THE CITY OF WORCESTER

Request for Bids
Mulcahy Field PH II
Site Improvements

November 2022

PROJECT SPECIAL CONDITIONS AND SPECIFICATIONS

DEPARTMENT OF PUBLIC WORKS AND PARKS

Parks, Recreation and Cemetery Division

Jay J. Fink, P.E., Commissioner
Robert C. Antonelli, Jr., Assistant Commissioner

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PROJECT SPECIAL CONDITIONS

ARTICLE 1 - PROJECT SITE

a. All work of this contract is located within the confines of Mulcahy Field, 158 Dorchester St., owned and maintained by the City of Worcester DPW and Parks.

ARTICLE 2 - SUMMARY OF WORK

a. The work to be completed under this contract involves the furnishing of all labor, materials and equipment for the following items of work and all incidentals thereto. All work shall be performed in full accordance with the specifications, other contract documents, obviously implied and necessary or under the direction of the Owner.

b. The plans and specifications are intended to be cooperative, and any item called for in one and not the other shall be as binding as if called for in both. During the bidding period discrepancies should be immediately brought to the attention of the Owner for clarification. If a discrepancy is discovered within the plans and the specifications after the bid period, **the Owner will determine which shall apply.**

c. When Applicable, The City of Worcester DPW and Parks, Parks, Recreation and Cemetery Division is in the process of standardizing appurtenances such as park benches, trash receptacles, irrigation controllers, Area/Street lights, Sports field lighting in the facilities within their jurisdiction and maybe currently installed at this facilities. By standardizing on one manufacturer it provides the Division with a consistent product which through familiarity reduces operator training and maintenance time. Standardization also provides opportunities for maintenance cost saving through interchangeable parts such as but not inclusive to luminaries, ballast, poles, compatibility with current Division maintenance equipment etc.

d. Quality Control: In order to ensure the highest level of quality with respect to the playing surface of this greatly utilized public athletic facility, the General Contractor / Awardee shall have a minimum of five (5) years of successful experience;

   a. as the Prime Contractor constructing (provide verifiable references upon request)
   b. ability to demonstrate constructing (provide verifiable references upon request)
   c. coordinating and supervising (provide verifiable references upon request)

Park Improvements of similar size and quality of this project as per the standards of the project specifications and construction drawings.

ARTICLE 3 - WORK WITHIN A PUBLIC PROPERTY

a. As a point of information, all of the work to be undertaken is located within the confines of an unsecured public property, and as such is subject to acts of vandalism. The City of Worcester will not pay for any damage to the Contractor's equipment or material. The Contractor shall take all means and measures necessary to protect the public, work in progress, work completed, and all furnishings, materials and equipment stored at the site through the completion of the project. The repair or replacement of work in place or in progress shall be the sole responsibility of the Contractor and shall be accomplished at no cost to the Owner.

ARTICLE 4 - SITE INSPECTION

a. It shall be contingent upon the Contractor to inspect the site as an aid to determining the extent of the work under the various contract items before submission of the bid.

ARTICLE 5 - PRE -BID AND PRE-CONSTRUCTION MEETINGS

a. A pre-bid conference will be held on December 14**, 2022**, 10:00 AM (Eastern Standard Time) at Mulcahy Field, 158 Dorchester St. Interested bidders are encouraged to attend. A mandatory pre-construction meeting will be arranged by the Owner's representative after the award of the contract. Sub-consultants may be asked to attend the pre-construction meeting if determined by the Owner's Representative to be warranted.

ARTICLE 6 - SITE ACCESS

b. Prospective bidders are advised that access to the project sites shall be in accordance with the governing traffic patterns with specific locations into the site to be designated in the field after award of the contract.

c. Regardless of the eventual location of the construction access, the Contractor shall make every provision to ensure the safety of pedestrians and drivers making use of the public property.

ARTICLE 7 - OWNER'S TAX EXEMPTION

a. The Awarding Authority, as a department of a corporate municipality in the Commonwealth is exempt from the taxes listed below. Contractor shall notify all suppliers of the following current certificates.

1. Federal Excise Taxes as applied to articles taxable under Chapter 32 of the Internal Revenue Code of 1954, as amended, City Excise Tax Exemption Certificate is not required.

2. From Sales and Use Tax imposed by the Commonwealth of Massachusetts under Chapter 14, Acts of 1966, the City has been assigned and exemption certificate with respect to leases, rentals, or purchases of "Tangible Personal Property". The Owner at the Contractor's request will furnish the tax-exempt certification number.

ARTICLE 8 - TIME FOR COMPLETION AND SEQUENCE OF WORK

a. The work of this Contract shall be commenced at the time stipulated by the Owner in the Notice to Proceed/Award of Contract and shall be substantially completed for occupancy/use **by August 15, 2023,** except as the work may be interrupted by weather conditions as hereinafter specified. The Contractor shall prosecute the Work with the diligence necessary to ensure its completion within the required time. The Contractor shall provide sufficient labor, materials, and equipment, and shall promptly take such appropriate action to keep the Work on schedule or as directed by the Owner. No additional time shall be provided for Change Orders.

b. The Parks, Recreation and Cemetery Division (Owner) shall be solely responsible for determining when the work shall be interrupted due to unsatisfactory weather conditions. Determination of the period to be included in the Time for Completion shall cease when the City directs that the work stop due to weather and shall commence again on the first working day thereafter that the City may designate for the work to be resumed. Owner reserves the right to limit or halt construction due to weather or winter condition during the period of January 01 through April 15 with no extension to Time for Completion.

c. The Contractor must completely understand that once the Contractor mobilizes and begins work, the Contractor must be on-site, every day during the normal work week, and must work continuously until substantial completion of the project. The Parks, Recreation, and Cemetery Division will not allow any time gaps of any length of time during the construction due to the Contractor's scheduling of other work not related to this specific Contract.

d. It should be further understood that this project will not be a "fill-in" for the Contractor and that the Contractor does not have the ability to start and stop construction at the Contractor's option. Any unauthorized time gaps will be subject to a flat fee of $500.00 per day. The Owner reserves the right to deduct said fee from the Contractor's periodic application for payment and the Contract Sum.

e. The Contractor shall carry on the Work and adhere to the schedule during all disputes and disagreements with The Owner. No Work shall be delayed or postponed pending resolution of any disputes or disagreements. The Contractor shall exercise reasonable precautions, efforts and measures to avoid or mitigate situations that would cause delays.

f. Punch list shall be completed within 28 day from date of issue.

g. The Contractor is advised that the **required calendar days** regarding Time for Completion and Punchlist, shall be consecutive.

ARTICLE 9 - LIQUIDATED DAMAGES

a. Prospective Bidders are advised that liquidated damages shall be in effect for this project. The Contractor and his Sureties shall be liable for and shall pay to the Owner the sum of Five Hundred and Dollars ($500.00) as fixed and agreed, as liquidated damages for each calendar day of delay from the date stipulated for completion, or as modified in accordance with the provisions of the Contract.

ARTICLE 10 - CONSTRUCTION SCHEDULES AND PAYMENT ESTIMATES

a. The Contractor must submit a construction schedule to the Owner indicating the general sequence of all work under this Contract. This schedule must be submitted within 7 days of the date of the Notice-to-Proceed and shall be revised if required to the satisfaction of the Owner.

b. The Contractor shall submit a breakdown and monthly cost estimate (schedule of values) for all items of work in categories approved by the Owner.

c. The established breakdown of items, categories and values shall be utilized to prepare the monthly pay requisition forms. It is recommended that the Contractor submit a draft Payment Applications to the Owner for approval, no later than the second week of every month. The Owner shall review and edit this copy to indicate the amount of payment to be approved and return this to the Contractor after field review. Revised/updated payment estimates and construction schedule must be submitted with monthly Payment Applications. The Contractor shall then formally submit three (3) originals of the Payment Applications, conforming to the Owner's approval, for payment.

ARTICLE 11 – CONSTRUCTION REPORTS & WEEKLY PROGRESS MEETINGS

a. The Contractor and Sub-Contractors shall attend a regular weekly meeting with the Owner at the Parks, Recreation and Cemetery Division Headquarters, 50 Skyline Drive, Worcester, MA in the Capital Projects Division Conference Room at a pre-determined time set by the Owner. The

Contractor must be present for these meetings during the course of the Contract and reserves no right to cancel the meeting. If the Contractor fails to attend the mandatory weekly meeting, a flat fee of $500.00 will be charged to the Contractor. The Owner reserves the right to deduct said fee from the Contractor's periodic application for payment and the Contract Sum.

b. The Contractor will be required to take minutes for the weekly scheduled meetings. The Contractor will have three (3) business days from the date of the meeting to submit to the Owner the minutes of the meeting on the Parks, Recreation and Cemetery Division form. The form will be supplied to the respective Contractor when the Notice to Proceed has been issued. Failure to supply the minutes of the meeting in the required timeframe will result in a flat fee of $250.00 to be charged to the Contractor. The Owner reserves the right to deduct said fee from the Contractor's periodic application for payment and the Contract Sum.

c. The Contactor will be required to maintain daily construction reports (DCRs) (format and information required to be reviewed/ approved by Owner). PDF of the DCRs shall be submitted weekly for review and shall be up to date prior to approval of monthly Payment Applications.

d. The Owner may desire other meetings from time to time, and the Contractor shall attend these and such Sub-Contractors as are directed to attend. All of the above mentioned conditions should apply.

ARTICLE 12 - HOURS OF OPERATION

a. Unless otherwise approved by the Owner, hours of operation shall be 7:00 a.m. to 3:30 p.m., Monday through Friday.

ARTICLE 13 - CONTRACT DOCUMENTS

a. The Owner will furnish the Contractor, without charge, four (4) complete copies of the Contract Documents. Additional copies requested by the Contractor will be furnished at cost.

ARTICLE 14 - STORAGE OF MATERIALS AND EQUIPMENT

a. Bidders are advised that the storage of equipment within the confines of the project limit shall be at the Contractors own risk. No material or equipment shall be stored outside the limits of work as defined in the contract documents, designated and agreed to by the Owner.

ARTICLE 15 - USE OF EQUIPMENT/MACHINERY

a. The Contractor shall not use as any part of his operation any skid steered, track driven, or heavy machinery/equipment on adjacent roadways.

ARTICLE 16 - RESPONSIBILITIES OF CONTRACTOR

a. Except as otherwise specifically stated in the Contract Documents and Technical Specifications, the Contractor shall provide and pay for all materials, tools, labor, equipment, water, light, heat, power, transportation, superintendence, temporary construction of every nature, charges, levies, fees or other expenses, permits and back charges and all other services and facilities of every nature whatsoever necessary for the performance of the Contract and to deliver all improvements embraced in this Contract completed in every respect within the specified time.

b. Unless otherwise specified herein all materials, workmanship, methods, and practices shall conform to the current Standards and Ordinances of the appropriate Departments and/or Commissions of the City. The following documents are available online at http://www.ci.worcester.ma.us/dpw/ , a hard copy or CD will be furnished to the Contractor upon request.

i. The City of Worcester DPW and Parks, Engineering Division, Construction Management Section, Standard Specifications and Details - March 2007 or current edition.

ii. Permit Manual – Revised 2004 or current edition.

c. The Contractor shall be responsible for detailed layout; all stakeout and grade control and shall employ a registered Professional Engineer or a registered Land Surveyor for this purpose. The Owner's Representative will verify and approve the layout and locations of improvements prior to excavation or installation.

d. The Contractor shall verify dimensions and utility locations shown on the plans and if any inconsistencies or discrepancies should be noted on the Drawings, or between the Drawings and actual field conditions, or between the Drawings and the specifications he/she shall immediately notify the Owner. The Contractor will be held responsible for any errors resulting from his/her failure to exercise the aforementioned precaution. Such information shall be marked on copies of the "As-Built" drawings and the original "As-Built" drawings are to be reviewed at weekly job meetings.

e. The Contractor shall provide final As-Built Drawings to the Owner. See "Record Drawings – As Built" of this Section.

f. The Contractor shall maintain a full time supervisor or foreman on the construction site, whether the construction forces are employed by his construction company or employed by a Sub-Contractor.

g. As soon as the Contract is executed, the Contractor shall order materials, submit construction schedules as herein after specified and otherwise anticipate the Notice to Proceed. When the Owner gives the Notice to Proceed, the work of construction shall begin at the time stipulated therein and shall be completed within the Time for Completion specified.

h. It is the Contractor's responsibility to make his own investigation and related assumptions, to satisfy her/him as to subsurface conditions and to insure that these are reflected in the bid.

i. In order to verify locations of utilities and varying field conditions, exploratory excavations may be necessary, the cost of which is to be included in the contract bid price.

j. The Contractor's attention is called to the necessity of obtaining permits especially those required by various departments of the City. These permit fees will <u>not be waived</u> by the City and must be paid in full by the Contractor.

k. The Contractor shall furnish and maintain all temporary fences, barriers, enclosures, lights and warning devices necessary to protect his/her work area and to protect the public and his work forces throughout the life of this contract.

ARTICLE 17 - EMERGENCY CONTACT INFORMATION

a. The Contractor will be required to submit within seven (7) business days after the Notice to Proceed a list of all people that will be involved with the completion of this project including all principal(s), president(s), superintendent(s), and project manager(s) of the company. The list shall contain the following information, including but not limited to: name, title, address, voice mail number, cell phone number, pager number, fax number and email address.

ARTICLE 18 - ON SITE SUPERINTENDENT/PROJECT MANAGER

a. The Contractor must, at all times, maintain an on-site superintendent during the construction and administration of this Contract. The superintendent must be completely familiar with all aspects of the project and capable of following the construction through from start to finish. The Contractor does not have the right to switch, replace, change or otherwise remove the superintendent assigned to this project unless specifically authorized in writing by the Owner. The on-site superintendent must be present a minimum of seven (7) hours per day during construction. If the on-site superintendent fails to meet the above-mentioned requirements, the Contractor will be subject to a flat fee of $500.00 per day. The Owner reserves the right to deduct said fee from the Contractor's periodic application for payment and the Contract Sum.

The Contractor must assign a Project Manager to this Contract that is completely familiar with all aspects of the project and capable of completing the project. The Contractor does not have the right to switch, replace, change or otherwise remove the superintendent assigned to this project unless specifically authorized in writing by the Owner. It should be further understood that the Owner would discuss all matters in regards to the administration of this Contract with only one (1) Project Manager, regardless of how many the Contractor assigns to the project.

All correspondence, emails, voice mail, faxes, etc. will be handled through the designated Project Manager only. The Parks, Recreation and Cemetery Division reserves the right, in conjunction with the Contractor, to remove the Contractor's assigned Project Manager if the City feels it is the best interest to do. Upon written notification, the Contractor must assign a new Project Manager within three (3) business days.

ARTICLE 19 - PROVISIONS FOR TRAFFIC/POLICE DETAIL (As Applicable)

a. The Contractor shall not close or obstruct any portion of a public road without obtaining the necessary permission from the proper municipal authorities. If any street or private way shall be rendered unsafe by the Contractor's opinion, he shall make such repairs or provide such temporary ways or guards as shall be acceptable to the Owner including the provision of police details required to complete the work.

b. The Contractor at his/her expense shall maintain public roads and sidewalks passable, and the Contractor shall assume full responsibility for the adequacy and safety of provisions made. He shall conduct his construction operations such that interference with the activities of park users will be held to a minimum.

c. The Contractor shall cooperate in every way possible with the municipal authorities in accommodating park activities and events.

ARTICLE 20 - COMMUNICATIONS

a. All notices, demands, requests, instructions, approvals, proposals and claims must be in writing and must be presented in person or by mail to the Owner.

b. Any notice to or demand upon the Contractor shall be considered sufficiently given if delivered at the office or field office of the Contractor stated on the signature page of the Agreement (or at such other office as the Contractor may from time to time designate in writing to the Owner), or if deposited in the United States mail in a sealed, postage prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission, in each case addressed to such office.

c. All papers required to be delivered to the **Owner** shall, unless otherwise specified in writing to the Contractor, be delivered to:

Robert C. Antonelli, Jr., Assistant Commissioner
Department of Public Works and Parks
50 Skyline Drive, Worcester, MA 01605

and any notice to or demand upon the Owner shall be sufficiently given is so delivered, or if deposited in the United States mail in a sealed, postage prepaid envelope, or delivered with charges prepaid to any telegraph company for transmission to said Owner at such address, or to such other representatives of the Owner or to such other address as the Owner may subsequently specify in writing to the Contractor for such purpose.

d. Any such notice shall be deemed to have been given as of the time of actual delivery or (in the case of mailing) when the same should have been received in due course of post, or in the case of telegrams, at the time of actual receipt, as the case may be.

ARTICLE 21 - PARTIAL USE OF SITE IMPROVEMENTS

a. The Owner, at its election, may give notice to the Contractor and place in use those sections of the improvements which have been completed, inspected and can be accepted as complying with the Technical Specifications and if, in its opinion, each such section is reasonably safe, fit and convenient for the use and accommodation for which it was intended, provided:

1. The use of such sections of the improvements shall in no way impede the completion of the remainder of the work by the Contractor.

2. The Contractor shall not be responsible for any damages or maintenance costs due directly to the use of such sections.

3. The use of such sections shall in no way relieve the Contractor of his liability due to having used defective materials or due to poor workmanship.

4. The period of guarantee stipulated in the specifications shall not begin to run until the date of the final acceptance of all work which the Contractor is required to construct under this Contract.

ARTICLE 22 - SAMPLING AND TESTING OF MATERIALS AND COMPACTION

a. Sampling and testing ordered by the Owner to ensure that materials are as specified and that compaction of all materials conforms to the necessary requirements shall be taken and completed by representatives of a Massachusetts certified testing laboratory satisfactory to the Owner, and shall be paid for by the City as described in the technical specifications.

ARTICLE 23 - TEMPORARY FACILITIES

a. Furnish all labor, materials, and services to fulfill the requirements for temporary facilities, at no additional cost to the Owner, and comply with all requirements set forth herein, except where said requirements are in conflict with Federal, State, or Local laws, rules, and regulations, in which case(s) the applicable Federal, State, or Local requirements shall govern.

ARTICLE 24 - SANITARY FACILITIES

a. Provide, place, and maintain in good order from the commencement to final completion of the work, suitable temporary toilet facilities for use by all persons employed under this contract. Toilets shall be rented from and serviced by an approved company, and shall be kept clean and sanitary and secured at all times. The type of toilets proposed for use shall have the approval of the appropriate City agency, and the number of units shall be as recommended by the Department of Labor. Toilets shall be locked during nonworking hours and placed in a secured (fenced) location, where possible.

ARTICLE 25 - TEMPORARY LIGHT AND POWER

a. Make all necessary arrangements with the local utility company and pay all costs including labor, in operating and maintaining all temporary services for electricity used during the construction, unless specifically noted otherwise.

b. Ensure that temporary wiring, outlets, and lighting are provided in accordance with the requirements of Bulletin No. 12, Division of Industrial Safety, Department of Public Safety, Commonwealth of Massachusetts.

ARTICLE 26 - TEMPORARY WATER

a. Contractor shall be responsible for securing and coordination of all water needs and temporary connections.

ARTICLE 27 - UTILITIES

a. The Contractor shall obtain and pay for all licenses and/or permits, which are required by the City or any other agencies that may be involved; he/she shall comply with all codes, regulations and standards of the City.

b. Contractor shall be responsible for all on-site coordination with utility companies and public agencies and for obtaining all required permits and paying all required fees. In accordance with M.G.L., Chapter 82, Section 40, including amendments; Contractor shall notify all utility companies and government agencies in writing prior to such excavation, Contractor shall also call "Dig Safe" at 1-(888) 344-7233 no less than 72 hours (exclusive of Saturdays, Sundays and Holidays.) prior to such excavation. Documentation of requests and numbers provided to Contractor shall be provided to Owner prior to excavation work.

ARTICLE 28 – PHOTOGRAPHS and TIME-LAPSE CAMERA(S)

a. The Contractor shall be required to furnish one (1) view of before, during and after photographs of each site conditions. The Contractor is encouraged to submit "during" photographs along with each pay requisition to facilitate approvals. Photographs in electronic format via compact disc (jpeg or tiff) are acceptable.

b. The Contactor shall be required to furnish, install and continuously maintain three (3) industrial-grade, wire-free, battery operated, weather-proof, construction time-lapse cameras. Cameras shall be securely mounted up to 25'-0" above sidewalk grade on existing light poles adjacent to the Project, location and field of view to be reviewed and approved by Owner. Minimum specification for the performance of the cameras shall be Brinno Model BCC200 or approved equal. The cameras' AVI file (1 frame per 15 minutes (or approved setting) and 30-day maximum duration) shall be submitted with monthly Payment Applications. Cameras shall be operational prior to site mobilization and maintained until substantial completion of the Project. Cameras and appurtenances shall become property of the Owner at the conclusion of the Project.

ARTICLE 29 - CONTRACTOR'S SHOP AND WORKING DRAWINGS

a. Contractor to coordinate preparation and processing of submittals with performance of construction activities. Transmit each submittal sufficiently in advance of performance of related construction activities to avoid delay. Furnish two (2) record hardcopy sets (binder 8.5x 11 format) of all approved shop drawings at end of the Project.

b. All Contractors are directed to the timeliness and critical importance of expediting the submittal process. Any lead times that may impact sequencing should be prioritized to meet the project schedule. The Owner must be notified if any delays arise that impact lead times.

c. The Contractor shall coordinate each submittal with fabrication, purchasing, testing, delivery, other submittals and related activities that requires sequential activity.

d. The Owner reserves the right to withhold action on a submittal requiring coordination with other submittals until all related submittals are received.

e. To avoid the need to delay installation as a result of the time required to process submittals and to allow sufficient time for submittal review, all initial product submittals, shop drawings shall be submitted for processing and within **35 calendar days** (35) days from the date of Notice to Proceed, unless approved otherwise by Owner.

f. The Contractor must allow the Owner **fourteen (14) calendar days** for initial review to achieve efficient construction sequencing. Allow additional time if the Owner must delay processing to permit coordination with subsequent submittals. If an intermediate submittal is necessary, process the same as the initial submittal. Allow ample time for reprocessing each submittal to achieve efficient construction sequencing.

g. No extension of Contract Time will be authorized because of the Contractor's failure to transmit submittals to the Owner for processing sufficiently in advance of the scheduled Work.

h. Shop drawings, product data and samples submitted for each item will be reviewed no more than two (2) times at the Owner's expense. Submittals failing to comply with the Contract requirements will be reviewed at times convenient to the Owner and the Owner's consultants and at the Contractor's expense, based upon a flat rate of $75.00 per hour not to exceed $600.00 for each subsequent re-submittal. The Owner reserves the right to deduct said reimbursement from the Contractor's periodic application for payment and the Contract Sum.

i. The Owner's review and approval of submittals shall be held to limitations stated in the conditions of the Contract. In no case shall approval or acceptance by the Owner be interpreted as release of Contractor of responsibility to fulfill requirements of Contract Documents. No acceptance or approval of submittals, nor any indication or note marked by the Owner on submittals, shall constitute authorization for increase in Contract Sum. The Owner will stamp each submittal with an action stamp.

j. As the timely submittal of samples, shop drawings, catalogue cuts and other related submittals is of paramount importance to the completion of the project within the stipulated time period, a contract value of 1% will be assigned to this effort. Upon receipt of the complete submittal package the General Contractor will be permitted to submit payment of this item with a value equal to 1% of the base bid contract amount.

k. Show in large-scale any unique fabrication and setting requirements or any other specified areas seen as necessary or as directed by the Owner's Representative.

l. Shop drawings shall indicate specification section and paragraph requiring items submitted.

m. Contractor shall submit to the Owner's Representative a notarized certificate of compliance from the galvanizer with all galvanizing requirements including ASTM number and weight of coatings in ounces per square foot. Certificate of compliance shall also contain the following:

1. Sole Source Responsibility: include statement that galvanizer accepts sole responsibility for coatings under this Article. Galvanizer who does not accept this responsibility is not acceptable and will be rejected.

2. Quality Assurance: include evidence that Galvanizer meets requirements of ANSI Q90.

3. Certificate of Compliance with Current Environmental Regulations: Galvanizer shall certify that coatings proposed for use comply with applicable environmental regulations. Contractor and Galvanizer shall be responsible for penalties assessed by governmental or environmental authorities for coatings that do not comply with current environmental regulations. All coatings shall be

4. Lead-free.

ARTICLE 30 - HISTORICAL, ARCHAEOLOGICAL OR ANTIQUE ITEMS

a. The Contractor during his excavation, site clearance and other operations may come upon, uncover or otherwise discover items of historical, archaeological or antique nature. The Contractor shall immediately stop operations at the particular site of the discovery and notify the Owner so that a proper evaluation may be made of its importance. The Owner shall arrange for the evaluation in a manner that shall not unduly interfere with the Contractor's operation.

c. All such items, if designated by competent authority to be of historical, archaeological or antique nature shall not become the property of the Contractor but shall be placed in the custody of the Owner for disposition.

c. The Contractor shall be required to remove with care or to assist in the removal of any such item or items and to transport the same to a place of safe keeping within the City. The costs for so assisting shall be reimbursed to the Contractor if approved by the Owner.

ARTICLE 31 - PROVISIONS FOR PUBLIC SAFETY AND CONVENIENCE

a. Particular care shall be taken to establish and maintain such methods and procedures as will not create hazards. Access to all park facilities and shall be maintained in a reasonable and safe manner for the duration of the construction period.

b. Every reasonable effort shall be made to reduce to a minimum any interference with or inconveniences to park operations and park patrons due to the construction work. Excavated material shall be trucked away and returned if the Owner deems it necessary and practical as a means for avoiding serious interference with and inconvenience to business concerns and abutters.

c. The Contractor's attention is directed to the fact that the work on this project is to be performed within a recreation area and adjacent to park drives and walkways which are utilized by pedestrians, bikers, joggers and vehicles. The Contractor shall be responsible for the installation of adequate precautions and other safety measures and controls deemed necessary by the Owner in order to protect all park users.

d. Any automotive equipment not protected by traffic cones that is operating on a public way under this project shall have one amber flashing warning light mounted on the cab roof or on the highest practical point of the machinery. This light shall be in operation while the equipment is so working.

e. Trenches shall not be opened in park areas until all material and equipment required for the work are on the site and available for immediate use. The work at each trench shall be practically continuous, with the placing of utilities, backfill and patching (where applicable) of the surface

closely following each preceding operation. When work is not in progress, trenches in areas subject to use by park patrons shall be covered with steel plates capable of safely sustaining all anticipated loads.

f. The Contractor shall provide traffic signs, warning markers and other construction safety measures as necessary to maintain public safety and optimum traffic flow. Parking of personal vehicles will be prohibited in construction areas as directed.

g. With suspension of construction activities during holidays, weekends and nights, the Contractor shall remove temporary traffic and/or safety control devices, as requested, and return them to their positions when work begins again. Payment for the installation and maintenance of appropriate safety provisions shall be included under the base bid price and no separate payment shall be considered.

h. The Contractor shall without additional compensation be required to maintain access to the project area for fire apparatus and other emergency vehicles at all times.

ARTICLE 32 - PROTECTION OF EXISTING FACILITIES

a. All existing walks, pipes, conduits, poles, fences, stairways, curbing, walls, buildings, trees and other structures which are to remain in place shall be carefully supported and protected from injury by the Contractor without additional compensation and in case of injury they shall be restored by him without compensation therefore to as good condition as that in which they were found. The value of any trees damaged shall be determined in accordance with established practices of the American Association of Nurserymen or a Registered or Certified Arborist selected by the Project Manager. Limits of liability shall not be limited to the replacement with new and immature trees.

b. The Contractor shall, at his own expense, provide suitable and safe bridges and other crossings, where required, for accommodation of travel and to provide access to private property during construction, and shall remove said structures thereafter.

c. The location of prior existing utility systems is not known and therefore may not be shown on the drawings prepared for this project. The existence of utilities shall not be considered as an unusual obstacle, and the Contractor shall not be entitled to extra compensation for maintaining, protecting, or repairing these utilities. The Contractor shall use the exploratory excavation included in his contract price, whenever he/she or the Owner's representatives deem it necessary to verify, or prevent interruption of, existing services.

ARTICLE 33 - RECORD DRAWINGS - AS-BUILT

a. The Contractor shall cooperate with the Project Manager and shall prepare and maintain a set of drawings on which shall be recorded accurately, as the work progresses, the actual "as built" locations and dimensions of all his work, indicating thereon all variations from the Contract Drawings. This record of "as built" conditions shall include the work of all subcontractors and shall be submitted, upon final acceptance of all work, to the Project Manager and shall be reviewed and updated at weekly meetings.

b. Prior to final acceptance of the work, all "as built" data shall be transferred into digital Auto CAD 2005 format files provided to the Owner by the Contractor. This work shall be performed by the Contractor's Registered Land Surveyor with the cooperation of the Contractor as required. After review and approval by the Owner the record drawings will be completed and delivered to the Owner.

