work. The bid item for this section is a lump sum quantity.

4.02 BASIS OF PAYMENT:

- A. Payment for the scope of work specified shall be paid at the applicable lump sum price for item No. 02970.01 – Landscape Work, which shall include all materials, plantings, equipment, tools, labor, transportation, maintenance, operations and incidental work.

Item No.
02970.01

Payment Item
Landscape Work

Unit
Lump Sum

*****END OF SECTION*****

SECTION 03310
CONCRETE REPAIR AND REHABILITATION

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Furnishing of all labor, materials and equipment necessary for the repair and rehabilitation of existing concrete structures in accordance with the Contract Drawings and the requirements of this Section.
- B. Work includes the surface preparation and repair of all abutment damage identified by the Engineer, within the limits depicted and described on the Contract Drawings, and as directed by the City. This includes damage to the corner and side of the abutment or the concrete footing below the limits of stonework. Repair extent of corner and side of abutment will be determined after the water level of the Newton City Hall Ponds has been dropped below the damage area as described on the Contract Drawings.
- C. Surface preparation and seal-coating of specified or indicated concrete surfaces shall be the work of the subcontractor.
- D. The limits of concrete rehabilitation shall be as depicted on the Contract Drawings, and as directed by the City during the construction operations.
- E. The Contractor is directed that cold weather provisions, including heated enclosures, etc. may be needed for this work and will be considered incidental to the work of this item. No separate payment for cold weather provisions will be provided.

1.2 RELATED SECTIONS

- A. Temporary Erosion and Sedimentation Controls: Section 01560
- B. Temporary Water Control: Section 01565
- C. Temporary Cofferdams: Section 02170

1.3 QUALITY ASSURANCE

- A. Provide qualified personnel, proper oversight and supervision to ensure that the concrete rehabilitation is performed in accordance with the Contract Drawings, the requirements of this specification, and to the satisfaction of the City.
- B. Perform all work in strict accordance with the manufacturer's recommendations for surface preparation, material preparation and installation, finishing and clean-up.
- C. Use only clean potable water for mixing of material components, in accordance with manufacturer's instructions.
- D. Arrange for manufacturer's technical representative(s) to be available for on-site meetings to confirm materials and methods during surface preparation and subsequent rehabilitation work, and as requested by the City or Engineer.

1.4 SUBMITTALS

- A. Product data for all repair and surface coating materials.
- B. Color charts for surface coating systems.
- C. Mock-up sample of finished surface coating on an area of existing concrete to be determined by the City.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Materials for various aspects of the proposed concrete rehabilitation are listed below. All products listed are manufactured by Sika Corporation, Lyndhurst, New Jersey. The Contractor may submit equals by other manufacturers, such as W. R. Meadows or Euclid, for review and approval by the City, provided that the submittal substantiates that all elements of the complete system of concrete rehabilitation products are compatible, as well as being equal, or superior in quality and performance to the system of products listed in this section. If alternate and equal materials are proposed, means and methods for use, application, curing, and finishing shall be provided with submittal.
- B. Reinforcing Steel Coating Repair Materials: Sika Armatoc 110 Epo-Cem for priming of reinforcing steel.
- C. Concrete Substrate Repair Materials:
 - 1. Prime the prepared substrate with a brush or sprayed applied coat of Sika Armatoc 110 Epo-Cem (or equal).
 - 2. Alternately, a scrub coat of Sikatop-123 Plus (or equal) can be applied prior to placement of the mortar.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Lower water level of the Newton City Hall Ponds below the depth indicated on the plans
- B. Remove all spalled, loose and flaking concrete by scaling, chipping or saw cutting.
- C. Thoroughly clean all exposed concrete surfaces by scaling, chipping, water jetting or sand blasting. Remove all calcification, efflorescence, slime and other build-up.
- D. Saw cut around edge of concrete area to be removed to produce a clean edge for bonding of repair mortar.
- E. Prepare all surfaces in strict accordance with the requirements of the manufacturer of the specific repair and surface restoration system materials to be used in each area. This work includes chipping, cutting and cleaning each repair area to achieve the minimum depth and surface profile required, per manufacturer's specifications.
- F. Substrate should be saturated surface dry (SSD) with clean water prior to application. No standing water should remain during application.

3.2 INSTALLATION

- A. Once footbridge areas are dewatered, identify and measure with the City in the field areas to receive Surface Restoration Repairs versus deeper Concrete Repair Work (see Section 4 of this Specification).
- B. Notify the City and Engineer once surface preparation operations are complete, and prior to beginning installation of repair and surface restoration materials.
- C. Sikatop-123 Plus (or equal) must be scrubbed into the substrate, filling all pores and voids.
- D. Force material against the edge of repair, working toward the center. After filling repair, consolidate, then screed.
- E. Where multiple lifts are required, score top of surface of each lift to produce a roughened surface for next lift. Allow preceding lift to reach initial set, 30 minutes minimum, before applying fresh material. Same material shall be used for all lifts.
- F. Scrub fresh mortar into preceding lift. Allow mortar or concrete to set to desired stiffness, then finish with wood or sponge float for a smooth surface.
- G. Install all materials for repair of damage to bridge abutment in strict accordance with the manufacturer's requirements, and to the satisfaction of the City and Engineer.
- H. As per ACI recommendations for Portland cement concrete, curing is required. Moist cure with wet burlap and polyethylene, a fine mist of water or water based compatible curing compound (ASTM C-309). Moist curing should commence immediately after finishing.
- I. Finished surface texture of repaired areas must match the finish of the surrounding existing material.
- J. Material repairs and finish shall cover the full vertical concrete section of abutments between junction with curved arch and 6 inches below normal water level to provide a cohesive appearance for vertical abutment areas. Confirm with City and Engineer in the field prior to work.

3.3 INSPECTION

- A. All areas of specified or indicated rehabilitation of existing concrete surfaces are subject to inspection and acceptance by the City.
- B. All areas that are inspected and found to be unacceptable to the City are to be cleaned and repaired by the Contractor, to the satisfaction of, and at no additional cost to the City.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT FOR PAYMENT

- A. Measurement for Surface Restoration Work for surficial repairs/surfacing shall be measured for payment per Square Foot of bridge abutment where restoration work is completed, in place, as agreed upon and accepted by the City.

- B. Measurement for Concrete Repair Work for repairs greater than ¼ inch in depth shall be measured for payment per Square Foot of bridge abutment where restoration work is completed, in place, as agreed upon and accepted by the City.

4.2 PAYMENT

- A. Surface restoration work will be paid for at the contract unit price per square foot for “Surface Restoration Work” - Item No. 03310.01 for the agreed upon area of surficial repairs (less than or equal to ¼ inch in depth). This price shall include all materials, equipment, fuel, tools, transportation, water control and cold weather enclosures, and labor incidental to the completion of the Work in accordance with the Contract Drawings and Specifications.
- B. Mortar Repair Work will be paid for at the contract unit price per square foot for “Mortar Repair Work” - Item No. 03310.02 for the agreed upon area of repairs more than ¼ inch in depth). This price shall include all materials, equipment, fuel, tools, transportation, water control and cold weather enclosures, and labor incidental to the completion of the Work in accordance with the Contract Drawings and Specifications.

4.3 PAYMENT

<u>Pay Item</u>	<u>Description</u>	<u>Pay Unit</u>
03310.01	Surface Restoration Work	Square Foot
03310.02	Mortar Repair Work	Square Foot

**** END OF SECTION ****