1. All geographic data must be submitted in a standard real-world coordinate system. The following coordinate system is required:

Projection:	Massachusetts State-plane Mainland
Datum:	NAD83
Fipszone:	2001
Units:	Feet
Spheroid:	GRS1980

2. All digital data must be delivered in the following format:

   Autodesk AutoCAD dwg. format, and one of the following file formats:

   ESRI Geodatabase
   ESRI Shapefile format
   ESRI Arc/Info Interchange File format (e00)
   Autodesk AutoCAD dxf format

3. All data must be clean of undershooting and overshooting arcs (dangles). Polygons must be snapped closed at nodes and lines must snap to one another at nodes.
4. All data must be thematically organized. There must be separate layers for road edges, road centerlines, buildings, streams, water and sewer mains, hydrants, easements, parcels, water bodies, etc. For example, if a stream is coincident with a parcel boundary that coincident line must appear in both the parcel layer and the stream layer. All data shown on the plan shall be submitted digitally.
5. Features, which contain a third, dimension or elevation data (z value) must have the elevation value within the attribute data. If elevation data is submitted in a CAD format then the value must be part of the feature (polyline).
6. Documentation:
   A. A list of all files being submitted is required.
   B. CAD data shall include metadata for each layer included within the file. This documentation will provide information on the source of the data, feature type (point, line, polygon, etc), source date, and a general description of what is shown on the layer(s).
   C. GIS data submissions (e.g., mdb, shp file, e00 export) must include all items from B above as well as metadata for each of the feature's geographic data attributes. This will include a complete description of each attribute's definition as well as a description of what each of the attribute values mean for each field.
7. Documentation on the method/s used for data collection shall be submitted for all data deliverables.
8. Documentation on the horizontal and vertical accuracy shall be submitted for all data deliverables.
9. Text & Annotation:
   A. For CAD submissions, text must be placed in separate layers. Features must not be erased in order to accommodate the placement of text. Text layers must be thematically separate, meaning that text associated with hydrography should be placed on a single layer, while text pertaining to a parcel's ID number should be placed on yet another separate layer. For example, should there be text on a map defining a parcel's ID number and another piece of text defining a stream name, the deliverable to the town must include two (2) separate text layers, one for the parcel ID numbers and one for the stream names.
   B. Text associated with a GIS formatted data deliverable must be in one of four forms.

1. A label attribute. This would be related to the feature's attribute fields as previously described above in Section 6.
2. Annotation subclass. This would be separate annotation included within a feature data set as a series of text attribute tables (TAT).
3. Annotation coverage (e00 export). This would be an entirely separate feature class containing text or annotation only.
4. Feature linked annotation as prescribed in ArcGIS.

10. Pertaining to CAD formatted deliverables, features, which cross map sheets, must precisely match each other at the join line between the sheets; edge matching must be seamless.
11. All deliverables, data, text and/or documentation, must be submitted on either CD-ROM or DVD.
12. The Owner shall supply the Contractor with electronic files (AutoCAD) for the sole purpose of creating As- Built Drawings.
13. **As-built tasks shall be assigned a monetary value equal to 2 percent (2%) of total construction cost and be included as an item in the approved schedule of values.**
14. **Contractor <u>shall</u> submit the final approved as-built within 28 day of notice of substantial completion or approval of final payment application.**

ARTICLE 34 - RUBBISH REMOVAL

a. The Contractor and each Subcontractor shall remove all rubbish, waste, tools, equipment, and appurtenances caused by and used in the execution of his work; but this shall in no way be construed to relieve the Contractor of his primary responsibility for maintaining the site clean and free of debris, leaving all work in a clean condition. The Contractor shall keep the site free of rubbish and construction debris at all times.

b. The Contractor shall provide sufficient metal barrels or dumpsters into which all refuse and garbage shall be deposited. All containers shall have tight fitting covers. These shall be secured overnight or removed daily.

c. At the end of each workweek, the Contractor shall thoroughly clean premises of rubbish and debris of any nature, and remove such from the premises.

ARTICLE 35 - PROJECT CONSTRUCTION SIGN

a. Contractor will provide and temporarily install one monolithic 48" high X 96" wide X ¾" thick project sign and 2- 4"x 4" posts to identify the Project at a location to be determined in the field by the Owner.

b. The Project sign shall conform exactly to the City of Worcester's DPW and Parks, Parks, Recreation and Cemetery Division's prototype projects sign including but not limited to: size, backer material, font style, size and relief, capitalization, color, weather proofing, fasteners and fastener locations.

c. **Final Graphic and language will be provided by the Owner** (Background color is forest green, text is white). **Sample below is for reference only.**

d. The Contractor shall include the cost of furnishing, post installation and removal of sign and posts in the total project costs

PROJECT SPECIAL SPECIFICATIONS

General

1. The following special standard specifications are to be used on contract work awarded by the City of Worcester DPW and Parks; Parks Recreation and Cemetery Division. They are intended to supplement, support and suit this specific contract.

ARTICLE 36 – DEMOLITION, SITE EXCAVATION AND PREPARATION

a. The work shall consist of excavating, removing and legal disposal of surplus if any, earth, boulders, masonry, existing pavements, building materials, footings, appurtenances and other materials encountered of whatever nature that is unsuitable for the construction and improvements of finished conditions. Excavated to the depth necessary to install according to the specifications, plans and details plans provided in the construction bidding documents.

b. Location of existing utilities shall be verified before excavation commences. The Drawings are based on available utility record drawings and site observation.

c. The excavation shall be carried out to such depths that sufficient materials will be left above the designated grade to allow for compaction to this grade. Should the Contractor, through negligence or other fault, excavate below the designated lines, he shall replace such excavation at his own expense. The Owner shall have complete control over excavation, moving, placing, and disposition of all material. All material determine to be unsuitable shall be disposed offsite at no additional cost to the Owner.

d. The Contractor shall inform and satisfy himself as to the character, quantity, and distribution of all material to be excavated. No payment shall be made for any excavated material, which is used for purposes other than those designated or implied.

e. If it is necessary in the process of the work to interrupt existing surface drainage, sewers, or to pass under drainage, conduits, utilities, or similar underground structures, or parts thereof, the Contractor shall protect it or provide temporary services. The Contractor shall, at his own expense, satisfactorily repair all damage to such facilities or structures that may result from any of his operations or from negligence during the period of the Contract..

f. No excavation shall be started until the Owner has approved the proposed area of construction.

g. Excavation shall be performed at such places as are indicated on the Drawings, to the lines, grades and elevations shown or as directed by the Project Manager, and shall be made in such manner that requirements for the formation of the sub-grade can be followed. Unless directed otherwise any disturbed existing rimmed structures shall be adjusted flush to final adjacent grade.

h. Existing pavements and base courses shall be carefully saw cut or core drilled and removed to the lines indicated and in a manner to obtain sound, vertical edges, and so as not to disturb or damage existing buildings, utilities, pavements, and base coats which are to remain.

i. Unit pavers, such as granite brick and concrete, shall be carefully removed and stockpiled for reuse, if required.

j. All excavations shall be opened using minimum, straight, parallel cuts through pavement and base materials, and other excavations opened using square or rectangular cuts or as directed to minimize removal while permitting regular, straight-line repair and patching.

k. No excavation shall commence in any until the pavement covering the proposed excavation has been marked for cutting.

l. Excavated areas shall be made safe for the residents at the end of each workday.

m. Transport excavated materials, waste materials, trash, and debris and legally dispose of it off city property.

n. Prevent, minimize and control groundwater and/or surface water to accumulate in excavations. Remove water to prevent the undercutting of footings and soil changes detrimental to the stability of sub-grades, foundations and granite, brick or concrete paving.

o. Payment for site excavation and preparation work shall be considered incidental to the individual items installed. No separate payment shall be made for site excavation and preparation work. No separate payment shall be made for all labor, equipment, tools and incidentals necessary to complete the work to the satisfaction of the city, including transportation and disposal of excavated materials.

p. It is the responsibility of the Contractor to verify the accuracy of all survey information provided by the Owner prior to commencing excavations or filling operations. Commencement of these operations constitutes acceptance of the survey information as appropriate to meet the intent of the Contract.

q. Soil testing, if required, for all materials to be reused on-site or removed and disposed of offsite, shall be the responsibility of the contractor. The city reserves the right to obtain its own test results from the same sample as the contractor without penalties to the owner. The contractor is required to obtain a large enough sample to divide with the owner for this proposes.

r. Transport excavated materials, waste materials, trash, and debris and legally dispose of it off city property.

s. Surplus excavated material not needed as specified above shall be hauled away and disposed of by the Contractor at no additional cost to the Owner, at appropriate locations, and in accordance with arrangements made by him. Disposal of all rubble shall be in accordance with all applicable local, state and federal regulations.

t. The Contractor shall comply with Massachusetts regulations (310 CMR 40.0032) that govern the removal and disposal of surplus excavated materials. Materials, including contaminated soils, having concentrations of oil or hazardous materials less than an otherwise Reportable Concentration

and that are not a hazardous waste, may not be disposed of at locations where concentrations of oil and/or hazardous material at the receiving site are significantly lower than the levels of those oil and /or hazardous materials present in the soil being disposed or reused.

u. If required: In response to the State/ Federal imposed quarantine regarding the Asian long-horned beetle infestation, the protocol for handling and disposal of wood based materials within the project area by the contractor shall be to:

   i. at a minimum, process all onsite vegetative, wood and cellulose based materials (trees, shrubs, root, stumps, branches, leaves, etc. **twelve inches and under in diameter** and designated for disposal) to a size of less than one inch as measured in two directions by approved mechanical means (wood chipper) prior to disposal/removal offsite. All other existing vegetative, wood and cellulose based products; tree trunks, stumps, branches etc., **greater than twelve inches, in diameter** and designated for removal/disposal shall be delivered to the current transfer station located within the City property limits.

   ii. Contractor shall be responsible to comply with changes to the current quarantine protocols at the time the work is performed.

ARTICLE 37 – RESERVED/ NOT USED

ARTICLE 38 - CAST IN PLACE CEMENT CONCRETE

a. The scope of work under this article shall consist of furnishing all labor, materials, equipments, transportation, reinforcing, forming, finishing and curing of cast in place concrete for the construction of concrete pads, footings and walls for the structures and site improvements as specified herein and according to the plans and details shown in the construction drawings and the balance of any concrete construction necessary to completion of the project.

b. Unless otherwise specified, all materials shall conform to the relevant provisions of Section 901, **Cement Concrete Masonry,** and Section M4, **Cement And Concrete Materials** of latest edition of The Massachusetts Department of Public Works Standard Specifications for Highways, Bridges and Waterways.

c. At a minimum, concrete to be used shall be Class 4,000 PSI - minimum 28 day compressive strength, and cement content of 610 lbs per cubic yard for ¾" course aggregate. Concrete shall be discharged at site within 90-minutes after batching.

d. All horizontal (pad) concrete construction shall be air entrained which shall be 4.5% to 7%, as determined by ASTM C231.

e. Formwork shall be sufficient enough to resist pressure of the concrete without springing and tight enough to prevent leakage of mortar. Forms shall be staked, braced, or tied together to maintain their position and shape when concrete is compacted in place. Forms shall be clean and shall produce an even finish for exposed surfaces. Forms shall not be removed for at least twenty-four (24) hours after concrete has been placed, or longer if directed by Owner.

f. Preformed expansion joint filler shall be non-extruding and resilient non-bituminous type conforming to AASHTO-M135.

g. Reinforcing as required or pads shall be welded wire fabric, 6" X 6", W1.4 X W1.4 gauge cold-drawn steel wires formed into a mesh and welded together at points of intersection in conformance with ASTM A-185-70. Welded wire fabric shall be furnished in mats and not in rolls.

h. All references to 'processed gravel', 'gravel borrow', or 'gravel' shall conform to Article 38 Gravel Borrow.

i. Curing and protection shall be accomplished by applicable optimum method specified in Section 901, **Cement Concrete Masonry,** and Section M4, **Cement And Concrete Materials** of latest

edition of The Massachusetts Department of Public Works Standard Specifications for Highways, Bridges and Waterways.

j. The Contractor is responsible for the quality and strength of the concrete. Inferior concrete, including that damaged by frost action shall be removed and replaced at no additional cost to the Owner.

k. The Contractor shall be responsible to repair or replace any concrete exhibiting deficient materials or workmanship with in one (1) year of final acceptance.

l. Payment for concrete and concrete work shall be considered incidental to the individual item in which the concrete is used. No separate payment shall be made for concrete work.

ARTICLE 39 - GRAVEL BORROW

a. The scope of work under this article shall consist of furnishing all labor, materials, equipment and transportation required for placement and compaction of approved processed gravel according to the plans and details plans and details shown in the construction drawings and the balance of any sub base construction necessary to the completion of the project.

b. All references to 'processed gravel', 'gravel borrow', or 'gravel base' shall conform to Article 39 Gravel Borrow.

c. Gravel borrow shall consist of inert material that is hard durable stone and coarse sand, free from loam and clay, surface coatings and deleterious material. Gravel borrow containing recycled concrete material shall not be used in areas of pervious finish grade (i.e. ball fields, skinned, and lawns areas).

d. Gradation requirements for gravel borrow shall be determined by AASHO-T11 and T27 and shall conform to the following:

Sieve	Percent Passing
2"	100
½"	50-85
No. 4	40-75
No. 50	8-28
No. 200	0-10

e. Maximum size of stone in gravel shall be two (2) inches, largest dimension.

f. Gravel shall be spread and compacted in layers not exceeding six (6) inches in depth compacted measurement and all layers shall be compacted to not less than ninety-five percent (95%) of the maximum dry density of the material as determined by the Standard AASHO Test Designation T99 compaction test Method C at optimum moisture content.

ARTICLE 40 –SECURITY CAMERAS - APPURTENANCES STANDARDS

a. Include $40,000 in Base Bid for allowance to furnish and install cameras and associated appurtenances. Owner will be responsible to secure specifications and vendor pricing for products, installation labor and connection of security system. Project Contract terms apply.

b. Include in Base Bid, to furnish, install and test 1000 LF of fiber optic cable, type 12 strand single mode outdoor plant fiber.

c. Communications conduits shall be 2-inch type HDPE continuous roll, smooth wall SDR 09 between handholes, communication conduits run into light poles can be Schedule 40 PVC. Electrical and HDPE conduits shall be in separate handhole/pullbox.

d. Include in base bid, to coordinate, furnish and install on each pedestrian light pole with communication handhole, one pole mounted NEMA 3R rated utility cabinet, with stainless steel back panel, include labor and materials to energized duplex outlet for security cameras, security camera appurtenances. Cameras and appurtenances inside pole mounted utility cabinet are not included in Base Bid (see item 'a" of Article 40). Furnish and install manufacturer's standard auxiliary wire exits (2). Mount utility cabinets with pole manufacturer's standard and provided "trac nut" hardware, include fabrication of custom H-bracket for the utility cabinet. Utility cabinet standard shall be Stahlin Part# RJ1614HW-P, Type# 1,3R,4X,6P,12 painted black, or approved equal.

ARTICLE 41 – RESERVED/NOT USED

ARTICLE 42 - WPRC DIVISION CHAIN LINK FENCE FRAMEWORK AND FABRIC

General

1. This work includes the installation of galvanized, aluminized and polymer coated fence framework and fabric of various heights in accordance with these specifications and in conformity with the details, lines and grades shown on the plans or established.

Construction Requirements

1. Locate and install all posts in concrete (4000 psi at 28 days), with minimum depth of 48 inches below finish grade and minimum diameter of twelve inches or four times the diameter of post, whichever is greater. Typical spacing of post shall be 120 inches max on center. Core spacing/location of post on the precast concrete wall shall be coordinated with shop drawings and adjusted to be located in the middle of top "anchor" block. If applicable, refer to plans for post concrete footing depth and size for batting cage, bullpen, backstop and netting framework. Install plumb and true to line and grade and to the height as indicated within the drawings. All posts shall have continuous horizontal rails at the top, middle (for fence design height 72 inches and greater), and bottom. In addition, all end and corner posts shall be braced to the nearest line post with center brace rails. Outside sleeve type top rail couplings shall be placed a maximum of twelve (12) inches from posts.

2. Chain link fence shall have continuous top and bottom rails. Refer to plans for rail layout for batting cage, bullpen and backstop and netting framework. Top and bottom edge of fence fabric shall have knuckled edges. Fabric shall be stretched uniformly taut and as tight as possible, true to line and grade and complete in all details. Install tension bars at corners.

3. All chain link fence fabric shall be fastened on the outside of the posts unless directed otherwise by the Owner. The fabric shall be properly stretched and securely fastened to the posts and between posts the top and bottom of the fabric shall be fastened to the horizontal braces as specified, herein. The fabric shall be fastened to end and corner posts with tension bars and stretcher bar bands spaced at one (1) foot intervals.

4. Fabric shall be aligned so that top and bottom shall extend one half the height of the "diamond" beyond outer edge of top and bottom of the horizontal rail. The fabric shall also be one (1) inch maximum above finish grade. The fabric shall be tied (as per item 5 below) to all line posts, top, middle and bottom rails every six (6) "diamonds" as measured horizontally or vertically. Overlapping fence fabric sections shall overlap one full height of the "diamond" and be centered on the horizontal rail.

5. All fabric, shall be fastened to all line posts and horizontal rails with 0.020" thickness, 200/300 series stainless steel ½" wide bands, with a minimum breaking strength of 850 lbs., 1/2" band capacity ear-lokt design buckles to be manufactured with 0.050" thick material, 201/301 series stainless steel. Fabric for bleachers shall be attached at each vertical post only, three bands per post. All bands shall be pulled tight

and raw ends of steel bands shall be secured in buckle by folding ear tabs around steel bands as per manufacturer's recommended installation procedure. No sharp edges shall protrude from band-it buckles.

Materials

Fabric, posts, gate frames, gate hinges, gate stops, braces, rails, stretcher bars, truss rods, post caps, stretcher bar bands, tension wire shall and other parts shall be of steel, pressed steel or approved equal except that post tops and rail ends may be of aluminum. **No malleable iron, ductile iron materials will be accepted**. The Contractor shall supply a notarized mill certification from manufacturer that all materials used have been tested and fully comply with the specifications specified herein.

1. Fabric: The fabric shall consist of No. 9 gauge (0.148 inch core) wire, 2-inch diamond mesh typical and 1.75-inch diamond mesh for fabric adjacent to tennis courts. All fabric shall be knuckled at both selvages. Public side of fabric shall be installed in accordance with the Owner's direction. The height of the fabric as shown on plans and details shall be typically one piece unless directed otherwise by Owner. Fabric for bleachers will be as per manufacturer's standard.

   (a) *Galvanized /Aluminized Coated Fabric:* All materials used shall conform to the requirements of ASTM A392 Class-2, or ASTM A491. Except aluminum alloy items, shall conform to ASTM-B211, B221 and B429.

   (b) *Polyvinyl Chloride (PVC) Coated Fabric:* Fence fabric shall be zinc coated in accordance ASTM A392 Class-1 or aluminum-coated in accordance with ASTM A 491(TABLE 3). PVC coating shall be applied in accordance with ASTM F668 Class-2a. The color of the fabric shall be black and in accordance with ASTM F934.

2. Framework: Type II, Group IC round steel pipe (electric resistance welded), cold-formed as per ASTM F1043-00 Standard, with minimum yield strength of 50,000 psi. The external zinc coating shall be Type B, zinc with polymer film, 0.90 oz / sq. ft, minimum zinc coating with a chromate conversion and a verifiable polymer film. The internal coating shall be Type B, zinc 0.90 oz./sq.ft. Minimum or type D, zinc pigmented, 81% nominal coating with 0.30 mils minimum thickness. Gate framework joints shall be welded and coated in accordance with Practice A780, employing zinc-rich paint. Refer to plans for framework sizes for batting cage, bullpen, backstop and netting framework.

   (a) End, Corner and Pull Post. Galvanized steel, physical pipe dimension and weights as follows:

      (1) Up to 12-foot fabric height: 2.875-inch OD pipe, 4.64-lbs. /lin. ft.
      (2) For basketball and tennis courts: 4.000-inch OD pipe, 6.56-lbs. /lin. ft.
      (3) For combo batting cage/bullpen and backstop: 4.000-inch OD pipe, 6.56-lbs. /lin. ft.
      (4) Maximum Spacing between all posts is 10'- 0" On Center.

   (b) Line Posts. Galvanized steel, physical pipe dimension and weights as follows:

      (1) Up to 12-foot fabric height: 2.375-inch OD steel pipe, 3.12-lbs. /lin. ft.
      (2) For basketball and tennis courts: 2.875-inch OD pipe, 4.64-lbs. /lin. ft.
      (3) For combo batting cage/bullpen and backstop: 4.000-inch OD pipe, 6.56-lbs. /lin. ft.
      (4) Maximum Spacing between all posts is 10'- 0" On Center.

   (c) Gate Posts. Galvanized steel, single gate widths, physical pipe dimension and weights as follows:

      (1) Up to 6-feet: 2.875-inch OD pipe, 4.64-lbs./linear ft.
      (2) Over 6-feet to 13 feet: 4.0 inch OD pipe, 6.56-lbs./ linear ft.
      (3) Gate frames as per ASTM F 900-94.

(d) Rails (Top, middle and bottom rails): Galvanized steel, manufacturer's longest lengths joined by six-inch (6") long sleeves, rail shall run continuously along top of fence. Bottom rail shall be joined at line posts with boulevard clamps. Minimum pipe sizes and weights as follows:

(1) 1.660-inch OD pipe, 1.82-lbs. /lin. ft. minimum.
(2) Top, Bottom and <u>MIDDLE</u> rails are required for fencing adjacent to the soccer field and top of wall OR any fence designated to be six (6) feet and taller.

(e) Couplings: Expansion types, approximately 6-inch long, install one sleeve for each 500 foot run. Standard couplings are installed at each rail end to form one continuous top rail.

(f) Attaching Devices: Provide fittings for attaching top rail securely to each gate corner pull and end post.

(g) Sleeves: Galvanized steel pipe not less than 6 inches long and with inside diameter not less than 1/2-inch greater than outside diameter of the post pipe. Provide steel plate closure welded to bottom of sleeve of width and length not less than 1-inch greater than outside diameter of sleeve.

(h) Post Brace Assembly: Manufacturer's standard adjustable braces at end of gateposts and at both sides of corner and pull posts. Provide horizontal brace located at mid-height of fabric. Use same material as top rail for brace, and truss to line posts with 3/8-inch diameter galvanized steel truss rods and adjustable tightener.

(i) Post Tops: Galvanized steel, weather-tight closure cap for each tubular post. Furnish caps with openings to permit passage of top rail.

(j) Tension Bars: Galvanized steel, one piece lengths equal to full height of fabric, with minimum cross-section of 3/16 inch x 3/4 inch. Provide tension bar for each gate and end post, and two for each corner and pull post. Stretcher Bar Bands will be manufacturer's standard.

(k) Gate Cross-Bracing: 3/8-inch diameter galvanized steel truss rods and adjustable tightener.

(l) Non-Shrink, Non-Metallic Grout: Premixed, factory-packaged, non-corrosive, non-staining, non-gaseous, exterior grout approved by the Engineer.

(m) Single and Double Swinging Gate and Hardware: Swing gates and hardware shall be manufactured to meet the requirements of ASTM F900. Unless indicate otherwise, and to meet ADA requirements, the minimum clear opening for all single gates (as measure with gate perpendicular to framework) shall be 36 inches.

(1) Hinges. Industrial butt hinges, size and material as required for the gate size. Non-lift-off type, offset to permit 180 degree gate opening. Provide one pair of hinges for each leaf, gates eight feet and taller in nominal height shall have three hinges per leaf. Spot-weld to post and paint (non polymer coated), to prevent rotational movement.

(2) Latch (for both single and double gates). Pressed steel, industrial series gate latch, straight fork type, provide latch catch for double gates, designed to permit operation from either side of gate, with padlock eye as integral part of latch catch. Provide two latch and catch for double gates. All gates shall be equipped with one gate stop.

(n) Sleeves if required for fence shall be galvanized steel pipe conforming to ASTM F1043 sizing as required to accommodate posts.

Polymer Coated Framework

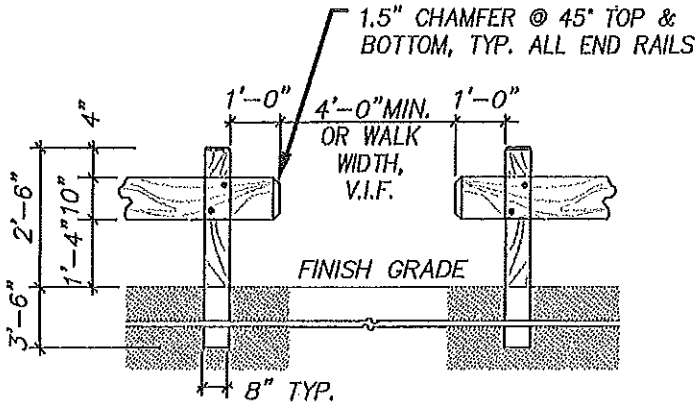
Shall meet the above-mentioned specification for materials. The framework shall be subjected to a complete thermal stratification coating process (multi-stage, high-temperature, multi-layer) including, as a minimum, a six-

stage pretreatment/wash (with zinc phosphate), an electrostatic spray application of an epoxy base, and a separate electrostatic spray application of a polyester finish. The material used for the base coat shall be a zinc-rich (gray color) thermosetting epoxy; the minimum thickness of the base coat shall be two (2) mils. The material used for the finish coat shall be a thermosetting "no-mar" TGIC polyester powder; the minimum thickness of the finish coat shall be two (2) mils. The stratification-coated pipe shall demonstrate the ability to endure a salt-spray resistance test in accordance with ASTM B117 without loss of adhesion for a minimum exposure time of 3,500 hours. Additionally, the coated pipe shall demonstrate the ability to withstand exposure in a weather-ometer apparatus for 1,000 hours without failure in accordance with ASTM D1499 and to show satisfactory adhesion when subjected to the crosshatch test, Method B, in ASTM D3359. The polyester finish coat shall not crack, blister or split under normal use. Painted framework and accessories are not acceptable, welded joints shall be top-coated to match frame color. Color of the polymer coated framework and accessories shall be black and in accordance with ASTM F934.

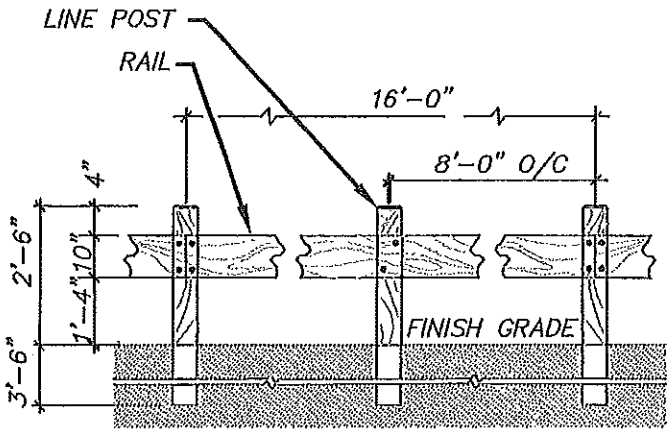
ARTICLE 43 - ATTACHMENTS

D-1, Wood Guardrail and Pipe Bollard Detail (1 page)
D-2, Chain Link Fence Framework and Fabric (1 page)
D-3, Single or Double Pipe Gate Detail (1 page)
Subsurface Investigation Report (81 pages)
Soil Boring Logs

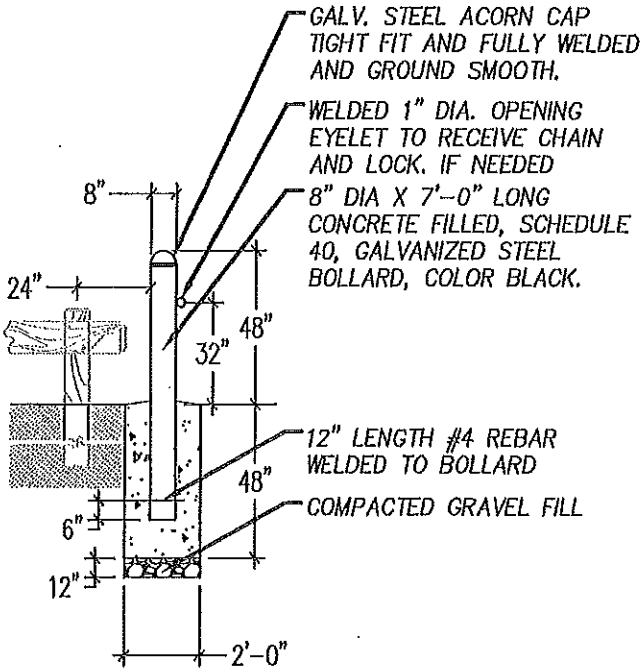
End of DPW and Parks Special Conditions and Specifications



TYPICAL RAILING OPENING / END POST

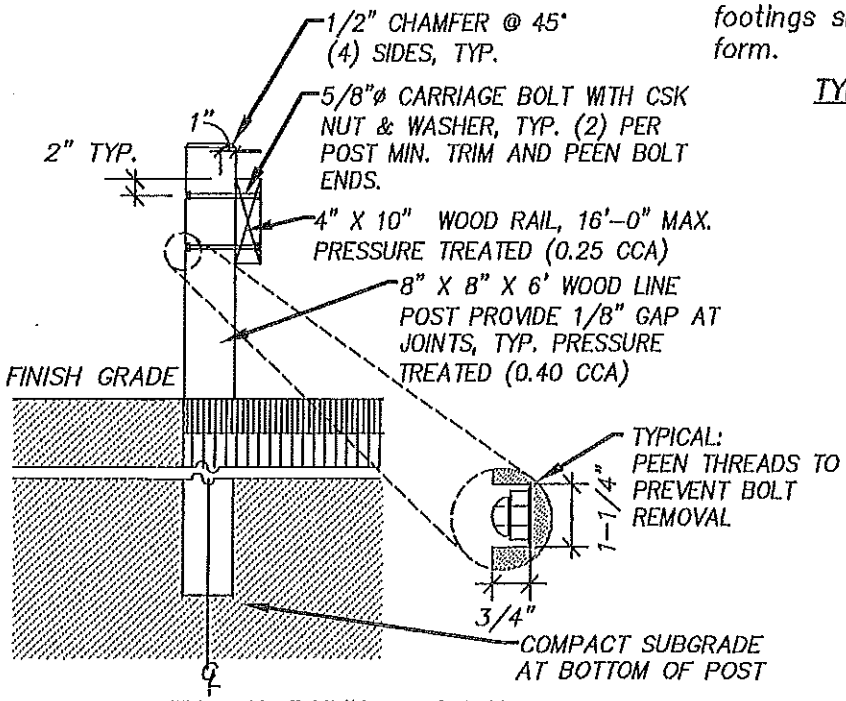


TYPICAL RAILING ELEVATION



1. Steel pipe for bollards shall be seamless steel pipe in accordance with ASTM 53 Type F.
2. All Hardware shall conform to ASTM A307 requirements and shall be galvanized Per ASTM A153.
3. Welding shall be in conformance with AWS codes. All connections shall be formed with fish-mouthed joints full seam welds, grounded smooth and sanded.
4. All bollards shall be set plumb and level. Concrete footings shall be installed using a sonatube for the form.

TYPICAL PIPE BOLLARD ELEVATION



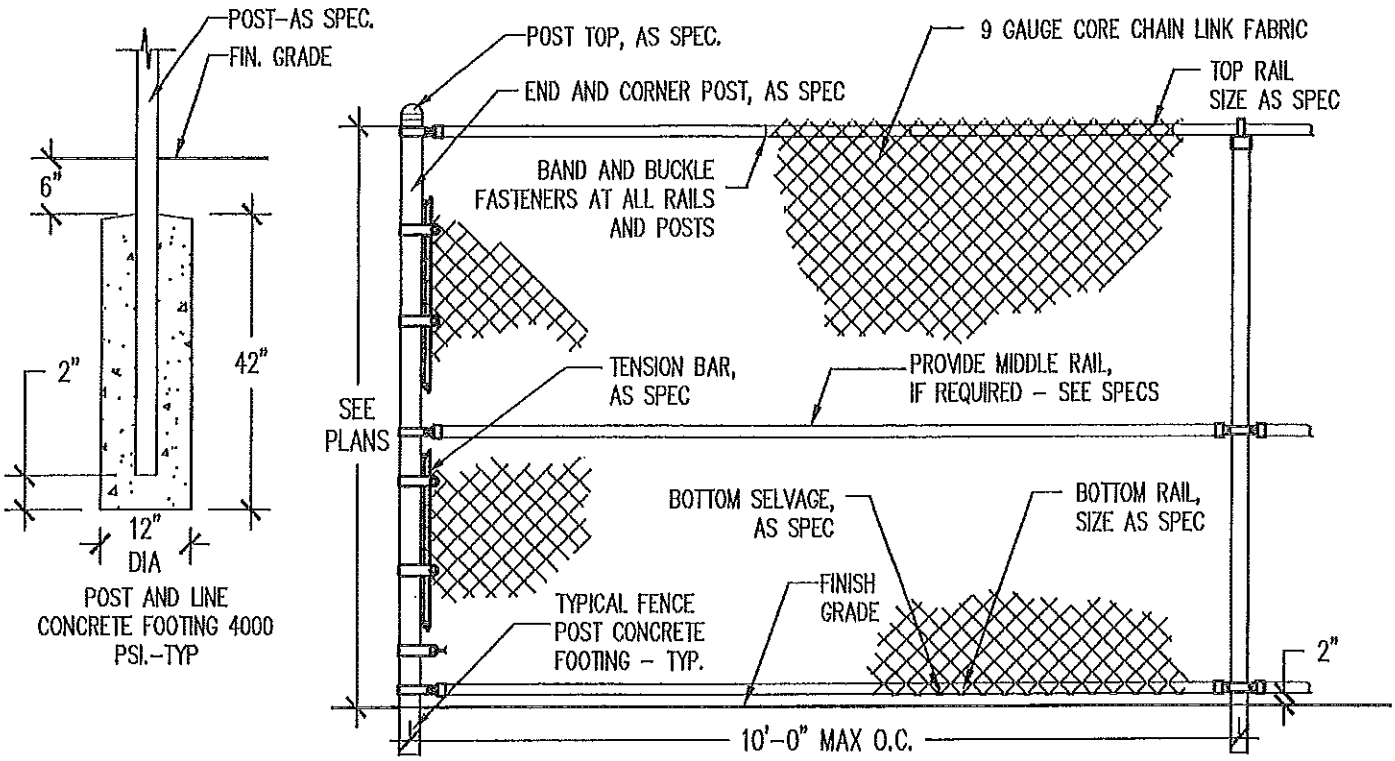
TYPICAL RAILING SECTION

Dept. Of Public Works & Parks
Capital Projects Division
ROBERT C. ANTONELLI, JR.
Assistant Commissioner

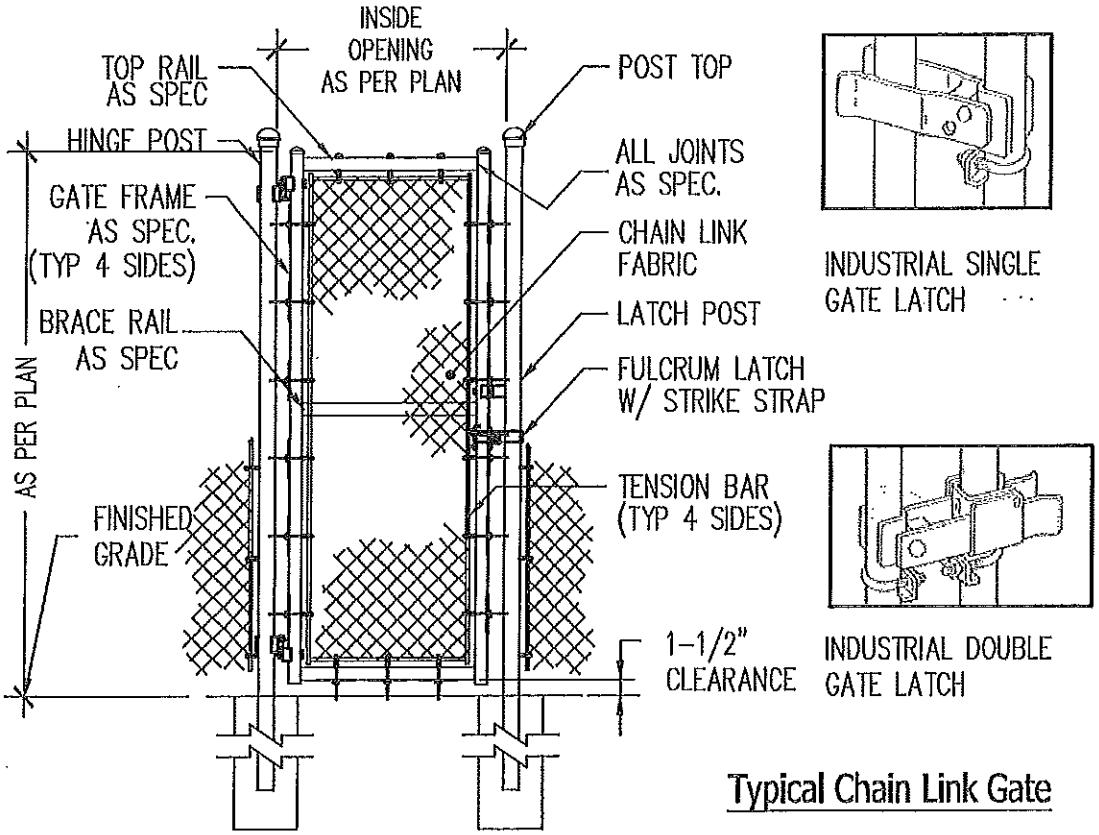
Parks, Recreation & Cemetery Division Standard
Wood Guardrail and Pipe Bollard Detail

Not To Scale

D-1



Typical Chain Link Fence And Footing



INDUSTRIAL SINGLE
GATE LATCH

INDUSTRIAL DOUBLE
GATE LATCH

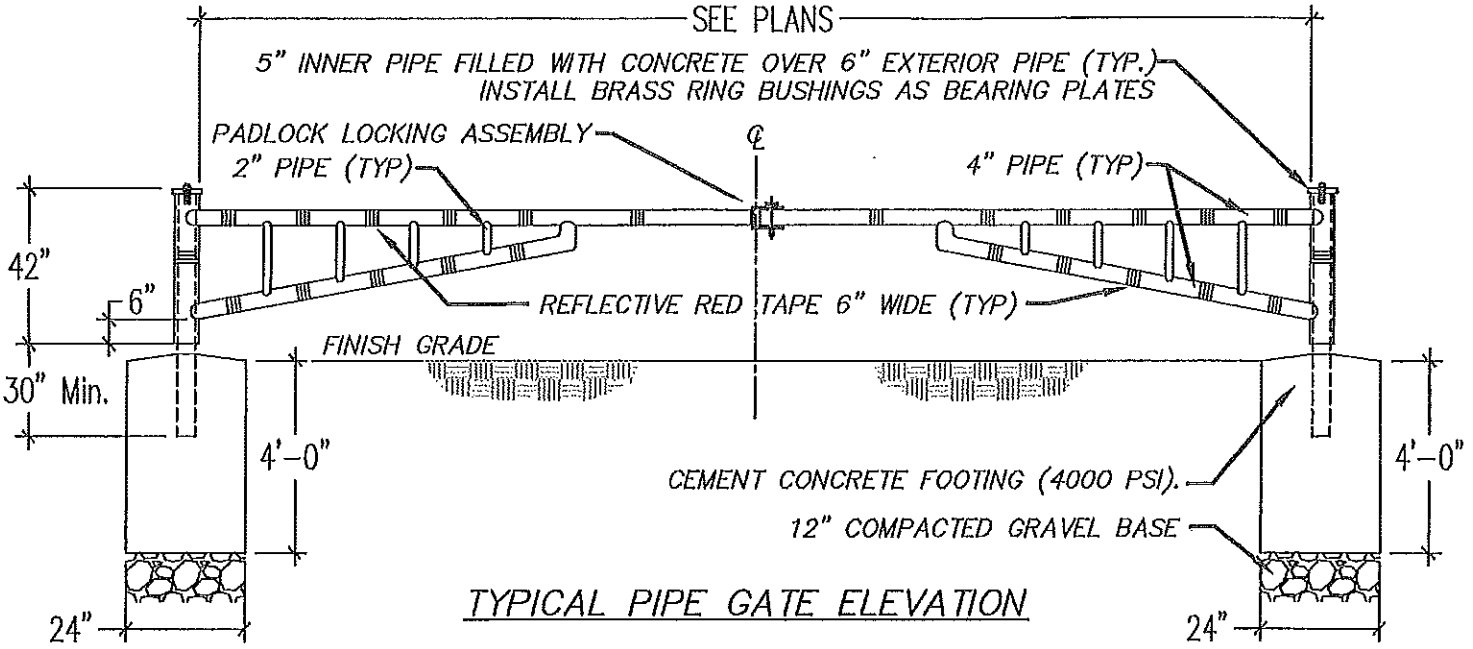
Typical Chain Link Gate

Dept. Of Public Works & Parks
Capital Projects Division
ROBERT C. ANTONELLI, JR.
Assistant Commissioner

Parks, Recreation & Cemetery Division Standard
Chain Link Fence Framework and Fabric

Not To Scale

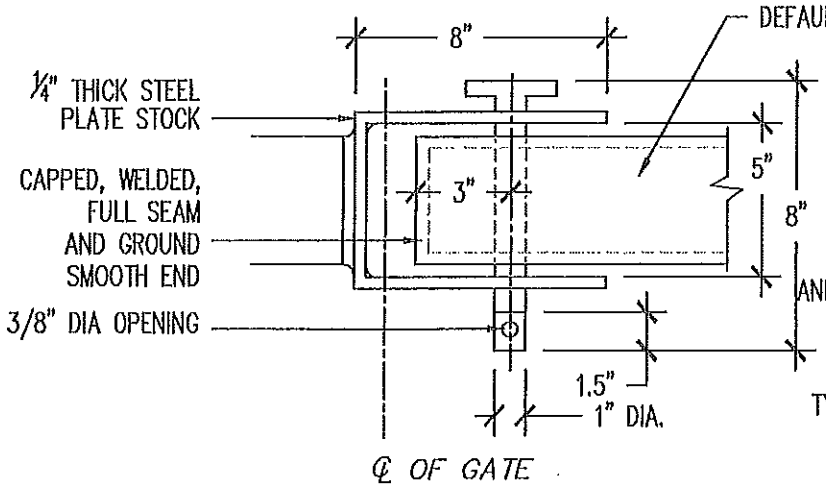
D-2



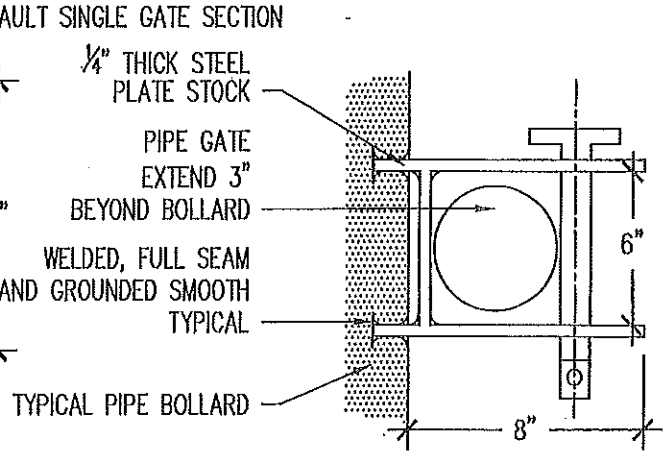
TYPICAL PIPE GATE ELEVATION

GENERAL NOTES:

1. Steel pipe for gates shall be seamless steel pipe in accordance with ASTM 53 type F.
2. All hardware shall conform to ASTM A307 requirements and shall be galvanized per ASTM A153.
3. Welding shall be in conformance with AWS codes. All connections shall be formed with fish-mouthed joints full seam welds, grounded smooth and sanded.
4. All gates shall be set plumb and level. Concrete footings shall be installed using approved formwork and rebar spacing (if required). Submit shop drawing for approval/review.
5. Gate must be free to open a min. of 95° from closed position.
6. Gate to be primed, enameled and painted. Paint type to be approved by owner. Color is Black.



DOUBLE GATE LOCKING ASSEMBLY DETAIL



STANCHION / SINGLE GATE LOCKING ASSEMBLY DETAIL

Dept. Of Public Works & Parks
Capital Projects Division
ROBERT C. ANTONELLI, JR.
Assistant Commissioner

Parks Division Standard
Single or Double Pipe Gate Detail
Not To Scale

D-3

IMPROVING COMMUNITIES TOGETHER

September 7, 2022

Ms. Alice W. Webb, PLA, ASLA
Principal
EarthDesign Landscape Architecture LLC
280 Beverly Road
Worcester, Massachusetts 01605

Re: **Subsurface Investigation**
Mulcahy Field
158 Dorchester Street
Worcester, Massachusetts

Dear Ms. Webb:

BETA Group, Inc. (BETA) has conducted soil characterization at the above-referenced location (the site) on behalf of EarthDesign Landscape Architecture LLC ("Client"). Soil characterization was completed to facilitate soil management during construction of a basketball court at the site by the City of Worcester. A summary of the subsurface soil investigation and analytical results is presented below.

SITE DESCRIPTION

The site is located on a public athletic field owned by the City of Worcester. The site is in a mixed residential and light commercial area. Single-family residences bound the site to the east and west. A restaurant and an auto repair facility are present to the southeast. Worcester East Middle School is present across Dorchester Street to the north. An asphalt-surfaced parking lot is present on the southern portion of the site. A playground is present on the west side of the site. A small building containing restrooms is present in the northwest portion of the site. Two baseball fields are currently present on the site. Most of the site contains grass-landscaped areas or baseball diamonds. Bleachers and dugouts are present on the newly-renovated southern baseball diamond.

HISTORICAL RESEARCH

BETA obtained historical aerial photographs, Sanborn fire insurance maps and a radius map from Environmental Data Resources (EDR) of Shelton, CT. The aerial photographs depict the site developed as an athletic field from 1966 through 2016.

The Sanborn maps indicate the site was developed with a hen house in 1910. The site was indicated as undeveloped in subsequent maps until 1949 when a locker building is depicted in the location where it currently exists in the northwest corner of the site. The 1978 map shows the site generally as it exists today. The 1937, 1949 and 1978 Sanborn maps show gasoline tanks at an auto repair facility to the southeast. The EDR Radius map does not depict any evidence of a release to the subsurface on the target site.

The nearby release properties, including the auto-repair facility mentioned above are not considered to represent a material threat to the site based on regulatory status and presumed groundwater flow direction. EDR aerial photographs, Sanborn Fire Insurance Maps and radius maps are included in ***Appendix A.***

MCP Reportable Concentrations

In accordance with Massachusetts Contingency Plan (MCP) (310 CMR 40.0000), target analyte concentrations detected during laboratory soil analyses are compared to applicable MCP Reportable Concentrations to determine whether a release condition is present that requires notification to the Massachusetts Department of Environmental Protection (MassDEP), pursuant to 310 CMR 40.0315. Two reporting categories exist for concentrations of oil or hazardous materials (OHM) in soil:

- Reporting Category RCS-1 (310 CMR 40.0361) is applicable to all soil samples obtained at or within 500-feet of a residential dwelling, a residentially-zoned property, school, playground, recreational area, or park, or within the geographical boundaries of a groundwater resource area.
- Reporting Category RCS-2 (310 CMR 40.0362) is applicable to all soil samples that are not obtained from category RCS-1 areas.

The site contains a playground/park and is within 500 feet of residential dwellings and a school; therefore, the RCS-1 category applies.

Subsurface Investigation

Martin Geo-Environmental (Martin) advanced eight soil borings (SB-21 through SB-28) at the site on June 28, 2022, using a truck-mounted direct push drill rig under BETA direction and supervision. The borings were advanced in a grid pattern within the proposed basketball court where soil export is anticipated based on design drawings. The eight borings ranged from 5 to 15 feet below grade and samples were collected continuously using a macro-core sampler. BETA personnel classified soil samples from each boring for geologic description, visual and olfactory evidence of contamination. Photoionization detector (PID) headspace screenings were conducted for each soil sample.

Two composite samples were collected each composed of four borings including the full vertical extent of the boring. The first composite sample designated North Comp included subsamples from borings SB-21 (0-5), SB-22 (0-5), SB-26 (0-2), and SB-28 (0-5). The second composite sample designated South Comp included subsamples from borings SB-23 (0-5), SB-24 (0-5), SB-25 (0-5), and SB-27 (0-2). The samples were submitted for laboratory analysis of total MCP-14 metals, Toxicity Characteristic Leaching Procedure (TCLP) resource conservation and recovery act (RCRA) 8 metals, total petroleum hydrocarbons (TPH), volatile organic compounds, semi-volatile organic compounds, polychlorinated biphenyls (PCBs), organochlorine pesticides, organochlorine herbicides, specific conductance, pH, reactive cyanide and sulfide.

Discussion of Soil Screening/Sampling Results

The borings indicate the presence of urban fill generally throughout the depths of exploration. Materials encountered include coal ash, glass, bricks, and other anthropogenic material. Groundwater was present at approximately 10 feet below grade. Most of the samples indicated relatively low PID headspace screening consistent with background readings. PID headspace screenings are summarized in boring logs included in **Appendix B**.

Laboratory analytical results indicate the presence of semi-volatile organic compounds and metals consistent with urban fill containing coal ash. Sample identified as North Comp indicated benzo(a)pyrene and lead were present above their applicable RCS-1 concentrations. Sample identified as South Comp indicated the presence of lead above applicable RCS-1 concentrations. All other analytes were below their respective RCS-

1 concentration. The TCLP results indicated all analytes are considered non-hazardous with concentrations below respective TCLP thresholds for a hazardous waste.

The geologic descriptions are included in the attached boring logs included in ***Appendix B***. The soil sample and boring locations are depicted in ***Figure 1***. The laboratory analytical data are summarized in ***Table 1***. The complete laboratory analytical reports are attached in ***Appendix C***.

CONCLUSIONS AND RECOMMENDATIONS

Lead and benzo(a)pyrene are present at the site above MCP RCS-1 concentrations due to the presence of urban fill containing coal ash or wood ash. As such, they are exempt from notification in accordance with 310 CMR 40.0317(9).

BETA recommends disclosing all of this environmental information in the Bid Documents for construction of the Basketball Court to avoid additional claims for additional time or costs related to worker protection and/or soil management. Appropriate measures for the protection of workers and on- and off-site management of urban fill (contaminated soil) management options should be included in the Bid Documents. Excess soil containing contaminants above RCS-1 levels must be disposed or recycled at an appropriately licensed, off-site soil management facilities. BETA recommends any remaining contaminated soil on site is isolated with at least 3 feet of clean fill material or solid surfacing such as asphalt or concrete in order to comply with the provisions of 310 CMR 40.0370.

If you have any questions, please do not hesitate to contact either of the undersigned at 413-331-5326.

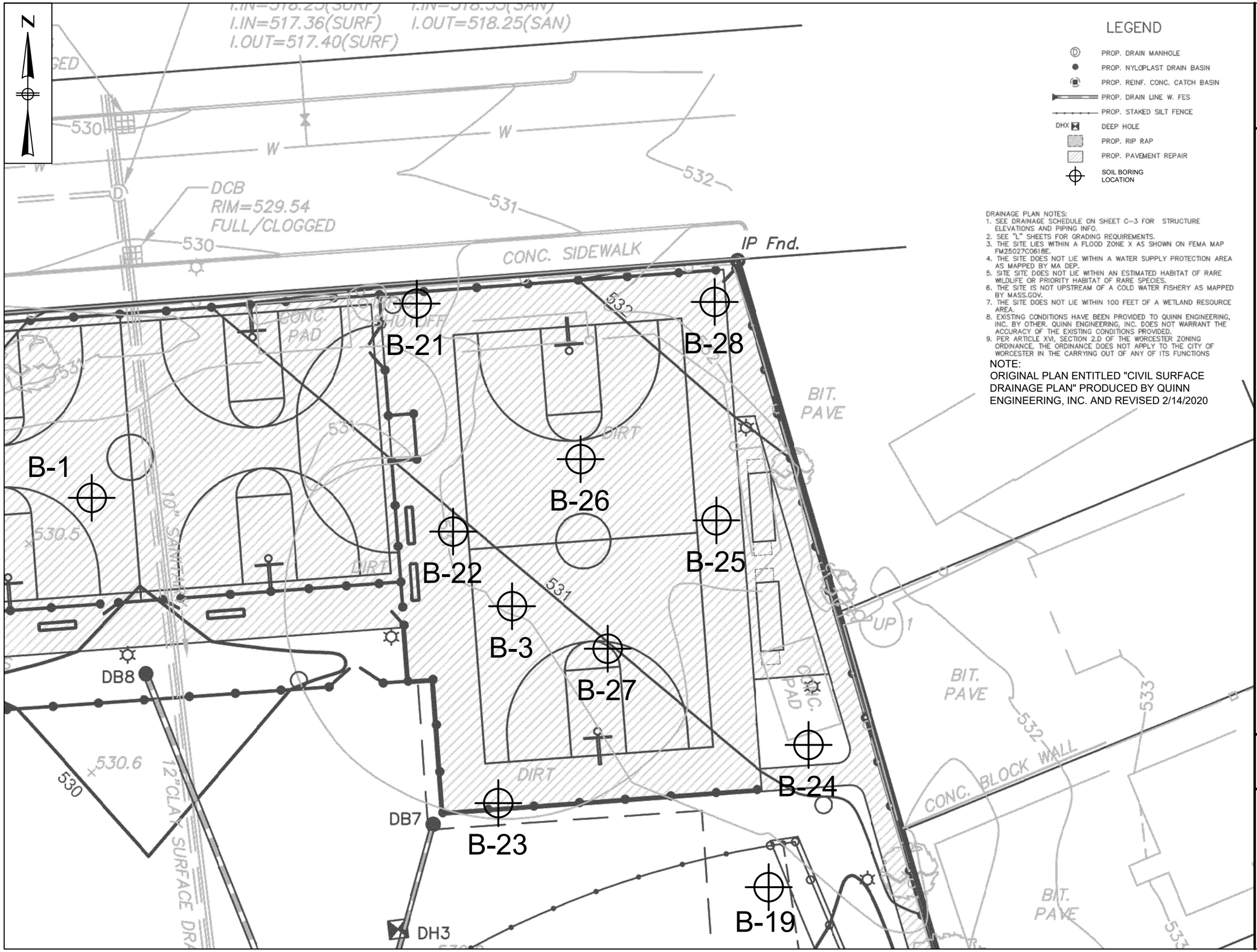
Very Truly Yours,
BETA GROUP, INC.

Robert E. Smith, LSP
Senior Project Manager

Attachments

Figure 1 – Site Plan
Table 1 – Soil Analytical Summary
Appendix A – Sanborn Maps
Appendix B – Boring Logs
Appendix C – Laboratory Analytical Results

FIGURES



LEGEND

- PROP. DRAIN MANHOLE
- PROP. NYLOPLAST DRAIN BASIN
- PROP. REINF. CONC. CATCH BASIN
- PROP. DRAIN LINE W. FES
- PROP. STAKED SILT FENCE
- DHX DEEP HOLE
- PROP. RIP RAP
- PROP. PAVEMENT REPAIR
- SOIL BORING LOCATION

DRAINAGE PLAN NOTES:

1. SEE DRAINAGE SCHEDULE ON SHEET C-3 FOR STRUCTURE ELEVATIONS AND PIPING INFO.
2. SEE "L" SHEETS FOR GRADING REQUIREMENTS.
3. THE SITE LIES WITHIN A FLOOD ZONE X AS SHOWN ON FEMA MAP FM25027C0618E.
4. THE SITE DOES NOT LIE WITHIN A WATER SUPPLY PROTECTION AREA AS MAPPED BY MA DEP.
5. SITE SITE DOES NOT LIE WITHIN AN ESTIMATED HABITAT OF RARE WILDLIFE OR PRIORITY HABITAT OF RARE SPECIES.
6. THE SITE IS NOT UPSTREAM OF A COLD WATER FISHERY AS MAPPED BY MASS.GOV.
7. THE SITE DOES NOT LIE WITHIN 100 FEET OF A WETLAND RESOURCE AREA.
8. EXISTING CONDITIONS HAVE BEEN PROVIDED TO QUINN ENGINEERING, INC. BY OTHER. QUINN ENGINEERING, INC. DOES NOT WARRANT THE ACCURACY OF THE EXISTING CONDITIONS PROVIDED.
9. PER ARTICLE XVI, SECTION 2.D OF THE WORCESTER ZONING ORDINANCE, THE ORDINANCE DOES NOT APPLY TO THE CITY OF WORCESTER IN THE CARRYING OUT OF ANY OF ITS FUNCTIONS

NOTE:
ORIGINAL PLAN ENTITLED "CIVIL SURFACE DRAINAGE PLAN" PRODUCED BY QUINN ENGINEERING, INC. AND REVISED 2/14/2020

Prepared by: CF

BETA
www.BETA-Inc.com

Print Date: 9/8/2022 3:37 PM

Mulcahy Field

158 Dorchester Street
Worcester, MA

0 10 20 40
1 inch = 20 ft.

Figure No. 1

Site Plan

TABLES

Table 1
Summary of Soil Laboratory Analytical Results
Mulcahy Field
158 Dorchester Street
Worchester, Massachusetts

SAMPLE ID	MADEP Identified Background Level Concentrations in Soil Containing Coal Ash or Wood Ash Associated With Fill Material	MADEP Reportable Concentration S-1	MADEP Reportable Concentration S-2	North Comp	South Comp
SAMPLE DATE				6/28/2022	6/28/2022
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MCP-14					
Antimony	7	20	30	0.98	BRL
Arsenic	20	20	20	17.6	18.9
Barium	50	1,000	3,000	69.9	71.7
Beryllium	0.9	90	200	BRL	BRL
Cadmium	3	70	100	1.78	4.85
Chromium	40	100	200	20.8	31.3
Lead	600	200	600	**304**	**294**
Nickel	30	600	1,000	17.4	38.7
Selenium	1	400	700	BRL	BRL
Silver	5	100	200	BRL	BRL
Vanadium	30	400	700	24.1	26.8
Zinc	300	1,000	3,000	152	393
Thallium	5	8	60	BRL	BRL
Mercury	1	20	30	0.159	0.207
Pesticides					
Pesticides - EPA 8081B	-	varies	varies	BRL	BRL
Herbicides					
Pesticides - EPA 8151A	-	varies	varies	BRL	BRL
Total Petroleum Hydrocarbons (TPH)					
TPH - EPA-8100-mod	-	1,000	3,000	278	160
Volatile Organic Compounds (VOCs)					
VOC - EPA 8260 Analytes	-	varies	varies	BRL	BRL
Polychlorinated Biphenyls (PCBs)					
PCBs Total - EPA 8082A	-	1	4	BRL	BRL

Notes:
Detection above MADEP Reportable Concentration S-1
Detection above MADEP Reportable Concentration S-2
mg/kg - Milligram per kilogram
Concentrations are presented in milligrams per kilogram (mg/kg)
- = No applicable value
BRL - Analyte not detected above laboratory reporting limits
MADEP - Massachusetts Department of Environmental Protection

Table 1
Summary of Soil Laboratory Analytical Results
Mulcahy Field
158 Dorchester Street
Worchester, Massachusetts

SAMPLE ID	MADEP Identified Background Level Concentrations in Soil Containing Coal Ash or Wood Ash Associated With Fill Material	MADEP Reportable Concentration S-1	MADEP Reportable Concentration S-2	North Comp	South Comp
SAMPLE DATE				6/28/2022	6/28/2022
UNITS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Semivolatile Organic Compounds (SVOCs)					
1,2,4-Trichlorobenzene	-	2	6	BRL(0.144)	BRL(0.737)
1,2-Dichlorobenzene	-	9	100	BRL(0.144)	BRL(0.737)
1,3-Dichlorobenzene	-	3	200	BRL(0.144)	BRL(0.737)
1,4-Dichlorobenzene	-	0.7	1	BRL(0.144)	BRL(0.737)
Phenol	-	1	20	BRL(0.144)	BRL(0.737)
2,4,5-Trichlorophenol	-	4	600	BRL(0.144)	BRL(0.737)
2,4,6-Trichlorophenol	-	0.7	20	BRL(0.144)	BRL(0.737)
2,4-Dichlorophenol	-	0.7	40	BRL(0.144)	BRL(0.737)
2,4-Dimethylphenol	-	0.7	100	BRL(0.366)	BRL(1.870)
2,4-Dinitrophenol	-	3	50	BRL(0.366)	BRL(1.870)
2,4-Dinitrotoluene	-	0.7	10	BRL(0.144)	BRL(0.737)
2,6-Dinitrotoluene	-	100	1,000	BRL(0.144)	BRL(0.737)
2-Chloronaphthalene	-	1,000	10,000	BRL(0.144)	BRL(0.737)
2-Chlorophenol	-	0.7	100	BRL(0.144)	BRL(0.737)
2-Methylnaphthalene	1	0.7	80	BRL(0.144)	BRL(0.737)
Nitrobenzene	-	500	5,000	BRL(0.144)	BRL(0.737)
2-Methylphenol	-	500	5,000	BRL(0.144)	BRL(0.737)
2-Nitroaniline	-	-	-	BRL(0.144)	BRL(0.737)
2-Nitrophenol	-	100	1,000	BRL(0.366)	BRL(1.870)
3,3'-Dichlorobenzidine	-	3	20	BRL(0.366)	BRL(1.870)
3-Nitroaniline	-	-	-	BRL(0.144)	BRL(0.737)
4,6-Dinitro-2-methylphenol	-	50	500	BRL(0.366)	BRL(1.870)
4-Bromophenyl phenyl ether	-	100	1,000	BRL(0.144)	BRL(0.737)
4-Chloro-3-methylphenol	-	1,000	10,000	BRL(0.144)	BRL(0.737)
4-Chloroaniline	-	1	3	BRL(0.144)	BRL(0.737)
4-Chlorophenyl phenyl ether	-	1,000	10,000	BRL(0.144)	BRL(0.737)
4-Nitroaniline	-	-	-	BRL(0.144)	BRL(0.737)
4-Nitrophenol	-	100	1,000	BRL(0.366)	BRL(1.870)
Acenaphthene	2	1	1,000	BRL(0.144)	BRL(0.737)
Acenaphthylene	1	1	10	0.262	BRL(0.737)
Aniline	-	1,000	10,000	BRL(0.144)	BRL(0.737)
Anthracene	4	1,000	3,000	0.579	BRL(0.737)
Benzo(a)anthracene	9	7	40	2.57	2.07
Benzo(a)pyrene	7	2	7	**2.38**	1.41
Benzo(b)fluoranthene	8	7	40	2.95	2.51
Benzo(g,h,i)perylene	3	1,000	3,000	1.96	BRL(0.737)
Benzo(k)fluoranthene	4	70	400	1.18	1.01
Benzoic acid	-	1,000	10,000	BRL(1.11)	BRL(5.670)
Biphenyl	-	0.05	6	BRL(0.044)	BRL(0.227)
Bis(2-chloroethoxy)methane	-	500	5,000	BRL(0.144)	BRL(0.737)
Bis(2-chloroethyl)ether	-	0.7	0.7	BRL(0.144)	BRL(0.737)
Bis(2-chloroisopropyl)ether	-	0.7	0.7	BRL(0.144)	BRL(0.737)
Bis(2-ethylhexyl)phthalate	-	90	600	BRL(0.443)	BRL(2.270)
Butyl benzyl phthalate	-	100	1,000	BRL(0.144)	BRL(0.737)
Chrysene	7	70	400	2.8	2.17
Di(n)octyl phthalate	-	1,000	10,000	BRL(0.222)	BRL(1.130)
Dibenz(a,h)anthracene	1	0.7	4	0.55	BRL(0.737)
Dibenzofuran	-	100	1,000	BRL(0.144)	BRL(0.737)
Diethyl phthalate	-	10	200	BRL(0.144)	BRL(0.737)
Dimethyl phthalate	-	0.7	50	BRL(0.366)	BRL(1.870)
Di-n-butylphthalate	-	50	500	BRL(0.222)	BRL(1.130)
Fluoranthene	10	1,000	3,000	3.73	3.23
Fluorene	2	1,000	3,000	0.154	BRL(0.737)
Hexachlorobenzene	-	0.7	0.8	BRL(0.144)	BRL(0.737)
Hexachlorobutadiene	-	30	100	BRL(0.144)	BRL(0.737)
Hexachlorocyclopentadiene	-	50	500	BRL(0.366)	BRL(1.870)
Hexachloroethane	-	0.7	3	BRL(0.144)	BRL(0.737)
Indeno(1,2,3-cd)pyrene	3	7	40	1.88	BRL(0.737)
Isophorone	-	100	1,000	BRL(0.144)	BRL(0.737)
Naphthalene	1	4	20	BRL(0.144)	BRL(0.737)
N-Nitrosodimethylamine	-	50	500	BRL(0.144)	BRL(0.737)
N-Nitrosodi-n-propylamine	-	50	500	BRL(0.144)	BRL(0.737)
N-Nitrosodiphenylamine	-	100	1,000	BRL(0.144)	BRL(0.737)
Pentachlorophenol	-	3	10	BRL(0.366)	BRL(1.870)
Phenanthrene	20	10	1,000	2.6	1.56
Pyrene	20	1,000	1,000	4.58	3.95
m&p-Cresol	-	1,000	10,000	BRL(0.288)	BRL(1.470)
Pyridine	-	500	5,000	BRL(0.144)	BRL(0.737)
Total Dichlorobenzene	-	0.7	4	BRL(0.144)	BRL(0.737)

Notes:

Detection above MADEP Reportable Concentration S-1

Detection above MADEP Reportable Concentration S-2

mg/kg - Milligram per kilogram

Concentrations are presented in milligrams per kilogram (mg/kg)

- = No applicable value

BRL - Analyte not detected above laboratory reporting limits

MADEP - Massachusetts Department of Environmental Protection

APPENDIX A

Mulchahy Field
158 Dorchester Street
Worcester, MA 01604

Inquiry Number: 5986712.3
February 26, 2020

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

02/26/20

Site Name:

Mulchahy Field
158 Dorchester Street
Worcester, MA 01604
EDR Inquiry # 5986712.3

Client Name:

Beta Group, Inc.
315 Norwood Park South
Norwood, MA 02062
Contact: Robert Smith

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Beta Group, Inc. were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 3EAD-4A83-A222

PO # 7041

Project Mulcahy Field

Maps Provided:

1978
1949
1937
1910

Sanborn® Library search results

Certification #: 3EAD-4A83-A222

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

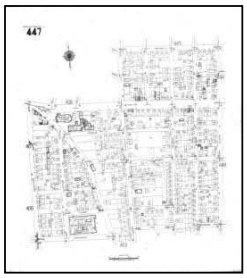
Limited Permission To Make Copies

Beta Group, Inc. (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

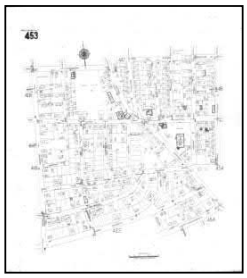
Sanborn Sheet Key

This Certified Sanborn Map Report is based upon the following Sanborn Fire Insurance map sheets.

1978 Source Sheets



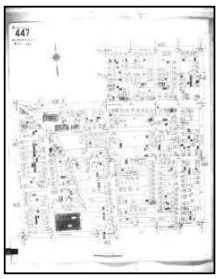
Volume 4, Sheet 447
1978



Volume 4, Sheet 453
1978

1949 Source Sheets

Volume 4, Sheet 453
1949



Volume 4, Sheet 447
1949

1937 Source Sheets

Volume 4, Sheet 447
1937

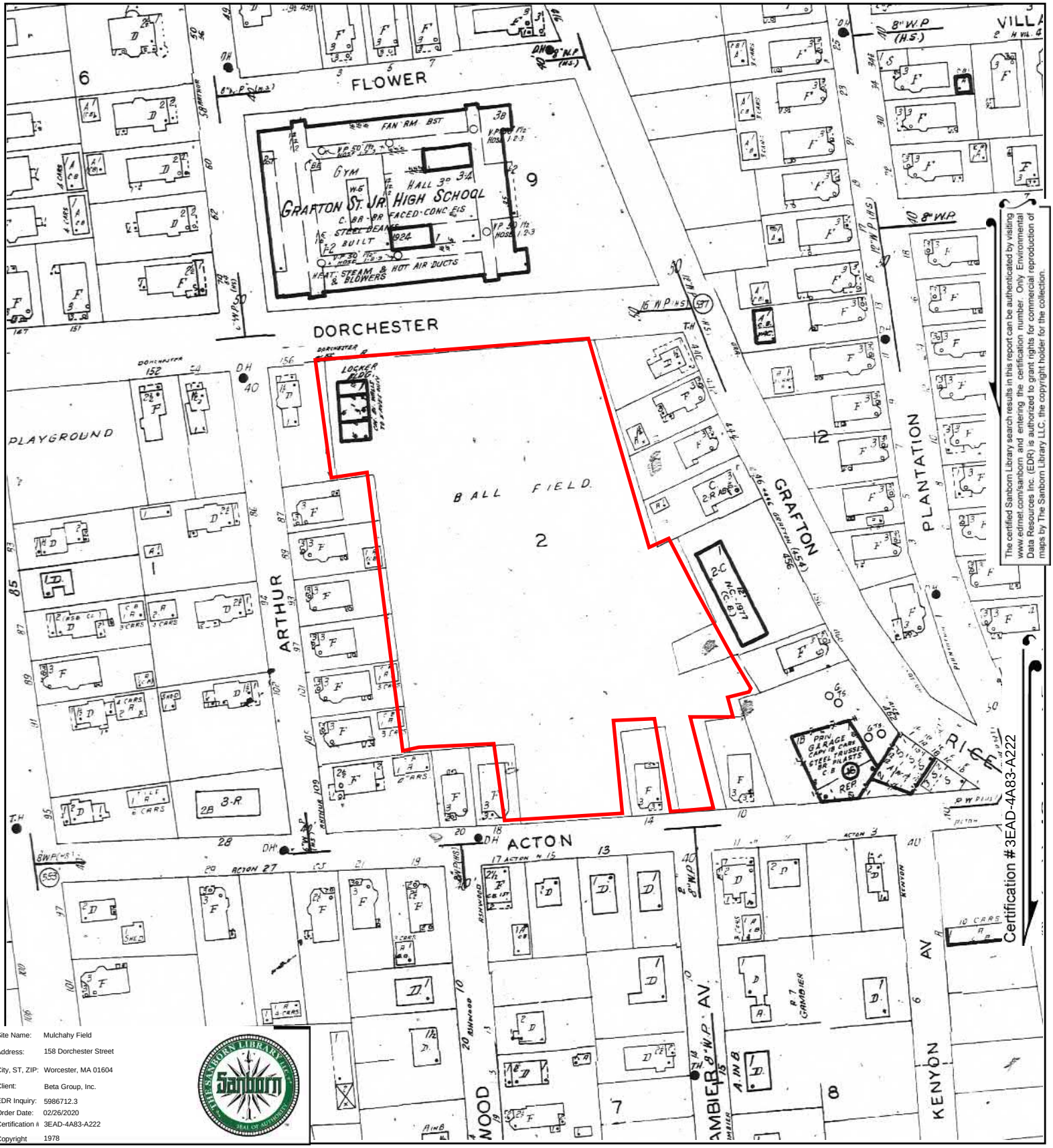
Volume 4, Sheet 453
1937

1910 Source Sheets

Volume 2, Sheet 162
1910

Certified Sanborn® Map

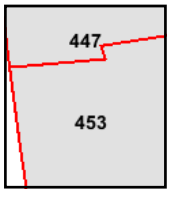
1978



Site Name:	Mulchahy Field
Address:	158 Dorchester Street
City, ST, ZIP:	Worcester, MA 01604
Client:	Beta Group, Inc.
EDR Inquiry:	5986712.3
Order Date:	02/26/2020
Certification #:	3EAD-4A83-A222
Copyright	1978

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

0 Feet 150 300 600



Volume 4, Sheet 453
Volume 4, Sheet 447

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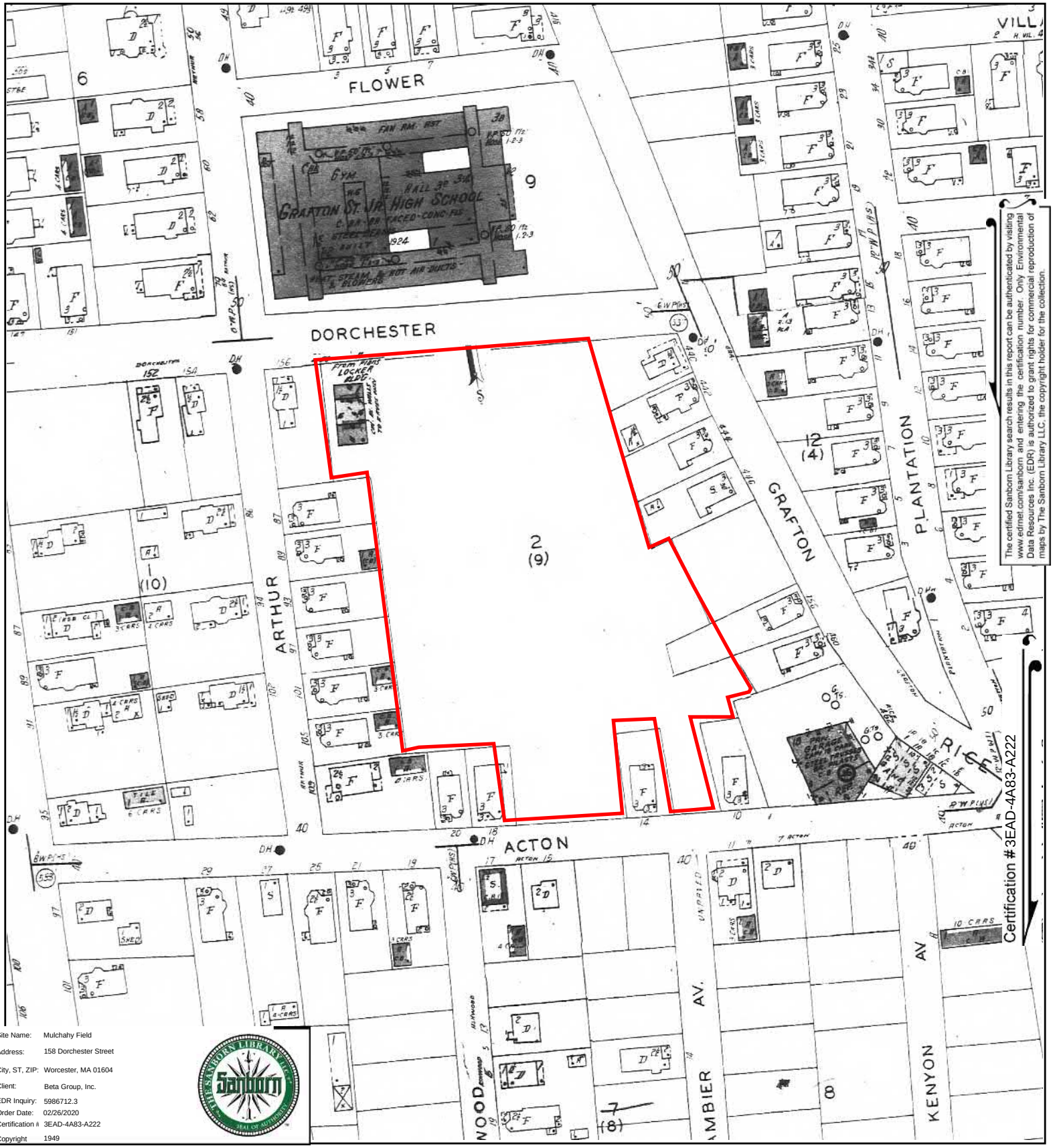

Site Name:	Mulchahy Field
Address:	158 Dorchester Street
City, ST, ZIP:	Worcester, MA 01604
Client:	Beta Group, Inc.
EDR Inquiry:	5986712.3
Order Date:	02/26/2020
Certification #:	3EAD-4A83-A222
Copyright	1949

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

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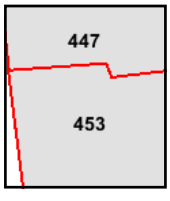
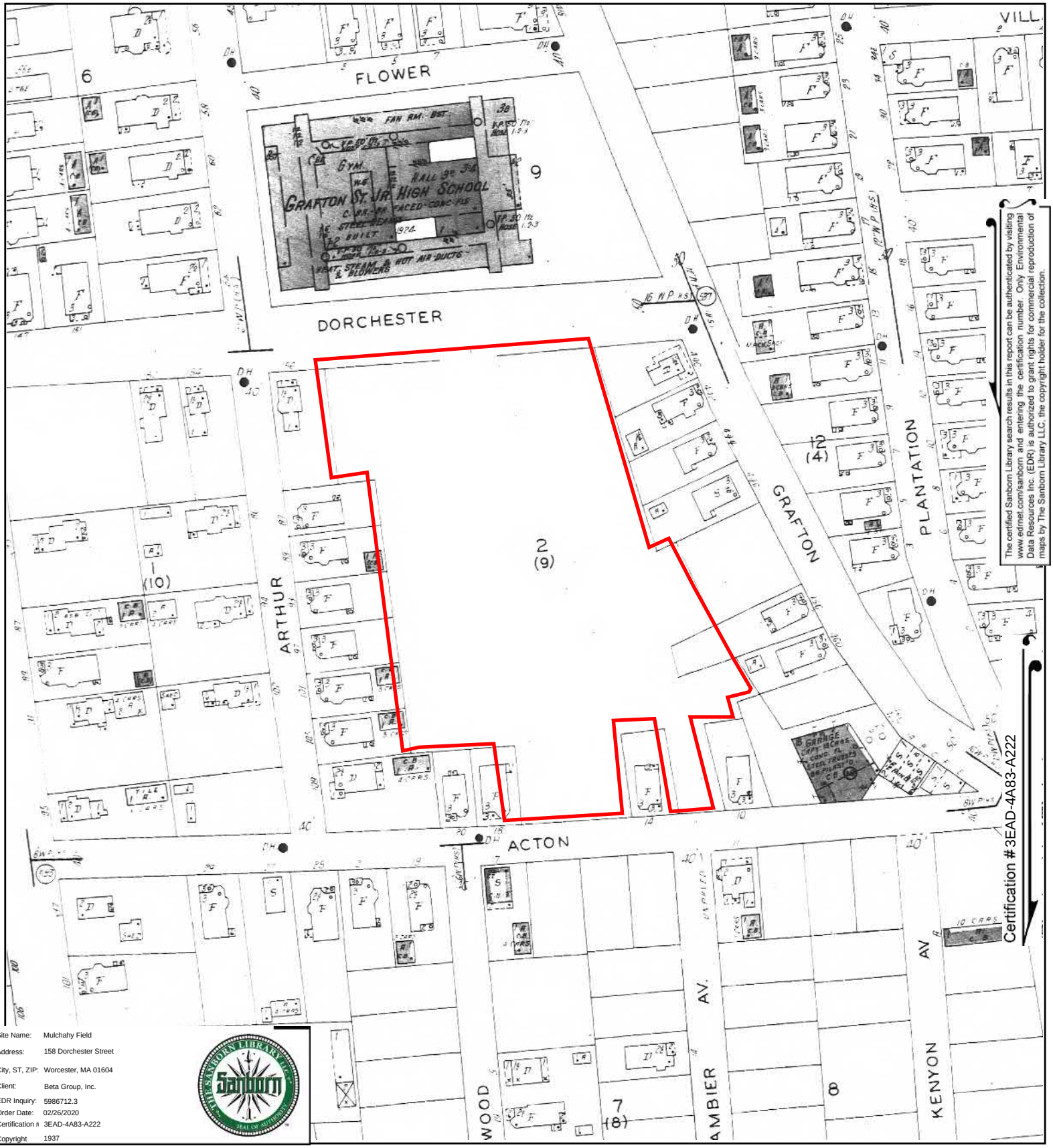


Volume 4, Sheet 447
Volume 4, Sheet 453

N

Certified Sanborn® Map

1937



Site Name:	Mulchahy Field
Address:	158 Dorchester Street
City, ST, ZIP:	Worcester, MA 01604
Client:	Beta Group, Inc.
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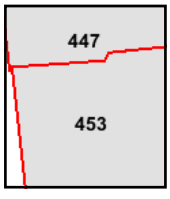
Certification #:	3EAD-4A83-A222
Copyright	1937

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

0 Feet 150 300 600



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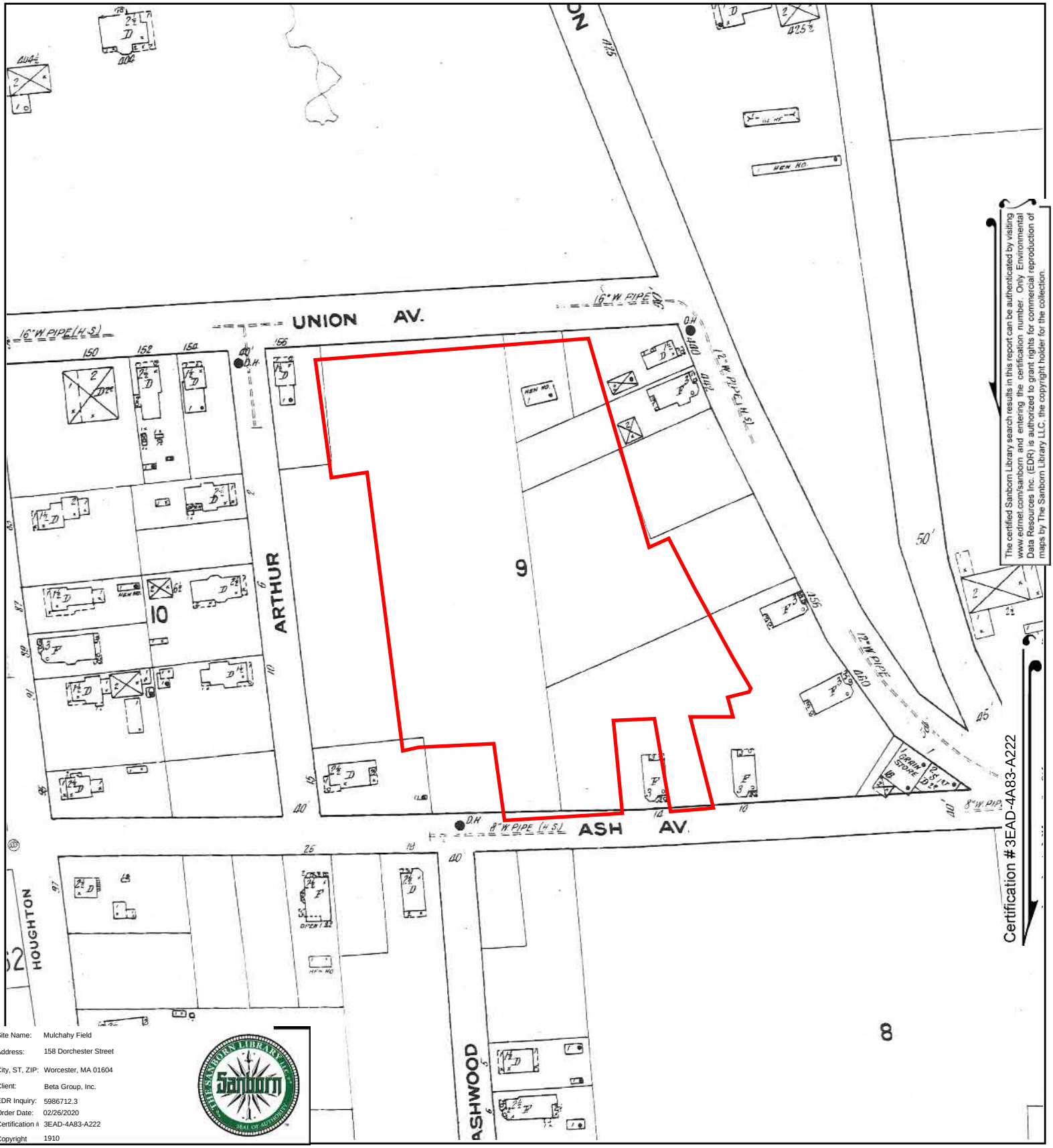
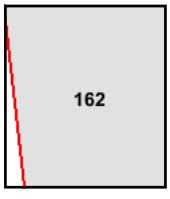


Certification #3EAD-4A83-A222

Site Name:	Mulchahy Field
Address:	158 Dorchester Street
City, ST, ZIP:	Worcester, MA 01604
Client:	Beta Group, Inc.
EDR Inquiry:	5986712.3
Order Date:	02/26/2020
Certification #:	3EAD-4A83-A222
Copyright	1910

This Certified Sanborn Map combines the following sheets.
Outlined areas indicate map sheets within the collection.

0 Feet 150 300 600



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APPENDIX B

TEST BORING LOG

BORING ID: SB-21

PROJECT:	Basketball Court Mulcahy Field Investigation Subsurface	**BETA JOB NUMBER:**	7041.118.01
		FIELD REP:	C. Florian
LOCATION:	Mulcahy Field Worchester, Massachusetts	**CLIENT:**	EarthDesign Landscape Architecture LLC
CONTRACTOR:	BETA Group INC.	**DRILLER:**	Martin Geotechnical LLC

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER		
TYPE	MacroCore	Steel	Direct-push	DATE	06/28/22	
SIZE (ID)	2.25	2.25	2	TIME	ATD	
HAMMER WEIGHT	NA	NA	NA	DEPTH	~10.0'	
HAMMER FALL	NA	NA	NA	SURFACE ELEV:	NM	

SAMPLING INTERVALS					Strata Change	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details / Materials
DEPTH (feet)	Sample **ID #**	**REC/PEN** feet	**Blows / 6"** `--/--/--/--	**PID** (ppmv)			
		3.8/5.0		0.7		0 -1.1': Light brown FINE SAND AND SILT, no staining, no odor, dry, loose	
				1.2		1.1-2.7': Dark brown FINE SAND AND SILT, little coal ash, no staining, moist, medium dense	
				0.0			
				0.0		2.7-3.8': Dark brown FINE SAND AND SILT, some coal ash, no staining, moist, medium dense	
5'				-			
		2.2/5.0		0.0		5.0-5.6': Slough	
				0.0		5.6-7.2': Dark brown FINE SAND AND SILT, trace coal ash, no staining, moist, medium dense	
				0.0			
				-		10.0-10.8': Slough	
10'				-		10.8-11.6': Dark gray SILT, no staining, wet, dense	
		4.5/5.0		0.0		**End of Boring 15.0'**	
				0.0			
				0.0		**Sample SB-1 (0-5), SB-2 (0-5), SB-8 (0-5) and SB-6 (0-2) as NORTH-COMP for Disposal Parameters**	
				0.0			
15'				0.0			
20'							
25'							
30'							

DRILLING RIG TYPE: GeoProbe

SURFACE ELEVATION:
START DATE: 06/28/22
END DATE: 06/28/22

MONITORING WELL INSTALLED: NA
RISER FROM: NA TO: NA SCREEN FROM: NA TO: NA
Filter Sand: #2 Sand Pack Intervals NA TO: NA
Bentonite Seal Interval NA TO: NA
Native Backfill NA TO: NA

PROPORTIONS USED		RELATIVE DENSITY		CONSISTENCY		SOIL CLASSIFICATION (inches)				SUMMARY	
trace	0-10%	0-4	Very Loose	0-2	Very Soft	Boulders	>11.8	Fine Sand	.02-.003	Overburden (feet):	NA
little	10-20%	4-10	Loose	2-4	Soft	Cobbles	11.8-2.9	Fine Silt	<.003	Rock Cored (feet):	NA
some	20-35%	10-30	Medium Dense	4-8	Medium Stiff	Coarse Gravel	2.9-.75	Clay	<.003	# of samples:	NA
and	35-50%	30-50	Dense	8-15	Stiff	Fine Gravel	.75-.19			Well set (feet):	NA
		50+	Very Dense	15-30	Very Stiff	Course Sand	.19-.08				
				30+	Hard	Medium Sand	.08-.02				

TEST BORING LOG

BORING ID: SB-22

PROJECT:	Basketball Court Mulcahy Field Investigation Subsurface	**BETA JOB NUMBER:**	7041.118.01
		FIELD REP:	C. Florian
LOCATION:	Mulcahy Field Worchester, Massachusetts	**CLIENT:**	EarthDesign Landscape Architecture LLC
CONTRACTOR:	BETA Group INC.	**DRILLER:**	Martin Geotechnical LLC

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER		
TYPE	MacroCore	Steel	Direct-push	DATE	06/28/22	
SIZE (ID)	2.25	2.25	2	TIME	-	
HAMMER WEIGHT	NA	NA	NA	DEPTH	-	
HAMMER FALL	NA	NA	NA	SURFACE ELEV:	NM	

SAMPLING INTERVALS					Strata Change	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details / Materials
DEPTH (feet)	Sample ID #	REC/PEN feet	Blows / 6" `--/--/--/--	PID (ppmv)			
		3.2/5.0		0.7		0-0.7': Light brown SILT AND FINE SAND, no staining, no odor, dry, loose	
				0.7		0.7-2.3': Medium brown SILT AND FINE SAND, little Fine Gravel, no staining, no odor, dry, loose	
				0.2		2.3-3.2': Dark brown SILT AND FINE SAND, little Fine Gravel, no staining, no odor, dry, loose	
				0.0			
5'				-		**End of Boring 5.0'**	
10'						**Sample SB-1 (0-5), SB-2 (0-5), SB-8 (0-5) and SB-6 (0-2) as NORTH-COMP for Disposal Parameters**	
15'							
20'							
25'							
30'							

DRILLING RIG TYPE: GeoProbe

SURFACE ELEVATION:
START DATE: 06/28/22
END DATE: 06/28/22

MONITORING WELL INSTALLED: NA
RISER FROM: NA TO: NA SCREEN FROM: NA TO: NA
Filter Sand: #2 Sand Pack Intervals NA TO: NA
Bentonite Seal Interval NA TO: NA
Native Backfill NA TO: NA

PROPORTIONS USED		RELATIVE DENSITY		CONSISTENCY		SOIL CLASSIFICATION (inches)				SUMMARY	
trace	0-10%	0-4	Very Loose	0-2	Very Soft	Boulders	>11.8	Fine Sand	.02-.003	Overburden (feet):	NA
little	10-20%	4-10	Loose	2-4	Soft	Cobbles	11.8-2.9	Fine Silt	<.003	Rock Cored (feet):	NA
some	20-35%	10-30	Medium Dense	4-8	Medium Stiff	Coarse Gravel	2.9-.75	Clay	<.003	# of samples:	NA
and	35-50%	30-50	Dense	8-15	Stiff	Fine Gravel	.75-.19			Well set (feet):	NA
		50+	Very Dense	15-30	Very Stiff	Course Sand	.19-.08				
				30+	Hard	Medium Sand	.08-.02				

TEST BORING LOG

BORING ID: SB-23

PROJECT:	Basketball Court Mulcahy Field Investigation Subsurface	**BETA JOB NUMBER:**	7041.118.01
		FIELD REP:	C. Florian
LOCATION:	Mulcahy Field Worchester, Massachusetts	**CLIENT:**	EarthDesign Landscape Architecture LLC
CONTRACTOR:	BETA Group INC.	**DRILLER:**	Martin Geotechnical LLC

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER		
TYPE	MacroCore	Steel	Direct-push	DATE	06/28/22	
SIZE (ID)	2.25	2.25	2	TIME	-	
HAMMER WEIGHT	NA	NA	NA	DEPTH	-	
HAMMER FALL	NA	NA	NA	SURFACE ELEV:	NM	

SAMPLING INTERVALS					Strata Change	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details / Materials
DEPTH (feet)	Sample ID #	REC/PEN feet	Blows / 6" `--/--/--/--	PID (ppmv)			
		4.0/5.0		0.8		0-0.7': Light brown FINE SAND AND SILT, no staining, no odor, dry, loose	
				0.4		0.7-2.9': Dark brown FINE SAND AND SILT, some coal ash, some brick, no staining, no odor, dry loose	
				0.5		2.9-4.0': Medium brown SILT, trace coal ash, some brick, no staining, no odor, moist, dense	
				0.0			
5'				-		**End of Boring 5.0'**	
						Sample SB-3 (0-5), SB-4 (0-5), SB-5 (0-5) and SB-7 (0-2) as SOUTH-COMP for Disposal Parameters	
10'							
15'							
20'							
25'							
30'							

DRILLING RIG TYPE: GeoProbe

SURFACE ELEVATION:
START DATE: 06/28/22
END DATE: 06/28/22

MONITORING WELL INSTALLED: NA
RISER FROM: NA TO: NA SCREEN FROM: NA TO: NA
Filter Sand: #2 Sand Pack Intervals NA TO: NA
Bentonite Seal Interval NA TO: NA
Native Backfill NA TO: NA

PROPORTIONS USED		RELATIVE DENSITY		CONSISTENCY		SOIL CLASSIFICATION (inches)				SUMMARY	
trace	0-10%	0-4	Very Loose	0-2	Very Soft	Boulders	>11.8	Fine Sand	.02-.003	Overburden (feet):	NA
little	10-20%	4-10	Loose	2-4	Soft	Cobbles	11.8-2.9	Fine Silt	<.003	Rock Cored (feet):	NA
some	20-35%	10-30	Medium Dense	4-8	Medium Stiff	Coarse Gravel	2.9-.75	Clay	<.003	# of samples:	NA
and	35-50%	30-50	Dense	8-15	Stiff	Fine Gravel	.75-.19			Well set (feet):	NA
		50+	Very Dense	15-30	Very Stiff	Course Sand	.19-.08				
				30+	Hard	Medium Sand	.08-.02				

TEST BORING LOG

BORING ID: SB-24

PROJECT:	Basketball Court Mulcahy Field Investigation Subsurface	**BETA JOB NUMBER:**	7041.118.01
		FIELD REP:	C. Florian
LOCATION:	Mulcahy Field Worchester, Massachusetts	**CLIENT:**	EarthDesign Landscape Architecture LLC
CONTRACTOR:	BETA Group INC.	**DRILLER:**	Martin Geotechnical LLC

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER		
TYPE	MacroCore	Steel	Direct-push	DATE	06/28/22	
SIZE (ID)	2.25	2.25	2	TIME	-	
HAMMER WEIGHT	NA	NA	NA	DEPTH	-	
HAMMER FALL	NA	NA	NA	SURFACE ELEV:	NM	

SAMPLING INTERVALS					Strata Change	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details / Materials
DEPTH (feet)	Sample ID #	REC/PEN feet	Blows / 6" `--/--/--/--	PID (ppmv)			
		3.4/5.0		1.9		0-1.2': Medium brown FINE SAND AND SILT, trace coal ash, no staining, no odor, moist, dense	
				0.8		1.2-2.5': Medium brown SILT, some Fine Sand, trace coal ash, no staining, no odor, moist, dense	
				0.7		2.5-3.4': Light brown SILT, little coal ash, no staining, no odor, moist, dense	
				0.0		**End of Boring 5.0'**	
5'				-		**Sample SB-3 (0-5), SB-4 (0-5), SB-5 (0-5) and SB-7 (0-2) as SOUTH-COMP for Disposal Parameters**	
10'							
15'							
20'							
25'							
30'							

DRILLING RIG TYPE: GeoProbe

SURFACE ELEVATION:
START DATE: 06/28/22
END DATE: 06/28/22

MONITORING WELL INSTALLED: NA
RISER FROM: NA TO: NA SCREEN FROM: NA TO: NA
Filter Sand: #2 Sand Pack Intervals NA TO: NA
Bentonite Seal Interval NA TO: NA
Native Backfill NA TO: NA

PROPORTIONS USED		RELATIVE DENSITY		CONSISTENCY		SOIL CLASSIFICATION (inches)				SUMMARY	
trace	0-10%	0-4	Very Loose	0-2	Very Soft	Boulders	>11.8	Fine Sand	.02-.003	Overburden (feet):	NA
little	10-20%	4-10	Loose	2-4	Soft	Cobbles	11.8-2.9	Fine Silt	<.003	Rock Cored (feet):	NA
some	20-35%	10-30	Medium Dense	4-8	Medium Stiff	Coarse Gravel	2.9-.75	Clay	<.003	# of samples:	NA
and	35-50%	30-50	Dense	8-15	Stiff	Fine Gravel	.75-.19			Well set (feet):	NA
		50+	Very Dense	15-30	Very Stiff	Course Sand	.19-.08				
				30+	Hard	Medium Sand	.08-.02				

TEST BORING LOG

BORING ID: SB-25

PROJECT:	Basketball Court Mulcahy Field Investigation Subsurface	**BETA JOB NUMBER:**	7041.118.01
		FIELD REP:	C. Florian
LOCATION:	Mulcahy Field Worchester, Massachusetts	**CLIENT:**	EarthDesign Landscape Architecture LLC
CONTRACTOR:	BETA Group INC.	**DRILLER:**	Martin Geotechnical LLC

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER		
TYPE	MacroCore	Steel	Direct-push	DATE	06/28/22	
SIZE (ID)	2.25	2.25	2	TIME	-	
HAMMER WEIGHT	NA	NA	NA	DEPTH	-	
HAMMER FALL	NA	NA	NA	SURFACE ELEV:	NM	

SAMPLING INTERVALS					Strata Change	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details / Materials
DEPTH (feet)	Sample ID #	REC/PEN feet	Blows / 6" `--/--/--/--	PID (ppmv)			
		3.3/5.0		1.8		0-1.0': Medium brown FINE SAND AND SILT, trace coal ash, trace brick, no staining, no odor, dry, loose	
				0.8		1.0-3.0': Medium brown FINE SAND AND SILT, little coal ash, trace brick, no staining, no odor, dry, loose	
				0.8		2.5-3.4': Black coal ash, little Silt, no staining, no odor, moist, dense	
				0.0		**End of Boring 5.0'**	
5'				-		**Sample SB-3 (0-5), SB-4 (0-5), SB-5 (0-5) and SB-7 (0-2) as SOUTH-COMP for Disposal Parameters**	
10'							
15'							
20'							
25'							
30'							

DRILLING RIG TYPE: GeoProbe

SURFACE ELEVATION:
START DATE: 06/28/22
END DATE: 06/28/22

MONITORING WELL INSTALLED: NA
RISER FROM: NA TO: NA SCREEN FROM: NA TO: NA
Filter Sand: #2 Sand Pack Intervals NA TO: NA
Bentonite Seal Interval NA TO: NA
Native Backfill NA TO: NA

PROPORTIONS USED		RELATIVE DENSITY		CONSISTENCY		SOIL CLASSIFICATION (inches)				SUMMARY	
trace	0-10%	0-4	Very Loose	0-2	Very Soft	Boulders	>11.8	Fine Sand	.02-.003	Overburden (feet):	NA
little	10-20%	4-10	Loose	2-4	Soft	Cobbles	11.8-2.9	Fine Silt	<.003	Rock Cored (feet):	NA
some	20-35%	10-30	Medium Dense	4-8	Medium Stiff	Coarse Gravel	2.9-.75	Clay	<.003	# of samples:	NA
and	35-50%	30-50	Dense	8-15	Stiff	Fine Gravel	.75-.19			Well set (feet):	NA
		50+	Very Dense	15-30	Very Stiff	Course Sand	.19-.08				
				30+	Hard	Medium Sand	.08-.02				

TEST BORING LOG

BORING ID: SB-26

PROJECT:	Basketball Court Mulcahy Field Investigation Subsurface	**BETA JOB NUMBER:**	7041.118.01
		FIELD REP:	C. Florian
LOCATION:	Mulcahy Field Worchester, Massachusetts	**CLIENT:**	EarthDesign Landscape Architecture LLC
CONTRACTOR:	BETA Group INC.	**DRILLER:**	Martin Geotechnical LLC

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER		
TYPE	MacroCore	Steel	Direct-push	DATE	06/28/22	
SIZE (ID)	2.25	2.25	2	TIME	-	
HAMMER WEIGHT	NA	NA	NA	DEPTH	-	
HAMMER FALL	NA	NA	NA	SURFACE ELEV:	NM	

SAMPLING INTERVALS					Strata Change	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details / Materials
DEPTH (feet)	Sample ID #	REC/PEN feet	Blows / 6" `--/--/--/--	PID (ppmv)			
		3.6/5.0		1.4		0-0.8': Medium brown FINE SAND AND SILT, no staining, no odor, dry, loose	
				1.0		0.8-2.0': Medium brown FINE SAND AND SILT, little Fine Gravel, trace coal ash, trace Brick, no staining, no odor, dry, loose	
				1.1		2.0-3.6': Dark brown SILT, some coal ash, little Brick, trace Fine Gravel, no staining, no odor, dry, loose	
				0.0			
5'				-			
						End of Boring 15.0'	
						Sample SB-1 (0-5), SB-2 (0-5), SB-8 (0-5) and SB-6 (0-2) as NORTH-COMP for Disposal Parameters	
10'							
15'							
20'							
25'							
30'							

DRILLING RIG TYPE: GeoProbe

SURFACE ELEVATION:
START DATE: 06/28/22
END DATE: 06/28/22

MONITORING WELL INSTALLED: NA
RISER FROM: NA TO: NA SCREEN FROM: NA TO: NA
Filter Sand: #2 Sand Pack Intervals NA TO: NA
Bentonite Seal Interval NA TO: NA
Native Backfill NA TO: NA

PROPORTIONS USED		RELATIVE DENSITY		CONSISTENCY		SOIL CLASSIFICATION (inches)				SUMMARY	
trace	0-10%	0-4	Very Loose	0-2	Very Soft	Boulders	>11.8	Fine Sand	.02-.003	Overburden (feet):	NA
little	10-20%	4-10	Loose	2-4	Soft	Cobbles	11.8-2.9	Fine Silt	<.003	Rock Cored (feet):	NA
some	20-35%	10-30	Medium Dense	4-8	Medium Stiff	Coarse Gravel	2.9-.75	Clay	<.003	# of samples:	NA
and	35-50%	30-50	Dense	8-15	Stiff	Fine Gravel	.75-.19			Well set (feet):	NA
		50+	Very Dense	15-30	Very Stiff	Course Sand	.19-.08				
				30+	Hard	Medium Sand	.08-.02				

TEST BORING LOG

BORING ID: SB-27

PROJECT:	Basketball Court Mulcahy Field Investigation Subsurface	**BETA JOB NUMBER:**	7041.118.01
		FIELD REP:	C. Florian
LOCATION:	Mulcahy Field Worchester, Massachusetts	**CLIENT:**	EarthDesign Landscape Architecture LLC
CONTRACTOR:	BETA Group INC.	**DRILLER:**	Martin Geotechnical LLC

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER		
TYPE	MacroCore	Steel	Direct-push	DATE	06/28/22	
SIZE (ID)	2.25	2.25	2	TIME	-	
HAMMER WEIGHT	NA	NA	NA	DEPTH	-	
HAMMER FALL	NA	NA	NA	SURFACE ELEV:	NM	

SAMPLING INTERVALS					Strata Change	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details / Materials
DEPTH (feet)	Sample ID #	REC/PEN feet	Blows / 6" `--/--/--/--	PID (ppmv)			
		3.7/5.0		1.5		0-1.4': Light brown FINE SAND AND SILT, no staining, no odor, dry, loose	
				1.0		1.4-2.0': Light brown FINE SAND AND SILT, little coal ash, little Fine Gravel, no staining, no odor, dry, loose	
				1.0		2.0-3.6': Dark brown FINE SAND AND SILT, trace coal ash, trace brick, trace glass, no staining, no odor, dry, loose	
				0.0			
5'				-		**End of Boring 5.0'**	
10'						**Sample SB-1 (0-5), SB-2 (0-5), SB-8 (0-5) and SB-6 (0-2) as NORTH-COMP for Disposal Parameters**	
15'							
20'							
25'							
30'							

DRILLING RIG TYPE: GeoProbe

SURFACE ELEVATION:
START DATE: 06/28/22
END DATE: 06/28/22

MONITORING WELL INSTALLED: NA
RISER FROM: NA TO: NA SCREEN FROM: NA TO: NA
Filter Sand: #2 Sand Pack Intervals NA TO: NA
Bentonite Seal Interval NA TO: NA
Native Backfill NA TO: NA

PROPORTIONS USED		RELATIVE DENSITY		CONSISTENCY		SOIL CLASSIFICATION (inches)				SUMMARY	
trace	0-10%	0-4	Very Loose	0-2	Very Soft	Boulders	>11.8	Fine Sand	.02-.003	Overburden (feet):	NA
little	10-20%	4-10	Loose	2-4	Soft	Cobbles	11.8-2.9	Fine Silt	<.003	Rock Cored (feet):	NA
some	20-35%	10-30	Medium Dense	4-8	Medium Stiff	Coarse Gravel	2.9-.75	Clay	<.003	# of samples:	NA
and	35-50%	30-50	Dense	8-15	Stiff	Fine Gravel	.75-.19			Well set (feet):	NA
		50+	Very Dense	15-30	Very Stiff	Course Sand	.19-.08				
				30+	Hard	Medium Sand	.08-.02				

TEST BORING LOG

BORING ID: SB-28

PROJECT:	Basketball Court Mulcahy Field Investigation Subsurface	**BETA JOB NUMBER:**	7041.118.01
		FIELD REP:	C. Florian
LOCATION:	Mulcahy Field Worchester, Massachusetts	**CLIENT:**	EarthDesign Landscape Architecture LLC
CONTRACTOR:	BETA Group INC.	**DRILLER:**	Martin Geotechnical LLC

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER		
TYPE	MacroCore	Steel	Direct-push	DATE	06/28/22	
SIZE (ID)	2.25	2.25	2	TIME	-	
HAMMER WEIGHT	NA	NA	NA	DEPTH	-	
HAMMER FALL	NA	NA	NA	SURFACE ELEV:	NM	

SAMPLING INTERVALS					Strata Change	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details / Materials
DEPTH (feet)	Sample ID #	REC/PEN feet	Blows / 6" `--/--/--/--	PID (ppmv)			
		3.1/5.0		0.6		0-1.0': Light brown SILT, little Fine Sand, trace Fine Gravel, no staining, no odor, dry, loose 1.0-3.0': Medium brown SILT, some Fine Sand, trace Fine Gravel, no staining, no odor, dry, loose 3.0-3.1': Medium gray SILT, little coal ash, trace Glass, no staining, no odor, dry, loose	
				0.5			
				0.6			
				0.0			
5'				-			
						End of Boring 5.0' **Sample SB-1 (0-5), SB-2 (0-5), SB-8 (0-5) and SB-6 (0-2) as NORTH-COMP for Disposal Parameters**	
10'							
15'							
20'							
25'							
30'							

DRILLING RIG TYPE: GeoProbe

SURFACE ELEVATION:
START DATE: 06/28/22
END DATE: 06/28/22

MONITORING WELL INSTALLED: NA
RISER FROM: NA TO: NA SCREEN FROM: NA TO: NA
Filter Sand: #2 Sand Pack Intervals NA TO: NA
Bentonite Seal Interval NA TO: NA
Native Backfill NA TO: NA

PROPORTIONS USED		RELATIVE DENSITY		CONSISTENCY		SOIL CLASSIFICATION (inches)				SUMMARY	
trace	0-10%	0-4	Very Loose	0-2	Very Soft	Boulders	>11.8	Fine Sand	.02-.003	Overburden (feet):	NA
little	10-20%	4-10	Loose	2-4	Soft	Cobbles	11.8-2.9	Fine Silt	<.003	Rock Cored (feet):	NA
some	20-35%	10-30	Medium Dense	4-8	Medium Stiff	Coarse Gravel	2.9-.75	Clay	<.003	# of samples:	NA
and	35-50%	30-50	Dense	8-15	Stiff	Fine Gravel	.75-.19			Well set (feet):	NA
		50+	Very Dense	15-30	Very Stiff	Course Sand	.19-.08				
				30+	Hard	Medium Sand	.08-.02				

APPENDIX C

New England Testing Laboratory, Inc.
(401) 353-3420

REPORT OF ANALYTICAL RESULTS

NETLAB Work Order Number: 2F30046
Client Project: 7041 - Earth Design, Mulcahy Field

Report Date: 11-July-2022

Prepared for:

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Samples Submitted :

The samples listed below were submitted to New England Testing Laboratory on 06/30/22. The group of samples appearing in this report was assigned an internal identification number (case number) for laboratory information management purposes. The client's designations for the individual samples, along with our case numbers, are used to identify the samples in this report. This report of analytical results pertains only to the sample(s) provided to us by the client which are indicated on the custody record. The case number for this sample submission is 2F30046. Custody records are included in this report.

Lab ID	Sample	Matrix	Date Sampled	Date Received
2F30046-01	North Comp	Soil	06/28/2022	06/30/2022
2F30046-02	South Comp	Soil	06/28/2022	06/30/2022
2F30046-03	Blank	Soil	06/28/2022	06/30/2022

Request for Analysis

At the client's request, the analyses presented in the following table were performed on the samples submitted.

Blank (Lab Number: 2F30046-03)

Analysis	Method
Volatile Organic Compounds	EPA 8260C

North Comp (Lab Number: 2F30046-01)

Analysis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Herbicides	EPA 8151A
Lead	EPA 6010C
Mercury	EPA 7471B
Nickel	EPA 6010C
PCBs	EPA 8082A
Pesticides	EPA 8081B
pH	SM4500-H-B (11)
Reactive Cyanide	NETL Internal
Reactive Sulfide	NETL Internal
Selenium	EPA 6010C
Semivolatile Organic Compounds	EPA 8270D
Silver	EPA 6010C
Specific Conductance	EPA 9010A--modified
TCLP Arsenic	EPA 6010C
TCLP Barium	EPA 6010C
TCLP Cadmium	EPA 6010C
TCLP Chromium	EPA 6010C
TCLP Lead	EPA 6010C
TCLP Mercury	EPA 7470A
TCLP Selenium	EPA 6010C
TCLP Silver	EPA 6010C
Thallium	EPA 6010C
Total Petroleum Hydrocarbons	EPA-8100-mod
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

South Comp (Lab Number: 2F30046-02)

Analysis	Method
Antimony	EPA 6010C
Arsenic	EPA 6010C
Barium	EPA 6010C
Beryllium	EPA 6010C
Cadmium	EPA 6010C
Chromium	EPA 6010C
Herbicides	EPA 8151A
Lead	EPA 6010C
Mercury	EPA 7471B
Nickel	EPA 6010C

Request for Analysis (continued)

South Comp (Lab Number: 2F30046-02) (continued)

Analysis	Method
PCBs	EPA 8082A
Pesticides	EPA 8081B
pH	SM4500-H-B (11)
Reactive Cyanide	NETL Internal
Reactive Sulfide	NETL Internal
Selenium	EPA 6010C
Semivolatile Organic Compounds	EPA 8270D
Silver	EPA 6010C
Specific Conductance	EPA 9010A--modified
TCLP Arsenic	EPA 6010C
TCLP Barium	EPA 6010C
TCLP Cadmium	EPA 6010C
TCLP Chromium	EPA 6010C
TCLP Lead	EPA 6010C
TCLP Mercury	EPA 7470A
TCLP Selenium	EPA 6010C
TCLP Silver	EPA 6010C
Thallium	EPA 6010C
Total Petroleum Hydrocarbons	EPA-8100-mod
Vanadium	EPA 6010C
Volatile Organic Compounds	EPA 8260C
Zinc	EPA 6010C

Method References

Reactive Cyanide, Standard Operating Procedure 407, New England Testing Laboratory Inc.

Reactive Sulfide, Standard Operating Procedure 426, New England Testing Laboratory Inc.

Standard Methods for the Examination of Water and Wastewater, 20th Edition, APHA/ AWWA-WPCF, 1998

Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, USEPA

Case Narrative

Sample Receipt:

The samples associated with this work order were received in appropriately cooled and preserved containers. The chain of custody was adequately completed and corresponded to the samples submitted.

Exceptions: None

Analysis:

All samples were prepared and analyzed within method specified holding times and according to NETLAB's documented standard operating procedures. The results for the associated calibration, method blank and laboratory control sample (LCS) were within method specified quality control requirements and allowances. Results for all soil samples, unless otherwise indicated, are reported on a dry weight basis.

Exceptions: None

Results: General Chemistry

Sample: North Comp

Lab Number: 2F30046-01 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
pH	**8.2**			SU	07/01/22	07/01/22
Specific Conductance	**53.9**		2.0	uS/cm	07/01/22	07/01/22

Results: General Chemistry

Sample: South Comp

Lab Number: 2F30046-02 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
pH	**6.8**			SU	07/01/22	07/01/22
Specific Conductance	**14.0**		2.0	uS/cm	07/01/22	07/01/22

Results: Reactivity

Sample: North Comp

Lab Number: 2F30046-01 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Reactive Cyanide	ND		0.2	mg/kg	07/05/22	07/05/22
Reactive Sulfide	ND		0.1	mg/kg	07/05/22	07/05/22

Results: Reactivity

Sample: South Comp

Lab Number: 2F30046-02 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Reactive Cyanide	ND		0.2	mg/kg	07/05/22	07/05/22
Reactive Sulfide	ND		0.1	mg/kg	07/05/22	07/05/22

Results: Total Metals

Sample: North Comp

Lab Number: 2F30046-01 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Antimony	**0.98**		0.72	mg/kg	07/06/22	07/13/22
Arsenic	**17.6**		1.09	mg/kg	07/06/22	07/13/22
Barium	**69.9**		0.36	mg/kg	07/06/22	07/13/22
Beryllium	ND		0.36	mg/kg	07/06/22	07/13/22
Cadmium	**1.78**		0.54	mg/kg	07/06/22	07/13/22
Chromium	**20.8**		0.54	mg/kg	07/06/22	07/13/22
Lead	**304**		0.54	mg/kg	07/06/22	07/13/22
Mercury	**0.159**		0.029	mg/kg	07/07/22	07/07/22
Nickel	**17.4**		0.54	mg/kg	07/06/22	07/13/22
Selenium	ND		1.09	mg/kg	07/06/22	07/13/22
Silver	ND		1.09	mg/kg	07/06/22	07/13/22
Vanadium	**24.1**		0.36	mg/kg	07/06/22	07/13/22
Zinc	**152**		2.2	mg/kg	07/06/22	07/13/22
Thallium	ND		0.36	mg/kg	07/06/22	07/13/22

Results: Total Metals

Sample: South Comp

Lab Number: 2F30046-02 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Antimony	ND		0.57	mg/kg	07/06/22	07/13/22
Arsenic	**18.9**		0.87	mg/kg	07/06/22	07/13/22
Barium	**71.7**		0.29	mg/kg	07/06/22	07/13/22
Beryllium	ND		0.29	mg/kg	07/06/22	07/13/22
Cadmium	**4.85**		0.43	mg/kg	07/06/22	07/13/22
Chromium	**31.3**		0.43	mg/kg	07/06/22	07/13/22
Lead	**294**		0.43	mg/kg	07/06/22	07/13/22
Mercury	**0.207**		0.032	mg/kg	07/07/22	07/07/22
Nickel	**38.7**		0.43	mg/kg	07/06/22	07/13/22
Selenium	ND		0.87	mg/kg	07/06/22	07/13/22
Silver	ND		0.87	mg/kg	07/06/22	07/13/22
Vanadium	**26.8**		0.29	mg/kg	07/06/22	07/13/22
Zinc	**393**		1.7	mg/kg	07/06/22	07/13/22
Thallium	ND		0.29	mg/kg	07/06/22	07/13/22

Results: Volatile Organic Compounds

Sample: North Comp

Lab Number: 2F30046-01 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Acetone	ND		6	ug/kg	07/08/22	07/08/22
Benzene	ND		6	ug/kg	07/08/22	07/08/22
Bromobenzene	ND		6	ug/kg	07/08/22	07/08/22
Bromochloromethane	ND		6	ug/kg	07/08/22	07/08/22
Bromodichloromethane	ND		6	ug/kg	07/08/22	07/08/22
Bromoform	ND		6	ug/kg	07/08/22	07/08/22
Bromomethane	ND		6	ug/kg	07/08/22	07/08/22
2-Butanone	ND		6	ug/kg	07/08/22	07/08/22
tert-Butyl alcohol	ND		6	ug/kg	07/08/22	07/08/22
sec-Butylbenzene	ND		6	ug/kg	07/08/22	07/08/22
n-Butylbenzene	ND		6	ug/kg	07/08/22	07/08/22
tert-Butylbenzene	ND		6	ug/kg	07/08/22	07/08/22
Methyl t-butyl ether (MTBE)	ND		6	ug/kg	07/08/22	07/08/22
Carbon Disulfide	ND		6	ug/kg	07/08/22	07/08/22
Carbon Tetrachloride	ND		6	ug/kg	07/08/22	07/08/22
Chlorobenzene	ND		6	ug/kg	07/08/22	07/08/22
Chloroethane	ND		6	ug/kg	07/08/22	07/08/22
Chloroform	ND		6	ug/kg	07/08/22	07/08/22
Chloromethane	ND		6	ug/kg	07/08/22	07/08/22
4-Chlorotoluene	ND		6	ug/kg	07/08/22	07/08/22
2-Chlorotoluene	ND		6	ug/kg	07/08/22	07/08/22
1,2-Dibromo-3-chloropropane (DBCP)	ND		6	ug/kg	07/08/22	07/08/22
Dibromochloromethane	ND		6	ug/kg	07/08/22	07/08/22
1,2-Dibromoethane (EDB)	ND		6	ug/kg	07/08/22	07/08/22
Dibromomethane	ND		6	ug/kg	07/08/22	07/08/22
1,2-Dichlorobenzene	ND		6	ug/kg	07/08/22	07/08/22
1,3-Dichlorobenzene	ND		6	ug/kg	07/08/22	07/08/22
1,4-Dichlorobenzene	ND		6	ug/kg	07/08/22	07/08/22
1,1-Dichloroethane	ND		6	ug/kg	07/08/22	07/08/22
1,2-Dichloroethane	ND		6	ug/kg	07/08/22	07/08/22
trans-1,2-Dichloroethene	ND		6	ug/kg	07/08/22	07/08/22
cis-1,2-Dichloroethene	ND		6	ug/kg	07/08/22	07/08/22
1,1-Dichloroethene	ND		6	ug/kg	07/08/22	07/08/22
1,2-Dichloropropane	ND		6	ug/kg	07/08/22	07/08/22
2,2-Dichloropropane	ND		6	ug/kg	07/08/22	07/08/22
cis-1,3-Dichloropropene	ND		6	ug/kg	07/08/22	07/08/22
trans-1,3-Dichloropropene	ND		6	ug/kg	07/08/22	07/08/22
1,1-Dichloropropene	ND		6	ug/kg	07/08/22	07/08/22
1,3-Dichloropropene (cis + trans)	ND		6	ug/kg	07/08/22	07/08/22
Diethyl ether	ND		6	ug/kg	07/08/22	07/08/22
1,4-Dioxane	ND		128	ug/kg	07/08/22	07/08/22
Ethylbenzene	ND		6	ug/kg	07/08/22	07/08/22
Hexachlorobutadiene	ND		6	ug/kg	07/08/22	07/08/22
2-Hexanone	ND		6	ug/kg	07/08/22	07/08/22
Isopropylbenzene	ND		6	ug/kg	07/08/22	07/08/22
p-Isopropyltoluene	ND		6	ug/kg	07/08/22	07/08/22
Methylene Chloride	ND		6	ug/kg	07/08/22	07/08/22
4-Methyl-2-pentanone	ND		6	ug/kg	07/08/22	07/08/22

Results: Volatile Organic Compounds (Continued)

Sample: North Comp (Continued)

Lab Number: 2F30046-01 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Naphthalene	ND		6	ug/kg	07/08/22	07/08/22
n-Propylbenzene	ND		6	ug/kg	07/08/22	07/08/22
Styrene	ND		6	ug/kg	07/08/22	07/08/22
1,1,1,2-Tetrachloroethane	ND		6	ug/kg	07/08/22	07/08/22
Tetrachloroethene	ND		6	ug/kg	07/08/22	07/08/22
Tetrahydrofuran	ND		6	ug/kg	07/08/22	07/08/22
Toluene	ND		6	ug/kg	07/08/22	07/08/22
1,2,4-Trichlorobenzene	ND		6	ug/kg	07/08/22	07/08/22
1,2,3-Trichlorobenzene	ND		6	ug/kg	07/08/22	07/08/22
1,1,2-Trichloroethane	ND		6	ug/kg	07/08/22	07/08/22
1,1,1-Trichloroethane	ND		6	ug/kg	07/08/22	07/08/22
Trichloroethene	ND		6	ug/kg	07/08/22	07/08/22
1,2,3-Trichloropropane	ND		6	ug/kg	07/08/22	07/08/22
1,3,5-Trimethylbenzene	ND		6	ug/kg	07/08/22	07/08/22
1,2,4-Trimethylbenzene	ND		6	ug/kg	07/08/22	07/08/22
Vinyl Chloride	ND		6	ug/kg	07/08/22	07/08/22
o-Xylene	ND		6	ug/kg	07/08/22	07/08/22
m&p-Xylene	ND		13	ug/kg	07/08/22	07/08/22
Total xylenes	ND		6	ug/kg	07/08/22	07/08/22
1,1,2,2-Tetrachloroethane	ND		6	ug/kg	07/08/22	07/08/22
tert-Amyl methyl ether	ND		6	ug/kg	07/08/22	07/08/22
1,3-Dichloropropane	ND		6	ug/kg	07/08/22	07/08/22
Ethyl tert-butyl ether	ND		6	ug/kg	07/08/22	07/08/22
Diisopropyl ether	ND		6	ug/kg	07/08/22	07/08/22
Trichlorofluoromethane	ND		6	ug/kg	07/08/22	07/08/22
Dichlorodifluoromethane	ND		6	ug/kg	07/08/22	07/08/22

Surrogate(s)	Recovery%	Limits		
4-Bromofluorobenzene	*77.8%*	*70-130*	07/08/22	07/08/22
1,2-Dichloroethane-d4	*109%*	*70-130*	07/08/22	07/08/22
Toluene-d8	*98.9%*	*70-130*	07/08/22	07/08/22

Results: Volatile Organic Compounds

Sample: South Comp

Lab Number: 2F30046-02 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Acetone	ND		5	ug/kg	07/08/22	07/08/22
Benzene	ND		5	ug/kg	07/08/22	07/08/22
Bromobenzene	ND		5	ug/kg	07/08/22	07/08/22
Bromochloromethane	ND		5	ug/kg	07/08/22	07/08/22
Bromodichloromethane	ND		5	ug/kg	07/08/22	07/08/22
Bromoform	ND		5	ug/kg	07/08/22	07/08/22
Bromomethane	ND		5	ug/kg	07/08/22	07/08/22
2-Butanone	ND		5	ug/kg	07/08/22	07/08/22
tert-Butyl alcohol	ND		5	ug/kg	07/08/22	07/08/22
sec-Butylbenzene	ND		5	ug/kg	07/08/22	07/08/22
n-Butylbenzene	ND		5	ug/kg	07/08/22	07/08/22
tert-Butylbenzene	ND		5	ug/kg	07/08/22	07/08/22
Methyl t-butyl ether (MTBE)	ND		5	ug/kg	07/08/22	07/08/22
Carbon Disulfide	ND		5	ug/kg	07/08/22	07/08/22
Carbon Tetrachloride	ND		5	ug/kg	07/08/22	07/08/22
Chlorobenzene	ND		5	ug/kg	07/08/22	07/08/22
Chloroethane	ND		5	ug/kg	07/08/22	07/08/22
Chloroform	ND		5	ug/kg	07/08/22	07/08/22
Chloromethane	ND		5	ug/kg	07/08/22	07/08/22
4-Chlorotoluene	ND		5	ug/kg	07/08/22	07/08/22
2-Chlorotoluene	ND		5	ug/kg	07/08/22	07/08/22
1,2-Dibromo-3-chloropropane (DBCP)	ND		5	ug/kg	07/08/22	07/08/22
Dibromochloromethane	ND		5	ug/kg	07/08/22	07/08/22
1,2-Dibromoethane (EDB)	ND		5	ug/kg	07/08/22	07/08/22
Dibromomethane	ND		5	ug/kg	07/08/22	07/08/22
1,2-Dichlorobenzene	ND		5	ug/kg	07/08/22	07/08/22
1,3-Dichlorobenzene	ND		5	ug/kg	07/08/22	07/08/22
1,4-Dichlorobenzene	ND		5	ug/kg	07/08/22	07/08/22
1,1-Dichloroethane	ND		5	ug/kg	07/08/22	07/08/22
1,2-Dichloroethane	ND		5	ug/kg	07/08/22	07/08/22
trans-1,2-Dichloroethene	ND		5	ug/kg	07/08/22	07/08/22
cis-1,2-Dichloroethene	ND		5	ug/kg	07/08/22	07/08/22
1,1-Dichloroethene	ND		5	ug/kg	07/08/22	07/08/22
1,2-Dichloropropane	ND		5	ug/kg	07/08/22	07/08/22
2,2-Dichloropropane	ND		5	ug/kg	07/08/22	07/08/22
cis-1,3-Dichloropropene	ND		5	ug/kg	07/08/22	07/08/22
trans-1,3-Dichloropropene	ND		5	ug/kg	07/08/22	07/08/22
1,1-Dichloropropene	ND		5	ug/kg	07/08/22	07/08/22
1,3-Dichloropropene (cis + trans)	ND		5	ug/kg	07/08/22	07/08/22
Diethyl ether	ND		5	ug/kg	07/08/22	07/08/22
1,4-Dioxane	ND		93	ug/kg	07/08/22	07/08/22
Ethylbenzene	ND		5	ug/kg	07/08/22	07/08/22
Hexachlorobutadiene	ND		5	ug/kg	07/08/22	07/08/22
2-Hexanone	ND		5	ug/kg	07/08/22	07/08/22
Isopropylbenzene	ND		5	ug/kg	07/08/22	07/08/22
p-Isopropyltoluene	ND		5	ug/kg	07/08/22	07/08/22
Methylene Chloride	ND		5	ug/kg	07/08/22	07/08/22
4-Methyl-2-pentanone	ND		5	ug/kg	07/08/22	07/08/22

Results: Volatile Organic Compounds (Continued)

Sample: South Comp (Continued)

Lab Number: 2F30046-02 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Naphthalene	ND		5	ug/kg	07/08/22	07/08/22
n-Propylbenzene	ND		5	ug/kg	07/08/22	07/08/22
Styrene	ND		5	ug/kg	07/08/22	07/08/22
1,1,1,2-Tetrachloroethane	ND		5	ug/kg	07/08/22	07/08/22
Tetrachloroethene	ND		5	ug/kg	07/08/22	07/08/22
Tetrahydrofuran	ND		5	ug/kg	07/08/22	07/08/22
Toluene	ND		5	ug/kg	07/08/22	07/08/22
1,2,4-Trichlorobenzene	ND		5	ug/kg	07/08/22	07/08/22
1,2,3-Trichlorobenzene	ND		5	ug/kg	07/08/22	07/08/22
1,1,2-Trichloroethane	ND		5	ug/kg	07/08/22	07/08/22
1,1,1-Trichloroethane	ND		5	ug/kg	07/08/22	07/08/22
Trichloroethene	ND		5	ug/kg	07/08/22	07/08/22
1,2,3-Trichloropropane	ND		5	ug/kg	07/08/22	07/08/22
1,3,5-Trimethylbenzene	ND		5	ug/kg	07/08/22	07/08/22
1,2,4-Trimethylbenzene	ND		5	ug/kg	07/08/22	07/08/22
Vinyl Chloride	ND		5	ug/kg	07/08/22	07/08/22
o-Xylene	ND		5	ug/kg	07/08/22	07/08/22
m&p-Xylene	ND		9	ug/kg	07/08/22	07/08/22
Total xylenes	ND		5	ug/kg	07/08/22	07/08/22
1,1,2,2-Tetrachloroethane	ND		5	ug/kg	07/08/22	07/08/22
tert-Amyl methyl ether	ND		5	ug/kg	07/08/22	07/08/22
1,3-Dichloropropane	ND		5	ug/kg	07/08/22	07/08/22
Ethyl tert-butyl ether	ND		5	ug/kg	07/08/22	07/08/22
Diisopropyl ether	ND		5	ug/kg	07/08/22	07/08/22
Trichlorofluoromethane	ND		5	ug/kg	07/08/22	07/08/22
Dichlorodifluoromethane	ND		5	ug/kg	07/08/22	07/08/22

Surrogate(s)	Recovery%	Limits		
4-Bromofluorobenzene	*76.2%*	*70-130*	07/08/22	07/08/22
1,2-Dichloroethane-d4	*110%*	*70-130*	07/08/22	07/08/22
Toluene-d8	*98.6%*	*70-130*	07/08/22	07/08/22

Results: Volatile Organic Compounds

Sample: Blank

Lab Number: 2F30046-03 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Acetone	ND		5	ug/kg	07/08/22	07/08/22
Benzene	ND		5	ug/kg	07/08/22	07/08/22
Bromobenzene	ND		5	ug/kg	07/08/22	07/08/22
Bromochloromethane	ND		5	ug/kg	07/08/22	07/08/22
Bromodichloromethane	ND		5	ug/kg	07/08/22	07/08/22
Bromoform	ND		5	ug/kg	07/08/22	07/08/22
Bromomethane	ND		5	ug/kg	07/08/22	07/08/22
2-Butanone	ND		5	ug/kg	07/08/22	07/08/22
tert-Butyl alcohol	ND		5	ug/kg	07/08/22	07/08/22
sec-Butylbenzene	ND		5	ug/kg	07/08/22	07/08/22
n-Butylbenzene	ND		5	ug/kg	07/08/22	07/08/22
tert-Butylbenzene	ND		5	ug/kg	07/08/22	07/08/22
Methyl t-butyl ether (MTBE)	ND		5	ug/kg	07/08/22	07/08/22
Carbon Disulfide	ND		5	ug/kg	07/08/22	07/08/22
Carbon Tetrachloride	ND		5	ug/kg	07/08/22	07/08/22
Chlorobenzene	ND		5	ug/kg	07/08/22	07/08/22
Chloroethane	ND		5	ug/kg	07/08/22	07/08/22
Chloroform	ND		5	ug/kg	07/08/22	07/08/22
Chloromethane	ND		5	ug/kg	07/08/22	07/08/22
4-Chlorotoluene	ND		5	ug/kg	07/08/22	07/08/22
2-Chlorotoluene	ND		5	ug/kg	07/08/22	07/08/22
1,2-Dibromo-3-chloropropane (DBCP)	ND		5	ug/kg	07/08/22	07/08/22
Dibromochloromethane	ND		5	ug/kg	07/08/22	07/08/22
1,2-Dibromoethane (EDB)	ND		5	ug/kg	07/08/22	07/08/22
Dibromomethane	ND		5	ug/kg	07/08/22	07/08/22
1,2-Dichlorobenzene	ND		5	ug/kg	07/08/22	07/08/22
1,3-Dichlorobenzene	ND		5	ug/kg	07/08/22	07/08/22
1,4-Dichlorobenzene	ND		5	ug/kg	07/08/22	07/08/22
1,1-Dichloroethane	ND		5	ug/kg	07/08/22	07/08/22
1,2-Dichloroethane	ND		5	ug/kg	07/08/22	07/08/22
trans-1,2-Dichloroethene	ND		5	ug/kg	07/08/22	07/08/22
cis-1,2-Dichloroethene	ND		5	ug/kg	07/08/22	07/08/22
1,1-Dichloroethene	ND		5	ug/kg	07/08/22	07/08/22
1,2-Dichloropropane	ND		5	ug/kg	07/08/22	07/08/22
2,2-Dichloropropane	ND		5	ug/kg	07/08/22	07/08/22
cis-1,3-Dichloropropene	ND		5	ug/kg	07/08/22	07/08/22
trans-1,3-Dichloropropene	ND		5	ug/kg	07/08/22	07/08/22
1,1-Dichloropropene	ND		5	ug/kg	07/08/22	07/08/22
1,3-Dichloropropene (cis + trans)	ND		5	ug/kg	07/08/22	07/08/22
Diethyl ether	ND		5	ug/kg	07/08/22	07/08/22
1,4-Dioxane	ND		99	ug/kg	07/08/22	07/08/22
Ethylbenzene	ND		5	ug/kg	07/08/22	07/08/22
Hexachlorobutadiene	ND		5	ug/kg	07/08/22	07/08/22
2-Hexanone	ND		5	ug/kg	07/08/22	07/08/22
Isopropylbenzene	ND		5	ug/kg	07/08/22	07/08/22
p-Isopropyltoluene	ND		5	ug/kg	07/08/22	07/08/22
Methylene Chloride	ND		5	ug/kg	07/08/22	07/08/22
4-Methyl-2-pentanone	ND		5	ug/kg	07/08/22	07/08/22

Sample: Blank (Continued)

Lab Number: 2F30046-03 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Naphthalene	ND		5	ug/kg	07/08/22	07/08/22
n-Propylbenzene	ND		5	ug/kg	07/08/22	07/08/22
Styrene	ND		5	ug/kg	07/08/22	07/08/22
1,1,1,2-Tetrachloroethane	ND		5	ug/kg	07/08/22	07/08/22
Tetrachloroethene	ND		5	ug/kg	07/08/22	07/08/22
Tetrahydrofuran	ND		5	ug/kg	07/08/22	07/08/22
Toluene	ND		5	ug/kg	07/08/22	07/08/22
1,2,4-Trichlorobenzene	ND		5	ug/kg	07/08/22	07/08/22
1,2,3-Trichlorobenzene	ND		5	ug/kg	07/08/22	07/08/22
1,1,2-Trichloroethane	ND		5	ug/kg	07/08/22	07/08/22
1,1,1-Trichloroethane	ND		5	ug/kg	07/08/22	07/08/22
Trichloroethene	ND		5	ug/kg	07/08/22	07/08/22
1,2,3-Trichloropropane	ND		5	ug/kg	07/08/22	07/08/22
1,3,5-Trimethylbenzene	ND		5	ug/kg	07/08/22	07/08/22
1,2,4-Trimethylbenzene	ND		5	ug/kg	07/08/22	07/08/22
Vinyl Chloride	ND		5	ug/kg	07/08/22	07/08/22
o-Xylene	ND		5	ug/kg	07/08/22	07/08/22
m&p-Xylene	ND		10	ug/kg	07/08/22	07/08/22
Total xylenes	ND		5	ug/kg	07/08/22	07/08/22
1,1,2,2-Tetrachloroethane	ND		5	ug/kg	07/08/22	07/08/22
tert-Amyl methyl ether	ND		5	ug/kg	07/08/22	07/08/22
1,3-Dichloropropane	ND		5	ug/kg	07/08/22	07/08/22
Ethyl tert-butyl ether	ND		5	ug/kg	07/08/22	07/08/22
Diisopropyl ether	ND		5	ug/kg	07/08/22	07/08/22
Trichlorofluoromethane	ND		5	ug/kg	07/08/22	07/08/22
Dichlorodifluoromethane	ND		5	ug/kg	07/08/22	07/08/22

Surrogate(s)	Recovery%	Limits		
4-Bromofluorobenzene	*81.1%*	*70-130*	07/08/22	07/08/22
1,2-Dichloroethane-d4	*106%*	*70-130*	07/08/22	07/08/22
Toluene-d8	*98.1%*	*70-130*	07/08/22	07/08/22

Results: Semivolatile organic compounds

Sample: North Comp

Lab Number: 2F30046-01 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
1,2,4-Trichlorobenzene	ND		144	ug/kg	07/01/22	07/06/22
1,2-Dichlorobenzene	ND		144	ug/kg	07/01/22	07/06/22
1,3-Dichlorobenzene	ND		144	ug/kg	07/01/22	07/06/22
1,4-Dichlorobenzene	ND		144	ug/kg	07/01/22	07/06/22
Phenol	ND		144	ug/kg	07/01/22	07/06/22
2,4,5-Trichlorophenol	ND		144	ug/kg	07/01/22	07/06/22
2,4,6-Trichlorophenol	ND		144	ug/kg	07/01/22	07/06/22
2,4-Dichlorophenol	ND		144	ug/kg	07/01/22	07/06/22
2,4-Dimethylphenol	ND		366	ug/kg	07/01/22	07/06/22
2,4-Dinitrophenol	ND		366	ug/kg	07/01/22	07/06/22
2,4-Dinitrotoluene	ND		144	ug/kg	07/01/22	07/06/22
2,6-Dinitrotoluene	ND		144	ug/kg	07/01/22	07/06/22
2-Chloronaphthalene	ND		144	ug/kg	07/01/22	07/06/22
2-Chlorophenol	ND		144	ug/kg	07/01/22	07/06/22
2-Methylnaphthalene	ND		144	ug/kg	07/01/22	07/06/22
Nitrobenzene	ND		144	ug/kg	07/01/22	07/06/22
2-Methylphenol	ND		144	ug/kg	07/01/22	07/06/22
2-Nitroaniline	ND		144	ug/kg	07/01/22	07/06/22
2-Nitrophenol	ND		366	ug/kg	07/01/22	07/06/22
3,3'-Dichlorobenzidine	ND		366	ug/kg	07/01/22	07/06/22
3-Nitroaniline	ND		144	ug/kg	07/01/22	07/06/22
4,6-Dinitro-2-methylphenol	ND		366	ug/kg	07/01/22	07/06/22
4-Bromophenyl phenyl ether	ND		144	ug/kg	07/01/22	07/06/22
4-Chloro-3-methylphenol	ND		144	ug/kg	07/01/22	07/06/22
4-Chloroaniline	ND		144	ug/kg	07/01/22	07/06/22
4-Chlorophenyl phenyl ether	ND		144	ug/kg	07/01/22	07/06/22
4-Nitroaniline	ND		144	ug/kg	07/01/22	07/06/22
4-Nitrophenol	ND		366	ug/kg	07/01/22	07/06/22
Acenaphthene	ND		144	ug/kg	07/01/22	07/06/22
Acenaphthylene	**262**		144	ug/kg	07/01/22	07/06/22
Aniline	ND		144	ug/kg	07/01/22	07/06/22
Anthracene	**579**		144	ug/kg	07/01/22	07/06/22
Benzo(a)anthracene	**2570**		144	ug/kg	07/01/22	07/06/22
Benzo(a)pyrene	**2380**		144	ug/kg	07/01/22	07/06/22
Benzo(b)fluoranthene	**2950**		144	ug/kg	07/01/22	07/06/22
Benzo(g,h,i)perylene	**1960**		144	ug/kg	07/01/22	07/06/22
Benzo(k)fluoranthene	**1180**		144	ug/kg	07/01/22	07/06/22
Benzoic acid	ND		1110	ug/kg	07/01/22	07/06/22
Biphenyl	ND		44	ug/kg	07/01/22	07/06/22
Bis(2-chloroethoxy)methane	ND		144	ug/kg	07/01/22	07/06/22
Bis(2-chloroethyl)ether	ND		144	ug/kg	07/01/22	07/06/22
Bis(2-chloroisopropyl)ether	ND		144	ug/kg	07/01/22	07/06/22
Bis(2-ethylhexyl)phthalate	ND		443	ug/kg	07/01/22	07/06/22
Butyl benzyl phthalate	ND		144	ug/kg	07/01/22	07/06/22
Chrysene	**2800**		144	ug/kg	07/01/22	07/06/22
Di(n)octyl phthalate	ND		222	ug/kg	07/01/22	07/06/22
Dibenz(a,h)anthracene	**550**		144	ug/kg	07/01/22	07/06/22
Dibenzofuran	ND		144	ug/kg	07/01/22	07/06/22

Results: Semivolatile organic compounds (Continued)

Sample: North Comp (Continued)

Lab Number: 2F30046-01 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Diethyl phthalate	ND		144	ug/kg	07/01/22	07/06/22
Dimethyl phthalate	ND		366	ug/kg	07/01/22	07/06/22
Di-n-butylphthalate	ND		222	ug/kg	07/01/22	07/06/22
Fluoranthene	**3730**		144	ug/kg	07/01/22	07/06/22
Fluorene	**154**		144	ug/kg	07/01/22	07/06/22
Hexachlorobenzene	ND		144	ug/kg	07/01/22	07/06/22
Hexachlorobutadiene	ND		144	ug/kg	07/01/22	07/06/22
Hexachlorocyclopentadiene	ND		366	ug/kg	07/01/22	07/06/22
Hexachloroethane	ND		144	ug/kg	07/01/22	07/06/22
Indeno(1,2,3-cd)pyrene	**1880**		144	ug/kg	07/01/22	07/06/22
Isophorone	ND		144	ug/kg	07/01/22	07/06/22
Naphthalene	ND		144	ug/kg	07/01/22	07/06/22
N-Nitrosodimethylamine	ND		144	ug/kg	07/01/22	07/06/22
N-Nitrosodi-n-propylamine	ND		144	ug/kg	07/01/22	07/06/22
N-Nitrosodiphenylamine	ND		144	ug/kg	07/01/22	07/06/22
Pentachlorophenol	ND		366	ug/kg	07/01/22	07/06/22
Phenanthrene	**2600**		144	ug/kg	07/01/22	07/06/22
Pyrene	**4580**		144	ug/kg	07/01/22	07/06/22
m&p-Cresol	ND		288	ug/kg	07/01/22	07/06/22
Pyridine	ND		144	ug/kg	07/01/22	07/06/22
Total Dichlorobenzene	ND		144	ug/kg	07/01/22	07/06/22

Surrogate(s)	Recovery%	Limits		
Nitrobenzene-d5	*42.3%*	*30-126*	07/01/22	07/06/22
p-Terphenyl-d14	*101%*	*47-130*	07/01/22	07/06/22
2-Fluorobiphenyl	*66.1%*	*34-130*	07/01/22	07/06/22
Phenol-d6	*62.2%*	*30-130*	07/01/22	07/06/22
2,4,6-Tribromophenol	*99.4%*	*30-130*	07/01/22	07/06/22
2-Fluorophenol	*60.3%*	*30-130*	07/01/22	07/06/22

Results: Semivolatile organic compounds

Sample: South Comp

Lab Number: 2F30046-02 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
1,2,4-Trichlorobenzene	ND		737	ug/kg	07/01/22	07/06/22
1,2-Dichlorobenzene	ND		737	ug/kg	07/01/22	07/06/22
1,3-Dichlorobenzene	ND		737	ug/kg	07/01/22	07/06/22
1,4-Dichlorobenzene	ND		737	ug/kg	07/01/22	07/06/22
Phenol	ND		737	ug/kg	07/01/22	07/06/22
2,4,5-Trichlorophenol	ND		737	ug/kg	07/01/22	07/06/22
2,4,6-Trichlorophenol	ND		737	ug/kg	07/01/22	07/06/22
2,4-Dichlorophenol	ND		737	ug/kg	07/01/22	07/06/22
2,4-Dimethylphenol	ND		1870	ug/kg	07/01/22	07/06/22
2,4-Dinitrophenol	ND		1870	ug/kg	07/01/22	07/06/22
2,4-Dinitrotoluene	ND		737	ug/kg	07/01/22	07/06/22
2,6-Dinitrotoluene	ND		737	ug/kg	07/01/22	07/06/22
2-Chloronaphthalene	ND		737	ug/kg	07/01/22	07/06/22
2-Chlorophenol	ND		737	ug/kg	07/01/22	07/06/22
2-Methylnaphthalene	ND		737	ug/kg	07/01/22	07/06/22
Nitrobenzene	ND		737	ug/kg	07/01/22	07/06/22
2-Methylphenol	ND		737	ug/kg	07/01/22	07/06/22
2-Nitroaniline	ND		737	ug/kg	07/01/22	07/06/22
2-Nitrophenol	ND		1870	ug/kg	07/01/22	07/06/22
3,3'-Dichlorobenzidine	ND		1870	ug/kg	07/01/22	07/06/22
3-Nitroaniline	ND		737	ug/kg	07/01/22	07/06/22
4,6-Dinitro-2-methylphenol	ND		1870	ug/kg	07/01/22	07/06/22
4-Bromophenyl phenyl ether	ND		737	ug/kg	07/01/22	07/06/22
4-Chloro-3-methylphenol	ND		737	ug/kg	07/01/22	07/06/22
4-Chloroaniline	ND		737	ug/kg	07/01/22	07/06/22
4-Chlorophenyl phenyl ether	ND		737	ug/kg	07/01/22	07/06/22
4-Nitroaniline	ND		737	ug/kg	07/01/22	07/06/22
4-Nitrophenol	ND		1870	ug/kg	07/01/22	07/06/22
Acenaphthene	ND		737	ug/kg	07/01/22	07/06/22
Acenaphthylene	ND		737	ug/kg	07/01/22	07/06/22
Aniline	ND		737	ug/kg	07/01/22	07/06/22
Anthracene	ND		737	ug/kg	07/01/22	07/06/22
Benzo(a)anthracene	**2070**		737	ug/kg	07/01/22	07/06/22
Benzo(a)pyrene	**1410**		737	ug/kg	07/01/22	07/06/22
Benzo(b)fluoranthene	**2510**		737	ug/kg	07/01/22	07/06/22
Benzo(g,h,i)perylene	ND		737	ug/kg	07/01/22	07/06/22
Benzo(k)fluoranthene	**1010**		737	ug/kg	07/01/22	07/06/22
Benzoic acid	ND		5670	ug/kg	07/01/22	07/06/22
Biphenyl	ND		227	ug/kg	07/01/22	07/06/22
Bis(2-chloroethoxy)methane	ND		737	ug/kg	07/01/22	07/06/22
Bis(2-chloroethyl)ether	ND		737	ug/kg	07/01/22	07/06/22
Bis(2-chloroisopropyl)ether	ND		737	ug/kg	07/01/22	07/06/22
Bis(2-ethylhexyl)phthalate	ND		2270	ug/kg	07/01/22	07/06/22
Butyl benzyl phthalate	ND		737	ug/kg	07/01/22	07/06/22
Chrysene	**2170**		737	ug/kg	07/01/22	07/06/22
Di(n)octyl phthalate	ND		1130	ug/kg	07/01/22	07/06/22
Dibenz(a,h)anthracene	ND		737	ug/kg	07/01/22	07/06/22
Dibenzofuran	ND		737	ug/kg	07/01/22	07/06/22

Results: Semivolatile organic compounds (Continued)

Sample: South Comp (Continued)

Lab Number: 2F30046-02 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Diethyl phthalate	ND		737	ug/kg	07/01/22	07/06/22
Dimethyl phthalate	ND		1870	ug/kg	07/01/22	07/06/22
Di-n-butylphthalate	ND		1130	ug/kg	07/01/22	07/06/22
Fluoranthene	**3230**		737	ug/kg	07/01/22	07/06/22
Fluorene	ND		737	ug/kg	07/01/22	07/06/22
Hexachlorobenzene	ND		737	ug/kg	07/01/22	07/06/22
Hexachlorobutadiene	ND		737	ug/kg	07/01/22	07/06/22
Hexachlorocyclopentadiene	ND		1870	ug/kg	07/01/22	07/06/22
Hexachloroethane	ND		737	ug/kg	07/01/22	07/06/22
Indeno(1,2,3-cd)pyrene	ND		737	ug/kg	07/01/22	07/06/22
Isophorone	ND		737	ug/kg	07/01/22	07/06/22
Naphthalene	ND		737	ug/kg	07/01/22	07/06/22
N-Nitrosodimethylamine	ND		737	ug/kg	07/01/22	07/06/22
N-Nitrosodi-n-propylamine	ND		737	ug/kg	07/01/22	07/06/22
N-Nitrosodiphenylamine	ND		737	ug/kg	07/01/22	07/06/22
Pentachlorophenol	ND		1870	ug/kg	07/01/22	07/06/22
Phenanthrene	**1560**		737	ug/kg	07/01/22	07/06/22
Pyrene	**3950**		737	ug/kg	07/01/22	07/06/22
m&p-Cresol	ND		1470	ug/kg	07/01/22	07/06/22
Pyridine	ND		737	ug/kg	07/01/22	07/06/22
Total Dichlorobenzene	ND		737	ug/kg	07/01/22	07/06/22

Surrogate(s)	Recovery%	Limits		
Nitrobenzene-d5	*65.5%*	*30-126*	07/01/22	07/06/22
p-Terphenyl-d14	*128%*	*47-130*	07/01/22	07/06/22
2-Fluorobiphenyl	*89.0%*	*34-130*	07/01/22	07/06/22
Phenol-d6	*84.2%*	*30-130*	07/01/22	07/06/22
2,4,6-Tribromophenol	*122%*	*30-130*	07/01/22	07/06/22
2-Fluorophenol	*87.0%*	*30-130*	07/01/22	07/06/22

Results: Pesticides

Sample: North Comp

Lab Number: 2F30046-01 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
alpha-BHC	ND		1.86	ug/kg	07/05/22	07/06/22
gamma-BHC (Lindane)	ND		1.86	ug/kg	07/05/22	07/06/22
beta-BHC	ND		1.86	ug/kg	07/05/22	07/06/22
delta-BHC	ND		1.86	ug/kg	07/05/22	07/06/22
Heptachlor	ND		1.86	ug/kg	07/05/22	07/06/22
Aldrin	ND		1.86	ug/kg	07/05/22	07/06/22
Heptachlor epoxide	ND		1.86	ug/kg	07/05/22	07/06/22
gamma-Chlordane	ND		1.86	ug/kg	07/05/22	07/06/22
alpha-Chlordane	ND		1.86	ug/kg	07/05/22	07/06/22
Chlordane	ND		18.6	ug/kg	07/05/22	07/06/22
4,4'-DDE	ND		3.72	ug/kg	07/05/22	07/06/22
Endosulfan I	ND		1.86	ug/kg	07/05/22	07/06/22
Dieldrin	ND		1.86	ug/kg	07/05/22	07/06/22
Endrin	ND		1.86	ug/kg	07/05/22	07/06/22
4,4'-DDD	ND		3.72	ug/kg	07/05/22	07/06/22
Endosulfan II	ND		1.86	ug/kg	07/05/22	07/06/22
Endrin aldehyde	ND		1.86	ug/kg	07/05/22	07/06/22
4,4'-DDT	ND		3.72	ug/kg	07/05/22	07/06/22
Methoxychlor	ND		3.72	ug/kg	07/05/22	07/06/22
Endosulfan sulfate	ND		1.86	ug/kg	07/05/22	07/06/22
Endrin Ketone	ND		1.86	ug/kg	07/05/22	07/06/22
Toxaphene	ND		18.6	ug/kg	07/05/22	07/06/22

Surrogate(s)	Recovery%	Limits		
2,4,5,6-Tetrachloro-m-xylene (TCMX)	*42.9%*	*30-106*	07/05/22	07/06/22
Decachlorobiphenyl (DCBP)	*52.9%*	*32-110*	07/05/22	07/06/22

Results: Pesticides

Sample: South Comp

Lab Number: 2F30046-02 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
alpha-BHC	ND		1.91	ug/kg	07/05/22	07/06/22
gamma-BHC (Lindane)	ND		1.91	ug/kg	07/05/22	07/06/22
beta-BHC	ND		1.91	ug/kg	07/05/22	07/06/22
delta-BHC	ND		1.91	ug/kg	07/05/22	07/06/22
Heptachlor	ND		1.91	ug/kg	07/05/22	07/06/22
Aldrin	ND		1.91	ug/kg	07/05/22	07/06/22
Heptachlor epoxide	ND		1.91	ug/kg	07/05/22	07/06/22
gamma-Chlordane	ND		1.91	ug/kg	07/05/22	07/06/22
alpha-Chlordane	ND		1.91	ug/kg	07/05/22	07/06/22
Chlordane	ND		19.1	ug/kg	07/05/22	07/06/22
4,4'-DDE	ND		3.80	ug/kg	07/05/22	07/06/22
Endosulfan I	ND		1.91	ug/kg	07/05/22	07/06/22
Dieldrin	ND		1.91	ug/kg	07/05/22	07/06/22
Endrin	ND		1.91	ug/kg	07/05/22	07/06/22
4,4'-DDD	ND		3.80	ug/kg	07/05/22	07/06/22
Endosulfan II	ND		1.91	ug/kg	07/05/22	07/06/22
Endrin aldehyde	ND		1.91	ug/kg	07/05/22	07/06/22
4,4'-DDT	ND		3.80	ug/kg	07/05/22	07/06/22
Methoxychlor	ND		3.80	ug/kg	07/05/22	07/06/22
Endosulfan sulfate	ND		1.91	ug/kg	07/05/22	07/06/22
Endrin Ketone	ND		1.91	ug/kg	07/05/22	07/06/22
Toxaphene	ND		19.1	ug/kg	07/05/22	07/06/22

Surrogate(s)	Recovery%	Limits		
2,4,5,6-Tetrachloro-m-xylene (TCMX)	*44.4%*	*30-106*	07/05/22	07/06/22
Decachlorobiphenyl (DCBP)	*53.0%*	*32-110*	07/05/22	07/06/22

Results: Polychlorinated Biphenyls (PCBs)

Sample: North Comp

Lab Number: 2F30046-01 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Aroclor-1016	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1221	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1232	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1242	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1248	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1254	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1260	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1262	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1268	ND		71	ug/kg	07/05/22	07/06/22
PCBs (Total)	ND		71	ug/kg	07/05/22	07/06/22

Surrogate(s)	Recovery%	Limits		
2,4,5,6-Tetrachloro-m-xylene (TCMX)	*80.0%*	*36.2-130*	07/05/22	07/06/22
Decachlorobiphenyl (DCBP)	*67.0%*	*43.3-130*	07/05/22	07/06/22

Results: Polychlorinated Biphenyls (PCBs)

Sample: South Comp

Lab Number: 2F30046-02 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Aroclor-1016	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1221	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1232	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1242	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1248	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1254	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1260	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1262	ND		71	ug/kg	07/05/22	07/06/22
Aroclor-1268	ND		71	ug/kg	07/05/22	07/06/22
PCBs (Total)	ND		71	ug/kg	07/05/22	07/06/22

Surrogate(s)	Recovery%	Limits		
2,4,5,6-Tetrachloro-m-xylene (TCMX)	*73.9%*	*36.2-130*	07/05/22	07/06/22
Decachlorobiphenyl (DCBP)	*94.4%*	*43.3-130*	07/05/22	07/06/22

Results: Herbicides

Sample: North Comp

Lab Number: 2F30046-01 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Dalapon	ND		111	ug/kg	06/30/22	07/05/22
Dicamba	ND		55	ug/kg	06/30/22	07/05/22
Dichloroprop	ND		55	ug/kg	06/30/22	07/05/22
2,4-D	ND		55	ug/kg	06/30/22	07/05/22
2,4,5-TP (Silvex)	ND		55	ug/kg	06/30/22	07/05/22
2,4,5-T	ND		55	ug/kg	06/30/22	07/05/22
2,4-DB	ND		55	ug/kg	06/30/22	07/05/22
Dinoseb	ND		111	ug/kg	06/30/22	07/05/22

Surrogate(s)	Recovery%	Limits		
2,4-Dichlorophenyl acetic acid	*73.9%*	*41-145*	06/30/22	07/05/22

Results: Herbicides

Sample: South Comp

Lab Number: 2F30046-02 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Dalapon	ND		113	ug/kg	06/30/22	07/05/22
Dicamba	ND		57	ug/kg	06/30/22	07/05/22
Dichloroprop	ND		57	ug/kg	06/30/22	07/05/22
2,4-D	ND		57	ug/kg	06/30/22	07/05/22
2,4,5-TP (Silvex)	ND		57	ug/kg	06/30/22	07/05/22
2,4,5-T	ND		57	ug/kg	06/30/22	07/05/22
2,4-DB	ND		57	ug/kg	06/30/22	07/05/22
Dinoseb	ND		113	ug/kg	06/30/22	07/05/22

Surrogate(s)	Recovery%	Limits		
2,4-Dichlorophenyl acetic acid	*96.2%*	*41-145*	06/30/22	07/05/22

Results: Total Petroleum Hydrocarbons

Sample: North Comp

Lab Number: 2F30046-01 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Total Petroleum Hydrocarbons	**278**		143	mg/kg	07/06/22	07/07/22
Surrogate(s)	Recovery%		Limits			
Chlorooctadecane	*108%*		*50-130*		07/06/22	07/07/22

Results: Total Petroleum Hydrocarbons

Sample: South Comp

Lab Number: 2F30046-02 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Total Petroleum Hydrocarbons	**160**		149	mg/kg	07/06/22	07/07/22
Surrogate(s)	Recovery%		Limits			
Chlorooctadecane	*123%*		*50-130*		07/06/22	07/07/22

Results: TCLP Metals

Sample: North Comp

Lab Number: 2F30046-01 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Arsenic	ND		0.05	mg/L	07/07/22	07/08/22
Silver	ND		0.025	mg/L	07/07/22	07/08/22
Barium	**0.509**		0.025	mg/L	07/07/22	07/08/22
Cadmium	ND		0.025	mg/L	07/07/22	07/08/22
Chromium	ND		0.025	mg/L	07/07/22	07/08/22
Lead	**2.50**		0.025	mg/L	07/07/22	07/11/22
Mercury	ND		0.001	mg/L	07/07/22	07/07/22
Selenium	ND		0.05	mg/L	07/07/22	07/08/22

Results: TCLP Metals

Sample: South Comp

Lab Number: 2F30046-02 (Soil)

Analyte	Result	Qual	Reporting Limit	Units	Date Prepared	Date Analyzed
Arsenic	ND		0.05	mg/L	07/07/22	07/08/22
Silver	ND		0.025	mg/L	07/07/22	07/08/22
Barium	**0.320**		0.025	mg/L	07/07/22	07/08/22
Cadmium	ND		0.025	mg/L	07/07/22	07/08/22
Chromium	ND		0.025	mg/L	07/07/22	07/08/22
Lead	**0.078**		0.025	mg/L	07/07/22	07/08/22
Mercury	ND		0.001	mg/L	07/07/22	07/07/22
Selenium	ND		0.05	mg/L	07/07/22	07/08/22

Quality Control

General Chemistry

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0038 - Conductivity										
Blank (B2G0038-BLK1)					Prepared & Analyzed: 07/01/22					
Specific Conductance	ND		2.0	uS/cm						
Duplicate (B2G0038-DUP1)		Source: 2F30046-01			Prepared & Analyzed: 07/01/22					
Specific Conductance	54.0		2.0	uS/cm		53.9			0.185	200
Batch: B2G0040 - pH										
LCS (B2G0040-BS1)					Prepared & Analyzed: 07/01/22					
pH	7.0			SU	7.00		100	0-200		
LCS (B2G0040-BS2)					Prepared & Analyzed: 07/01/22					
pH	7.0			SU	7.00		100	0-200		
Duplicate (B2G0040-DUP1)		Source: 2F30046-01			Prepared & Analyzed: 07/01/22					
pH	8.2			SU		8.2			0.122	200

Quality Control
(Continued)

Reactivity

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0107 - Reactivity										
Blank (B2G0107-BLK1)					Prepared & Analyzed: 07/05/22					
Cyanide	ND		0.2	mg/kg						
Blank (B2G0107-BLK2)					Prepared & Analyzed: 07/05/22					
Cyanide	ND		0.2	mg/kg						
Duplicate (B2G0107-DUP1)		Source: 2F30046-01			Prepared & Analyzed: 07/05/22					
Cyanide	ND		0.2	mg/kg dry		ND				20
Batch: B2G0108 - Reactivity										
Blank (B2G0108-BLK1)					Prepared & Analyzed: 07/05/22					
Sulfide	ND		0.1	mg/kg						
Blank (B2G0108-BLK2)					Prepared & Analyzed: 07/05/22					
Sulfide	ND		0.1	mg/kg						
LCS (B2G0108-BS1)					Prepared & Analyzed: 07/05/22					
Sulfide	3.9		0.1	mg/kg	4.00		98.0	90-110		
LCS (B2G0108-BS2)					Prepared & Analyzed: 07/05/22					
Sulfide	3.9		0.1	mg/kg	4.00		97.5	90-110		
Duplicate (B2G0108-DUP1)		Source: 2F30046-01			Prepared & Analyzed: 07/05/22					
Sulfide	ND		0.1	mg/kg dry		ND				20
Matrix Spike (B2G0108-MS1)		Source: 2F30046-01			Prepared & Analyzed: 07/05/22					
Sulfide	4.5		0.1	mg/kg dry	4.46	ND	102	80-120		

Quality Control
(Continued)

Total Metals

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0210 - Metals Digestion Soils										
Blank (B2G0210-BLK1)					Prepared: 07/06/22 Analyzed: 07/13/22					
Lead	ND		0.50	mg/kg						
Beryllium	ND		0.33	mg/kg						
Selenium	ND		1.00	mg/kg						
Antimony	ND		0.66	mg/kg						
Nickel	ND		0.50	mg/kg						
Chromium	ND		0.50	mg/kg						
Cadmium	ND		0.50	mg/kg						
Vanadium	ND		0.33	mg/kg						
Barium	ND		0.33	mg/kg						
Silver	ND		1.00	mg/kg						
Arsenic	ND		1.00	mg/kg						
Zinc	ND		2.0	mg/kg						
Thallium	ND		0.33	mg/kg						
LCS (B2G0210-BS1)					Prepared: 07/06/22 Analyzed: 07/13/22					
Lead	93.8		0.50	mg/kg	100		93.8	85-115		
Silver	40.5		1.00	mg/kg	40.0		101	85-115		
Barium	87.2		0.33	mg/kg	100		87.2	85-115		
Vanadium	99.0		0.33	mg/kg	100		99.0	85-115		
Selenium	21.1		1.00	mg/kg	20.0		106	85-115		
Antimony	96.1		0.66	mg/kg	100		96.1	85-115		
Cadmium	97.0		0.50	mg/kg	100		97.0	85-115		
Arsenic	19.1		1.00	mg/kg	20.0		95.7	85-115		
Chromium	95.3		0.50	mg/kg	100		95.3	85-115		
Nickel	92.5		0.50	mg/kg	100		92.5	85-112		
Zinc	96.9		2.0	mg/kg	100		96.9	85-115		
Beryllium	20.7		0.33	mg/kg	20.0		103	85-115		
Thallium	104		0.33	mg/kg	100		104	85-115		

Quality Control
(Continued)

Total Metals (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0252 - Metals Cold-Vapor Mercury										
Blank (B2G0252-BLK1)					Prepared & Analyzed: 07/07/22					
Mercury	ND		0.035	mg/kg						
LCS (B2G0252-BS1)					Prepared & Analyzed: 07/07/22					
Mercury	0.073		0.035	mg/kg	0.0714		102	93-114		

Volatile Organic Compounds

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0428 - EPA 5035										
Blank (B2G0428-BLK1)					Prepared & Analyzed: 07/08/22					
Acetone	ND		5	ug/kg						
Benzene	ND		5	ug/kg						
Bromobenzene	ND		5	ug/kg						
Bromochloromethane	ND		5	ug/kg						
Bromodichloromethane	ND		5	ug/kg						
Bromoform	ND		5	ug/kg						
Bromomethane	ND		5	ug/kg						
2-Butanone	ND		5	ug/kg						
tert-Butyl alcohol	ND		5	ug/kg						
sec-Butylbenzene	ND		5	ug/kg						
n-Butylbenzene	ND		5	ug/kg						
tert-Butylbenzene	ND		5	ug/kg						
Methyl t-butyl ether (MTBE)	ND		5	ug/kg						
Carbon Disulfide	ND		5	ug/kg						
Carbon Tetrachloride	ND		5	ug/kg						
Chlorobenzene	ND		5	ug/kg						
Chloroethane	ND		5	ug/kg						
Chloroform	ND		5	ug/kg						
Chloromethane	ND		5	ug/kg						
4-Chlorotoluene	ND		5	ug/kg						
2-Chlorotoluene	ND		5	ug/kg						
1,2-Dibromo-3-chloropropane (DBCP)	ND		5	ug/kg						
Dibromochloromethane	ND		5	ug/kg						
1,2-Dibromoethane (EDB)	ND		5	ug/kg						
Dibromomethane	ND		5	ug/kg						
1,2-Dichlorobenzene	ND		5	ug/kg						
1,3-Dichlorobenzene	ND		5	ug/kg						
1,4-Dichlorobenzene	ND		5	ug/kg						
1,1-Dichloroethane	ND		5	ug/kg						
1,2-Dichloroethane	ND		5	ug/kg						
trans-1,2-Dichloroethene	ND		5	ug/kg						
cis-1,2-Dichloroethene	ND		5	ug/kg						
1,1-Dichloroethene	ND		5	ug/kg						
1,2-Dichloropropane	ND		5	ug/kg						
2,2-Dichloropropane	ND		5	ug/kg						
cis-1,3-Dichloropropene	ND		5	ug/kg						
trans-1,3-Dichloropropene	ND		5	ug/kg						
1,1-Dichloropropene	ND		5	ug/kg						
1,3-Dichloropropene (cis + trans)	ND		5	ug/kg						
Diethyl ether	ND		5	ug/kg						
1,4-Dioxane	ND		100	ug/kg						
Ethylbenzene	ND		5	ug/kg						
Hexachlorobutadiene	ND		5	ug/kg						
2-Hexanone	ND		5	ug/kg						
Isopropylbenzene	ND		5	ug/kg						
p-Isopropyltoluene	ND		5	ug/kg						
Methylene Chloride	ND		5	ug/kg						
4-Methyl-2-pentanone	ND		5	ug/kg						
Naphthalene	ND		5	ug/kg						
n-Propylbenzene	ND		5	ug/kg						
Styrene	ND		5	ug/kg						
1,1,1,2-Tetrachloroethane	ND		5	ug/kg						
Tetrachloroethene	ND		5	ug/kg						
Tetrahydrofuran	ND		5	ug/kg						
Toluene	ND		5	ug/kg						
1,2,4-Trichlorobenzene	ND		5	ug/kg						
1,2,3-Trichlorobenzene	ND		5	ug/kg						

Volatile Organic Compounds (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0428 - EPA 5035 (Continued)										
Blank (B2G0428-BLK1)					Prepared & Analyzed: 07/08/22					
1,1,2-Trichloroethane	ND		5	ug/kg						
1,1,1-Trichloroethane	ND		5	ug/kg						
Trichloroethene	ND		5	ug/kg						
1,2,3-Trichloropropane	ND		5	ug/kg						
1,3,5-Trimethylbenzene	ND		5	ug/kg						
1,2,4-Trimethylbenzene	ND		5	ug/kg						
Vinyl Chloride	ND		5	ug/kg						
o-Xylene	ND		5	ug/kg						
m&p-Xylene	ND		10	ug/kg						
Total xylenes	ND		5	ug/kg						
1,1,2,2-Tetrachloroethane	ND		5	ug/kg						
tert-Amyl methyl ether	ND		5	ug/kg						
1,3-Dichloropropane	ND		5	ug/kg						
Ethyl tert-butyl ether	ND		5	ug/kg						
Diisopropyl ether	ND		5	ug/kg						
Trichlorofluoromethane	ND		5	ug/kg						
Dichlorodifluoromethane	ND		5	ug/kg						
Surrogate: 4-Bromofluorobenzene			*45.9*	ug/kg	*50.0*		*91.8*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4			*52.8*	ug/kg	*50.0*		*106*	*70-130*		
Surrogate: Toluene-d8			*48.4*	ug/kg	*50.0*		*96.8*	*70-130*		
LCS (B2G0428-BS1)					Prepared & Analyzed: 07/08/22					
Acetone	45			ug/kg	50.0		90.1	60-140		
Benzene	60			ug/kg	50.0		119	70-130		
Bromobenzene	59			ug/kg	50.0		117	70-130		
Bromochloromethane	58			ug/kg	50.0		115	70-130		
Bromodichloromethane	55			ug/kg	50.0		111	70-130		
Bromoform	58			ug/kg	50.0		116	70-130		
Bromomethane	55			ug/kg	50.0		111	60-140		
2-Butanone	45			ug/kg	50.0		90.2	60-140		
tert-Butyl alcohol	49			ug/kg	50.0		98.0	70-130		
sec-Butylbenzene	59			ug/kg	50.0		119	70-130		
n-Butylbenzene	65			ug/kg	50.0		129	70-130		
tert-Butylbenzene	61			ug/kg	50.0		123	70-130		
Methyl t-butyl ether (MTBE)	55			ug/kg	50.0		110	70-130		
Carbon Disulfide	56			ug/kg	50.0		111	50-150		
Carbon Tetrachloride	59			ug/kg	50.0		118	70-130		
Chlorobenzene	59			ug/kg	50.0		118	70-130		
Chloroethane	41			ug/kg	50.0		82.0	60-140		
Chloroform	55			ug/kg	50.0		110	70-130		
Chloromethane	37			ug/kg	50.0		74.5	60-140		
4-Chlorotoluene	56			ug/kg	50.0		112	70-130		
2-Chlorotoluene	58			ug/kg	50.0		115	70-130		
1,2-Dibromo-3-chloropropane (DBCP)	54			ug/kg	50.0		108	70-130		
Dibromochloromethane	57			ug/kg	50.0		114	70-130		
1,2-Dibromoethane (EDB)	59			ug/kg	50.0		117	70-130		
Dibromomethane	54			ug/kg	50.0		109	60-140		
1,2-Dichlorobenzene	60			ug/kg	50.0		120	70-130		
1,3-Dichlorobenzene	59			ug/kg	50.0		117	70-130		
1,4-Dichlorobenzene	60			ug/kg	50.0		120	70-130		
1,1-Dichloroethane	56			ug/kg	50.0		113	70-130		
1,2-Dichloroethane	46			ug/kg	50.0		91.3	70-130		
trans-1,2-Dichloroethene	59			ug/kg	50.0		117	70-130		
cis-1,2-Dichloroethene	58			ug/kg	50.0		115	70-130		
1,1-Dichloroethene	62			ug/kg	50.0		125	70-130		
1,2-Dichloropropane	55			ug/kg	50.0		111	70-130		
2,2-Dichloropropane	59			ug/kg	50.0		117	70-130		

Quality Control
(Continued)

Volatile Organic Compounds (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0428 - EPA 5035 (Continued)										
LCS (B2G0428-BS1)					Prepared & Analyzed: 07/08/22					
cis-1,3-Dichloropropene	57			ug/kg	50.0		113	70-130		
trans-1,3-Dichloropropene	55			ug/kg	50.0		109	70-130		
1,1-Dichloropropene	59			ug/kg	50.0		118	70-130		
Diethyl ether	40			ug/kg	50.0		80.9	60-140		
1,4-Dioxane	272			ug/kg	250		109	0-200		
Ethylbenzene	62			ug/kg	50.0		124	70-130		
Hexachlorobutadiene	74			ug/kg	50.0		148	70-130		
2-Hexanone	44			ug/kg	50.0		88.0	70-130		
Isopropylbenzene	56			ug/kg	50.0		112	70-130		
p-Isopropyltoluene	59			ug/kg	50.0		118	70-130		
Methylene Chloride	53			ug/kg	50.0		107	60-140		
4-Methyl-2-pentanone	45			ug/kg	50.0		90.3	70-130		
Naphthalene	51			ug/kg	50.0		102	70-130		
n-Propylbenzene	59			ug/kg	50.0		118	70-130		
Styrene	58			ug/kg	50.0		117	70-130		
1,1,1,2-Tetrachloroethane	59			ug/kg	50.0		118	70-130		
Tetrachloroethene	62			ug/kg	50.0		124	70-130		
Tetrahydrofuran	50			ug/kg	50.0		100	50-150		
Toluene	56			ug/kg	50.0		112	70-130		
1,2,4-Trichlorobenzene	58			ug/kg	50.0		117	70-130		
1,2,3-Trichlorobenzene	52			ug/kg	50.0		105	70-130		
1,1,2-Trichloroethane	53			ug/kg	50.0		105	70-130		
1,1,1-Trichloroethane	59			ug/kg	50.0		119	70-130		
Trichloroethene	58			ug/kg	50.0		117	70-130		
1,2,3-Trichloropropane	53			ug/kg	50.0		106	70-130		
1,3,5-Trimethylbenzene	59			ug/kg	50.0		119	70-130		
1,2,4-Trimethylbenzene	60			ug/kg	50.0		120	70-130		
Vinyl Chloride	45			ug/kg	50.0		89.4	60-140		
o-Xylene	59			ug/kg	50.0		119	70-130		
m&p-Xylene	116			ug/kg	100		116	70-130		
1,1,2,2-Tetrachloroethane	54			ug/kg	50.0		109	70-130		
tert-Amyl methyl ether	55			ug/kg	50.0		110	70-130		
1,3-Dichloropropane	55			ug/kg	50.0		110	70-130		
Ethyl tert-butyl ether	54			ug/kg	50.0		109	70-130		
Trichlorofluoromethane	54			ug/kg	50.0		107	70-130		
Dichlorodifluoromethane	58			ug/kg	50.0		116	60-140		
Surrogate: 4-Bromofluorobenzene			*46.9*	ug/kg	*50.0*		*93.7*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4			*48.7*	ug/kg	*50.0*		*97.4*	*70-130*		
Surrogate: Toluene-d8			*48.8*	ug/kg	*50.0*		*97.5*	*70-130*		

Volatile Organic Compounds (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0428 - EPA 5035 (Continued)										
LCS Dup (B2G0428-BSD1)					Prepared & Analyzed: 07/08/22					
Acetone	43			ug/kg	50.0		86.1	60-140	4.56	30
Benzene	59			ug/kg	50.0		119	70-130	0.454	20
Bromobenzene	59			ug/kg	50.0		117	70-130	0.205	20
Bromochloromethane	60			ug/kg	50.0		119	70-130	3.36	20
Bromodichloromethane	56			ug/kg	50.0		112	70-130	0.719	20
Bromoform	58			ug/kg	50.0		117	70-130	0.309	20
Bromomethane	54			ug/kg	50.0		109	60-140	1.87	30
2-Butanone	44			ug/kg	50.0		87.3	60-140	3.20	30
tert-Butyl alcohol	46			ug/kg	50.0		92.0	70-130	6.33	20
sec-Butylbenzene	60			ug/kg	50.0		120	70-130	0.789	20
n-Butylbenzene	63			ug/kg	50.0		127	70-130	2.27	20
tert-Butylbenzene	61			ug/kg	50.0		121	70-130	0.934	20
Methyl t-butyl ether (MTBE)	54			ug/kg	50.0		109	70-130	1.17	20
Carbon Disulfide	60			ug/kg	50.0		120	50-150	7.61	40
Carbon Tetrachloride	57			ug/kg	50.0		113	70-130	3.98	20
Chlorobenzene	58			ug/kg	50.0		117	70-130	0.716	20
Chloroethane	41			ug/kg	50.0		82.9	60-140	1.09	30
Chloroform	54			ug/kg	50.0		108	70-130	1.61	20
Chloromethane	35			ug/kg	50.0		70.9	60-140	4.95	30
4-Chlorotoluene	55			ug/kg	50.0		109	70-130	2.12	20
2-Chlorotoluene	57			ug/kg	50.0		113	70-130	1.93	20
1,2-Dibromo-3-chloropropane (DBCP)	52			ug/kg	50.0		104	70-130	3.40	20
Dibromochloromethane	59			ug/kg	50.0		117	70-130	2.87	20
1,2-Dibromoethane (EDB)	58			ug/kg	50.0		117	70-130	0.427	20
Dibromomethane	55			ug/kg	50.0		109	60-140	0.422	30
1,2-Dichlorobenzene	58			ug/kg	50.0		116	70-130	2.81	20
1,3-Dichlorobenzene	58			ug/kg	50.0		117	70-130	0.0855	20
1,4-Dichlorobenzene	60			ug/kg	50.0		120	70-130	0.550	20
1,1-Dichloroethane	55			ug/kg	50.0		110	70-130	2.56	20
1,2-Dichloroethane	46			ug/kg	50.0		92.2	70-130	0.959	20
trans-1,2-Dichloroethene	56			ug/kg	50.0		111	70-130	5.59	20
cis-1,2-Dichloroethene	60			ug/kg	50.0		120	70-130	3.84	20
1,1-Dichloroethene	58			ug/kg	50.0		116	70-130	7.60	20
1,2-Dichloropropane	56			ug/kg	50.0		111	70-130	0.234	20
2,2-Dichloropropane	60			ug/kg	50.0		120	70-130	1.86	20
cis-1,3-Dichloropropene	58			ug/kg	50.0		115	70-130	2.12	20
trans-1,3-Dichloropropene	55			ug/kg	50.0		111	70-130	1.13	20
1,1-Dichloropropene	59			ug/kg	50.0		119	70-130	1.01	20
Diethyl ether	46			ug/kg	50.0		91.4	60-140	12.3	30
1,4-Dioxane	268			ug/kg	250		107	0-200	1.60	50
Ethylbenzene	60			ug/kg	50.0		120	70-130	3.17	20
Hexachlorobutadiene	73			ug/kg	50.0		146	70-130	1.22	20
2-Hexanone	43			ug/kg	50.0		85.6	70-130	2.81	20
Isopropylbenzene	57			ug/kg	50.0		114	70-130	2.02	20
p-Isopropyltoluene	58			ug/kg	50.0		116	70-130	1.38	20
Methylene Chloride	55			ug/kg	50.0		110	60-140	2.99	30
4-Methyl-2-pentanone	43			ug/kg	50.0		86.8	70-130	3.97	20
Naphthalene	50			ug/kg	50.0		99.7	70-130	2.22	20
n-Propylbenzene	58			ug/kg	50.0		117	70-130	1.47	20
Styrene	58			ug/kg	50.0		116	70-130	0.775	20
1,1,1,2-Tetrachloroethane	58			ug/kg	50.0		116	70-130	1.45	20
Tetrachloroethene	61			ug/kg	50.0		122	70-130	1.32	20
Tetrahydrofuran	49			ug/kg	50.0		98.8	50-150	1.49	40
Toluene	59			ug/kg	50.0		119	70-130	5.65	20
1,2,4-Trichlorobenzene	57			ug/kg	50.0		115	70-130	1.92	20
1,2,3-Trichlorobenzene	53			ug/kg	50.0		105	70-130	0.324	20
1,1,2-Trichloroethane	58			ug/kg	50.0		117	70-130	10.3	20

Quality Control
(Continued)

Volatile Organic Compounds (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0428 - EPA 5035 (Continued)										
LCS Dup (B2G0428-BSD1)					Prepared & Analyzed: 07/08/22					
1,1,1-Trichloroethane	59			ug/kg	50.0		119	70-130	0.370	20
Trichloroethene	58			ug/kg	50.0		116	70-130	0.791	20
1,2,3-Trichloropropane	52			ug/kg	50.0		104	70-130	2.38	20
1,3,5-Trimethylbenzene	58			ug/kg	50.0		116	70-130	2.22	20
1,2,4-Trimethylbenzene	59			ug/kg	50.0		118	70-130	1.20	20
Vinyl Chloride	45			ug/kg	50.0		89.6	60-140	0.179	30
o-Xylene	59			ug/kg	50.0		118	70-130	0.472	20
m&p-Xylene	118			ug/kg	100		118	70-130	1.06	20
1,1,2,2-Tetrachloroethane	53			ug/kg	50.0		106	70-130	2.46	20
tert-Amyl methyl ether	56			ug/kg	50.0		112	70-130	2.16	20
1,3-Dichloropropane	55			ug/kg	50.0		110	70-130	0.0908	20
Ethyl tert-butyl ether	55			ug/kg	50.0		109	70-130	0.239	20
Trichlorofluoromethane	53			ug/kg	50.0		106	70-130	1.30	20
Dichlorodifluoromethane	54			ug/kg	50.0		109	60-140	6.10	30
Surrogate: 4-Bromofluorobenzene			*46.8*	ug/kg	*50.0*		*93.5*	*70-130*		
Surrogate: 1,2-Dichloroethane-d4			*49.1*	ug/kg	*50.0*		*98.2*	*70-130*		
Surrogate: Toluene-d8			*49.3*	ug/kg	*50.0*		*98.6*	*70-130*		

Semivolatile organic compounds

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0003 - EPA 3546										
Blank (B2G0003-BLK1)					Prepared: 07/01/22 Analyzed: 07/05/22					
1,2,4-Trichlorobenzene	ND		130	ug/kg						
1,2-Dichlorobenzene	ND		130	ug/kg						
1,3-Dichlorobenzene	ND		130	ug/kg						
1,4-Dichlorobenzene	ND		130	ug/kg						
Phenol	ND		130	ug/kg						
2,4,5-Trichlorophenol	ND		130	ug/kg						
2,4,6-Trichlorophenol	ND		130	ug/kg						
2,4-Dichlorophenol	ND		130	ug/kg						
2,4-Dimethylphenol	ND		330	ug/kg						
2,4-Dinitrophenol	ND		330	ug/kg						
2,4-Dinitrotoluene	ND		130	ug/kg						
2,6-Dinitrotoluene	ND		130	ug/kg						
2-Chloronaphthalene	ND		130	ug/kg						
2-Chlorophenol	ND		130	ug/kg						
2-Methylnaphthalene	ND		130	ug/kg						
Nitrobenzene	ND		130	ug/kg						
2-Methylphenol	ND		130	ug/kg						
2-Nitroaniline	ND		130	ug/kg						
2-Nitrophenol	ND		330	ug/kg						
3,3'-Dichlorobenzidine	ND		330	ug/kg						
3-Nitroaniline	ND		130	ug/kg						
4,6-Dinitro-2-methylphenol	ND		330	ug/kg						
4-Bromophenyl phenyl ether	ND		130	ug/kg						
4-Chloro-3-methylphenol	ND		130	ug/kg						
4-Chloroaniline	ND		130	ug/kg						
4-Chlorophenyl phenyl ether	ND		130	ug/kg						
4-Nitroaniline	ND		130	ug/kg						
4-Nitrophenol	ND		330	ug/kg						
Acenaphthene	ND		130	ug/kg						
Acenaphthylene	ND		130	ug/kg						
Aniline	ND		130	ug/kg						
Anthracene	ND		130	ug/kg						
Benzo(a)anthracene	ND		130	ug/kg						
Benzo(a)pyrene	ND		130	ug/kg						
Benzo(b)fluoranthene	ND		130	ug/kg						
Benzo(g,h,i)perylene	ND		130	ug/kg						
Benzo(k)fluoranthene	ND		130	ug/kg						
Benzoic acid	ND		1000	ug/kg						
Biphenyl	ND		40	ug/kg						
Bis(2-chloroethoxy)methane	ND		130	ug/kg						
Bis(2-chloroethyl)ether	ND		130	ug/kg						
Bis(2-chloroisopropyl)ether	ND		130	ug/kg						
Bis(2-ethylhexyl)phthalate	ND		400	ug/kg						
Butyl benzyl phthalate	ND		130	ug/kg						
Chrysene	ND		130	ug/kg						
Di(n)octyl phthalate	ND		200	ug/kg						
Dibenz(a,h)anthracene	ND		130	ug/kg						
Dibenzofuran	ND		130	ug/kg						
Diethyl phthalate	ND		130	ug/kg						
Dimethyl phthalate	ND		330	ug/kg						
Di-n-butylphthalate	ND		200	ug/kg						
Fluoranthene	ND		130	ug/kg						
Fluorene	ND		130	ug/kg						
Hexachlorobenzene	ND		130	ug/kg						
Hexachlorobutadiene	ND		130	ug/kg						
Hexachlorocyclopentadiene	ND		330	ug/kg						
Hexachloroethane	ND		130	ug/kg						

Semivolatile organic compounds (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0003 - EPA 3546 (Continued)										
Blank (B2G0003-BLK1)					Prepared: 07/01/22 Analyzed: 07/05/22					
Indeno(1,2,3-cd)pyrene	ND		130	ug/kg						
Isophorone	ND		130	ug/kg						
Naphthalene	ND		130	ug/kg						
N-Nitrosodimethylamine	ND		130	ug/kg						
N-Nitrosodi-n-propylamine	ND		130	ug/kg						
N-Nitrosodiphenylamine	ND		130	ug/kg						
Pentachlorophenol	ND		330	ug/kg						
Phenanthrene	ND		130	ug/kg						
Pyrene	ND		130	ug/kg						
m&p-Cresol	ND		260	ug/kg						
Pyridine	ND		130	ug/kg						
Total Dichlorobenzene	ND		130	ug/kg						
Surrogate: Nitrobenzene-d5			*1850*	ug/kg	*3330*		*55.4*	*30-126*		
Surrogate: p-Terphenyl-d14			*2640*	ug/kg	*3330*		*79.2*	*47-130*		
Surrogate: 2-Fluorobiphenyl			*2250*	ug/kg	*3330*		*67.6*	*34-130*		
Surrogate: Phenol-d6			*2210*	ug/kg	*3330*		*66.2*	*30-130*		
Surrogate: 2,4,6-Tribromophenol			*2360*	ug/kg	*3330*		*70.7*	*30-130*		
Surrogate: 2-Fluorophenol			*2360*	ug/kg	*3330*		*70.8*	*30-130*		
LCS (B2G0003-BS1)					Prepared: 07/01/22 Analyzed: 07/05/22					
1,2,4-Trichlorobenzene	2510		130	ug/kg	3330		75.4	40-130		
1,2-Dichlorobenzene	2400		130	ug/kg	3330		72.0	40-130		
1,3-Dichlorobenzene	2330		130	ug/kg	3330		69.8	40-130		
1,4-Dichlorobenzene	2320		130	ug/kg	3330		69.7	40-130		
Phenol	2300		130	ug/kg	3330		69.1	40-130		
2,4,5-Trichlorophenol	2280		130	ug/kg	3330		68.3	40-130		
2,4,6-Trichlorophenol	2250		130	ug/kg	3330		67.5	40-130		
2,4-Dichlorophenol	2320		130	ug/kg	3330		69.6	40-130		
2,4-Dimethylphenol	2440		330	ug/kg	3330		73.3	40-130		
2,4-Dinitrotoluene	2530		130	ug/kg	3330		75.8	40-130		
2,6-Dinitrotoluene	2540		130	ug/kg	3330		76.2	40-130		
2-Chloronaphthalene	2430		130	ug/kg	3330		72.9	40-130		
2-Chlorophenol	2370		130	ug/kg	3330		71.1	40-130		
2-Methylnaphthalene	2330		130	ug/kg	3330		69.8	40-130		
Nitrobenzene	2050		130	ug/kg	3330		61.6	40-130		
2-Methylphenol	2180		130	ug/kg	3330		65.4	40-130		
2-Nitroaniline	1920		130	ug/kg	3330		57.6	40-130		
2-Nitrophenol	2190		330	ug/kg	3330		65.6	40-130		
3-Nitroaniline	2270		130	ug/kg	3330		68.1	40-130		
4,6-Dinitro-2-methylphenol	1150		330	ug/kg	3330		34.4	40-130		
4-Bromophenyl phenyl ether	2600		130	ug/kg	3330		78.1	40-130		
4-Chloro-3-methylphenol	2150		130	ug/kg	3330		64.5	40-130		
4-Chlorophenyl phenyl ether	2620		130	ug/kg	3330		78.7	40-130		
4-Nitroaniline	2300		130	ug/kg	3330		69.1	40-130		
4-Nitrophenol	1900		330	ug/kg	3330		57.0	40-130		
Acenaphthene	2400		130	ug/kg	3330		72.0	40-130		
Acenaphthylene	2300		130	ug/kg	3330		69.1	40-130		
Anthracene	2520		130	ug/kg	3330		75.5	40-130		
Benzo(a)anthracene	2510		130	ug/kg	3330		75.3	40-130		
Benzo(a)pyrene	2560		130	ug/kg	3330		76.9	40-130		
Benzo(b)fluoranthene	2470		130	ug/kg	3330		74.2	40-130		
Benzo(g,h,i)perylene	2620		130	ug/kg	3330		78.7	40-130		
Benzo(k)fluoranthene	2720		130	ug/kg	3330		81.5	40-130		
Biphenyl	561		40	ug/kg	833		67.3	40-130		
Bis(2-chloroethoxy)methane	2380		130	ug/kg	3330		71.5	40-130		
Bis(2-chloroethyl)ether	2370		130	ug/kg	3330		71.1	40-130		
Bis(2-chloroisopropyl)ether	2450		130	ug/kg	3330		73.4	40-130		

Quality Control
(Continued)

Semivolatile organic compounds (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0003 - EPA 3546 (Continued)										
LCS (B2G0003-BS1)					Prepared: 07/01/22 Analyzed: 07/05/22					
Bis(2-ethylhexyl)phthalate	2360		400	ug/kg	3330		70.8	40-130		
Butyl benzyl phthalate	2430		130	ug/kg	3330		72.9	40-130		
Chrysene	2600		130	ug/kg	3330		77.9	40-130		
Di(n)octyl phthalate	2410		200	ug/kg	3330		72.3	40-130		
Dibenz(a,h)anthracene	2470		130	ug/kg	3330		74.1	40-130		
Dibenzofuran	2560		130	ug/kg	3330		76.7	40-130		
Diethyl phthalate	2340		130	ug/kg	3330		70.1	40-130		
Dimethyl phthalate	2410		330	ug/kg	3330		72.3	40-130		
Di-n-butylphthalate	2550		200	ug/kg	3330		76.5	40-130		
Fluoranthene	2660		130	ug/kg	3330		79.8	40-130		
Fluorene	2540		130	ug/kg	3330		76.3	40-130		
Hexachlorobenzene	2720		130	ug/kg	3330		81.5	40-130		
Hexachlorobutadiene	2650		130	ug/kg	3330		79.5	40-130		
Hexachlorocyclopentadiene	2430		330	ug/kg	3330		73.0	40-130		
Hexachloroethane	2160		130	ug/kg	3330		64.9	40-130		
Indeno(1,2,3-cd)pyrene	2480		130	ug/kg	3330		74.4	40-130		
Isophorone	2290		130	ug/kg	3330		68.8	40-130		
Naphthalene	2470		130	ug/kg	3330		74.2	40-130		
N-Nitrosodimethylamine	1740		130	ug/kg	3330		52.2	40-130		
N-Nitrosodi-n-propylamine	2070		130	ug/kg	3330		62.1	40-130		
N-Nitrosodiphenylamine	3120		130	ug/kg	3330		93.6	40-130		
Pentachlorophenol	1490		330	ug/kg	3330		44.8	40-130		
Phenanthrene	2590		130	ug/kg	3330		77.7	40-130		
Pyrene	2730		130	ug/kg	3330		81.8	40-130		
m&p-Cresol	2230		260	ug/kg	3330		66.8	40-130		
Surrogate: Nitrobenzene-d5			*2080*	ug/kg	*3330*		*62.4*	*30-126*		
Surrogate: p-Terphenyl-d14			*2990*	ug/kg	*3330*		*89.7*	*47-130*		
Surrogate: 2-Fluorobiphenyl			*2610*	ug/kg	*3330*		*78.4*	*34-130*		
Surrogate: Phenol-d6			*2690*	ug/kg	*3330*		*80.6*	*30-130*		
Surrogate: 2,4,6-Tribromophenol			*3030*	ug/kg	*3330*		*90.8*	*30-130*		
Surrogate: 2-Fluorophenol			*2700*	ug/kg	*3330*		*81.1*	*30-130*		

Semivolatile organic compounds (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0003 - EPA 3546 (Continued)										
LCS Dup (B2G0003-BSD1)					Prepared: 07/01/22 Analyzed: 07/06/22					
1,2,4-Trichlorobenzene	2570		130	ug/kg	3330		77.0	40-130	2.15	30
1,2-Dichlorobenzene	2430		130	ug/kg	3330		72.8	40-130	1.05	30
1,3-Dichlorobenzene	2420		130	ug/kg	3330		72.7	40-130	4.10	30
1,4-Dichlorobenzene	2390		130	ug/kg	3330		71.6	40-130	2.58	30
Phenol	2270		130	ug/kg	3330		68.2	40-130	1.25	30
2,4,5-Trichlorophenol	2600		130	ug/kg	3330		78.0	40-130	13.2	30
2,4,6-Trichlorophenol	2520		130	ug/kg	3330		75.5	40-130	11.1	30
2,4-Dichlorophenol	2550		130	ug/kg	3330		76.6	40-130	9.55	30
2,4-Dimethylphenol	2870		330	ug/kg	3330		86.1	40-130	16.0	30
2,4-Dinitrotoluene	2790		130	ug/kg	3330		83.8	40-130	10.1	30
2,6-Dinitrotoluene	2810		130	ug/kg	3330		84.4	40-130	10.2	30
2-Chloronaphthalene	2540		130	ug/kg	3330		76.1	40-130	4.29	30
2-Chlorophenol	2480		130	ug/kg	3330		74.3	40-130	4.38	30
2-Methylnaphthalene	2450		130	ug/kg	3330		73.5	40-130	5.19	30
Nitrobenzene	2090		130	ug/kg	3330		62.6	40-130	1.61	30
2-Methylphenol	2330		130	ug/kg	3330		70.0	40-130	6.79	30
2-Nitroaniline	1990		130	ug/kg	3330		59.7	40-130	3.62	30
2-Nitrophenol	2460		330	ug/kg	3330		73.9	40-130	12.0	30
3-Nitroaniline	2620		130	ug/kg	3330		78.6	40-130	14.4	30
4,6-Dinitro-2-methylphenol	1780		330	ug/kg	3330		53.5	40-130	43.5	30
4-Bromophenyl phenyl ether	3020		130	ug/kg	3330		90.5	40-130	14.8	30
4-Chloro-3-methylphenol	2360		130	ug/kg	3330		70.7	40-130	9.15	30
4-Chlorophenyl phenyl ether	2800		130	ug/kg	3330		83.9	40-130	6.42	30
4-Nitroaniline	2460		130	ug/kg	3330		73.8	40-130	6.63	30
4-Nitrophenol	2080		330	ug/kg	3330		62.5	40-130	9.24	30
Acenaphthene	2560		130	ug/kg	3330		76.8	40-130	6.53	30
Acenaphthylene	2440		130	ug/kg	3330		73.1	40-130	5.62	30
Anthracene	2700		130	ug/kg	3330		80.9	40-130	6.93	30
Benzo(a)anthracene	2780		130	ug/kg	3330		83.4	40-130	10.2	30
Benzo(a)pyrene	2890		130	ug/kg	3330		86.6	40-130	11.9	30
Benzo(b)fluoranthene	2810		130	ug/kg	3330		84.4	40-130	12.8	30
Benzo(g,h,i)perylene	2980		130	ug/kg	3330		89.3	40-130	12.6	30
Benzo(k)fluoranthene	2980		130	ug/kg	3330		89.5	40-130	9.35	30
Biphenyl	575		40	ug/kg	833		69.0	40-130	2.47	30
Bis(2-chloroethoxy)methane	2490		130	ug/kg	3330		74.8	40-130	4.48	30
Bis(2-chloroethyl)ether	2390		130	ug/kg	3330		71.6	40-130	0.701	30
Bis(2-chloroisopropyl)ether	2610		130	ug/kg	3330		78.2	40-130	6.39	30
Bis(2-ethylhexyl)phthalate	3120		400	ug/kg	3330		93.6	40-130	27.7	30
Butyl benzyl phthalate	3140		130	ug/kg	3330		94.2	40-130	25.5	30
Chrysene	2800		130	ug/kg	3330		84.1	40-130	7.68	30
Di(n)octyl phthalate	3300		200	ug/kg	3330		99.1	40-130	31.3	30
Dibenz(a,h)anthracene	2920		130	ug/kg	3330		87.7	40-130	16.8	30
Dibenzofuran	2720		130	ug/kg	3330		81.7	40-130	6.31	30
Diethyl phthalate	2550		130	ug/kg	3330		76.6	40-130	8.81	30
Dimethyl phthalate	2590		330	ug/kg	3330		77.7	40-130	7.09	30
Di-n-butylphthalate	2810		200	ug/kg	3330		84.4	40-130	9.87	30
Fluoranthene	2750		130	ug/kg	3330		82.6	40-130	3.45	30
Fluorene	2720		130	ug/kg	3330		81.6	40-130	6.69	30
Hexachlorobenzene	3080		130	ug/kg	3330		92.4	40-130	12.5	30
Hexachlorobutadiene	2680		130	ug/kg	3330		80.3	40-130	1.05	30
Hexachlorocyclopentadiene	2300		330	ug/kg	3330		68.9	40-130	5.83	30
Hexachloroethane	2120		130	ug/kg	3330		63.7	40-130	1.93	30
Indeno(1,2,3-cd)pyrene	2840		130	ug/kg	3330		85.3	40-130	13.7	30
Isophorone	2380		130	ug/kg	3330		71.4	40-130	3.68	30
Naphthalene	2580		130	ug/kg	3330		77.4	40-130	4.22	30
N-Nitrosodimethylamine	1690		130	ug/kg	3330		50.7	40-130	2.99	30
N-Nitrosodi-n-propylamine	2130		130	ug/kg	3330		63.9	40-130	2.86	30

Quality Control
(Continued)

Semivolatile organic compounds (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0003 - EPA 3546 (Continued)										
LCS Dup (B2G0003-BSD1)					Prepared: 07/01/22 Analyzed: 07/06/22					
N-Nitrosodiphenylamine	3620		130	ug/kg	3330		109	40-130	14.8	30
Pentachlorophenol	2240		330	ug/kg	3330		67.2	40-130	39.9	30
Phenanthrene	2810		130	ug/kg	3330		84.4	40-130	8.26	30
Pyrene	3330		130	ug/kg	3330		99.8	40-130	19.8	30
m&p-Cresol	2360		260	ug/kg	3330		70.7	40-130	5.64	30
Surrogate: Nitrobenzene-d5			*1990*	ug/kg	*3330*		*59.6*	*30-126*		
Surrogate: p-Terphenyl-d14			*3440*	ug/kg	*3330*		*103*	*47-130*		
Surrogate: 2-Fluorobiphenyl			*2500*	ug/kg	*3330*		*74.9*	*34-130*		
Surrogate: Phenol-d6			*2560*	ug/kg	*3330*		*76.8*	*30-130*		
Surrogate: 2,4,6-Tribromophenol			*3220*	ug/kg	*3330*		*96.5*	*30-130*		
Surrogate: 2-Fluorophenol			*2750*	ug/kg	*3330*		*82.4*	*30-130*		

Pesticides

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0064 - EPA 3546										
Blank (B2G0064-BLK1)					Prepared: 07/05/22 Analyzed: 07/06/22					
alpha-BHC	ND		1.67	ug/kg						
gamma-BHC (Lindane)	ND		1.67	ug/kg						
beta-BHC	ND		1.67	ug/kg						
delta-BHC	ND		1.67	ug/kg						
Heptachlor	ND		1.67	ug/kg						
Aldrin	ND		1.67	ug/kg						
Heptachlor epoxide	ND		1.67	ug/kg						
gamma-Chlordane	ND		1.67	ug/kg						
alpha-Chlordane	ND		1.67	ug/kg						
Chlordane	ND		16.7	ug/kg						
4,4'-DDE	ND		3.33	ug/kg						
Endosulfan I	ND		1.67	ug/kg						
Dieldrin	ND		1.67	ug/kg						
Endrin	ND		1.67	ug/kg						
4,4'-DDD	ND		3.33	ug/kg						
Endrin aldehyde	ND		1.67	ug/kg						
Endosulfan II	ND		1.67	ug/kg						
4,4'-DDT	ND		3.33	ug/kg						
Methoxychlor	ND		3.33	ug/kg						
Endosulfan sulfate	ND		1.67	ug/kg						
Endrin Ketone	ND		1.67	ug/kg						
Toxaphene	ND		16.7	ug/kg						
Surrogate: 2,4,5,6-Tetrachloro-m-xylene (TCMX)			*8.85*	ug/kg	*13.3*		*66.4*	*30-106*		
Surrogate: Decachlorobiphenyl (DCBP)			*7.46*	ug/kg	*13.3*		*56.0*	*32-110*		
LCS (B2G0064-BS1)					Prepared: 07/05/22 Analyzed: 07/06/22					
alpha-BHC	10.8		1.67	ug/kg	13.3		80.8	50-132		
gamma-BHC (Lindane)	11.0		1.67	ug/kg	13.3		82.2	54-128		
beta-BHC	10.6		1.67	ug/kg	13.3		79.7	69-126		
delta-BHC	11.6		1.67	ug/kg	13.3		87.0	40-126		
Heptachlor	10.8		1.67	ug/kg	13.3		80.6	55-125		
Aldrin	10.4		1.67	ug/kg	13.3		78.0	45-135		
Heptachlor epoxide	10.7		1.67	ug/kg	13.3		80.3	54-127		
gamma-Chlordane	10.7		1.67	ug/kg	13.3		80.4	55-124		
alpha-Chlordane	10.7		1.67	ug/kg	13.3		80.5	54-126		
4,4'-DDE	10.9		3.33	ug/kg	13.3		81.5	63-130		
Endosulfan I	10.1		1.67	ug/kg	13.3		75.6	53-128		
Dieldrin	11.0		1.67	ug/kg	13.3		82.3	57-124		
Endrin	11.6		1.67	ug/kg	13.3		87.2	40-140		
4,4'-DDD	11.4		3.33	ug/kg	13.3		85.9	74-140		
Endosulfan II	11.8		1.67	ug/kg	13.3		88.5	45-125		
Endrin aldehyde	11.6		1.67	ug/kg	13.3		87.1	40-140		
4,4'-DDT	13.6		3.33	ug/kg	13.3		102	60-140		
Methoxychlor	12.5		3.33	ug/kg	13.3		94.1	71-140		
Endosulfan sulfate	11.4		1.67	ug/kg	13.3		85.6	43-131		
Endrin Ketone	12.5		1.67	ug/kg	13.3		93.4	56-131		
Surrogate: 2,4,5,6-Tetrachloro-m-xylene (TCMX)			*7.71*	ug/kg	*13.3*		*57.8*	*38-106*		
Surrogate: Decachlorobiphenyl (DCBP)			*8.42*	ug/kg	*13.3*		*63.1*	*32-110*		

Quality Control
(Continued)

Pesticides (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0064 - EPA 3546 (Continued)										
LCS Dup (B2G0064-BSD1)					Prepared: 07/05/22 Analyzed: 07/06/22					
alpha-BHC	11.2		1.67	ug/kg	13.3		84.0	50-132	3.82	30
gamma-BHC (Lindane)	11.3		1.67	ug/kg	13.3		84.8	54-128	3.20	30
beta-BHC	10.9		1.67	ug/kg	13.3		82.1	69-126	2.97	30
delta-BHC	11.8		1.67	ug/kg	13.3		88.4	40-126	1.57	30
Heptachlor	11.2		1.67	ug/kg	13.3		83.8	55-125	3.83	30
Aldrin	10.5		1.67	ug/kg	13.3		78.9	45-135	1.15	30
Heptachlor epoxide	11.0		1.67	ug/kg	13.3		82.6	54-127	2.89	30
gamma-Chlordane	11.1		1.67	ug/kg	13.3		83.3	55-124	3.57	30
alpha-Chlordane	11.1		1.67	ug/kg	13.3		83.0	54-126	3.03	30
4,4'-DDE	11.2		3.33	ug/kg	13.3		84.2	63-130	3.32	30
Endosulfan I	10.4		1.67	ug/kg	13.3		78.2	53-128	3.38	30
Dieldrin	11.2		1.67	ug/kg	13.3		84.4	57-124	2.55	30
Endrin	12.0		1.67	ug/kg	13.3		90.3	40-140	3.46	30
4,4'-DDD	11.6		3.33	ug/kg	13.3		87.1	74-140	1.36	30
Endosulfan II	12.4		1.67	ug/kg	13.3		92.7	45-125	4.69	30
Endrin aldehyde	12.3		1.67	ug/kg	13.3		92.3	40-140	5.83	30
4,4'-DDT	13.5		3.33	ug/kg	13.3		101	60-140	0.640	30
Methoxychlor	13.4		3.33	ug/kg	13.3		101	71-140	6.68	30
Endosulfan sulfate	11.8		1.67	ug/kg	13.3		88.8	43-131	3.61	30
Endrin Ketone	12.8		1.67	ug/kg	13.3		95.8	56-131	2.51	30
Surrogate: 2,4,5,6-Tetrachloro-m-xylene (TCMX)			*7.76*	ug/kg	*13.3*		*58.2*	*38-106*		
Surrogate: Decachlorobiphenyl (DCBP)			*8.54*	ug/kg	*13.3*		*64.1*	*32-110*		

Quality Control
(Continued)

Polychlorinated Biphenyls (PCBs)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0060 - EPA 3546										
Blank (B2G0060-BLK1)					Prepared: 07/05/22 Analyzed: 07/06/22					
Aroclor-1016	ND		66	ug/kg						
Aroclor-1221	ND		66	ug/kg						
Aroclor-1232	ND		66	ug/kg						
Aroclor-1242	ND		66	ug/kg						
Aroclor-1248	ND		66	ug/kg						
Aroclor-1254	ND		66	ug/kg						
Aroclor-1260	ND		66	ug/kg						
Aroclor-1262	ND		66	ug/kg						
Aroclor-1268	ND		66	ug/kg						
PCBs (Total)	ND		66	ug/kg						
Surrogate: 2,4,5,6-Tetrachloro-m-xylene (TCMX)			*12.3*	ug/kg	*13.3*		*92.0*	*36.2-130*		
Surrogate: Decachlorobiphenyl (DCBP)			*13.3*	ug/kg	*13.3*		*99.7*	*43.3-130*		
LCS (B2G0060-BS1)					Prepared: 07/05/22 Analyzed: 07/06/22					
Aroclor-1016	168		66	ug/kg	167		101	58.2-125		
Aroclor-1260	205		66	ug/kg	167		123	65.5-130		
Surrogate: 2,4,5,6-Tetrachloro-m-xylene (TCMX)			*14.1*	ug/kg	*13.3*		*106*	*36.2-130*		
Surrogate: Decachlorobiphenyl (DCBP)			*15.5*	ug/kg	*13.3*		*117*	*43.3-130*		
LCS Dup (B2G0060-BSD1)					Prepared: 07/05/22 Analyzed: 07/06/22					
Aroclor-1016	167		66	ug/kg	167		100	58.2-125	0.819	20
Aroclor-1260	192		66	ug/kg	167		115	65.5-130	6.80	20
Surrogate: 2,4,5,6-Tetrachloro-m-xylene (TCMX)			*13.3*	ug/kg	*13.3*		*99.4*	*36.2-130*		
Surrogate: Decachlorobiphenyl (DCBP)			*14.2*	ug/kg	*13.3*		*107*	*43.3-130*		

Quality Control
(Continued)

Herbicides

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2F1695 - EPA 8151A										
Blank (B2F1695-BLK1)					Prepared: 06/30/22 Analyzed: 07/05/22					
Dalapon	ND		100	ug/kg						
Dicamba	ND		50	ug/kg						
Dichloroprop	ND		50	ug/kg						
2,4-D	ND		50	ug/kg						
2,4,5-TP (Silvex)	ND		50	ug/kg						
2,4,5-T	ND		50	ug/kg						
2,4-DB	ND		50	ug/kg						
Dinoseb	ND		100	ug/kg						
Surrogate: 2,4-Dichlorophenyl acetic acid			*160*	ug/kg	*250*		*64.0*	*41-145*		
LCS (B2F1695-BS1)					Prepared: 06/30/22 Analyzed: 07/05/22					
Dalapon	208		100	ug/kg	250		83.2	40-140		
Dicamba	213		50	ug/kg	250		85.0	40-140		
Dichloroprop	235		50	ug/kg	250		94.0	40-140		
2,4-D	216		50	ug/kg	250		86.3	40-140		
2,4,5-TP (Silvex)	212		50	ug/kg	250		84.6	40-140		
2,4,5-T	200		50	ug/kg	250		79.9	40-140		
2,4-DB	273		50	ug/kg	250		109	40-140		
Dinoseb	151		100	ug/kg	250		60.5	40-140		
Surrogate: 2,4-Dichlorophenyl acetic acid			*259*	ug/kg	*250*		*103*	*41-145*		
LCS Dup (B2F1695-BSD1)					Prepared: 06/30/22 Analyzed: 07/05/22					
Dalapon	200		100	ug/kg	250		80.0	40-140	3.94	20
Dicamba	212		50	ug/kg	250		84.6	40-140	0.489	20
Dichloroprop	231		50	ug/kg	250		92.4	40-140	1.72	20
2,4-D	214		50	ug/kg	250		85.7	40-140	0.608	20
2,4,5-TP (Silvex)	213		50	ug/kg	250		85.3	40-140	0.724	20
2,4,5-T	201		50	ug/kg	250		80.4	40-140	0.644	20
2,4-DB	233		50	ug/kg	250		93.4	40-140	15.6	20
Dinoseb	150		100	ug/kg	250		59.8	40-140	1.17	20
Surrogate: 2,4-Dichlorophenyl acetic acid			*258*	ug/kg	*250*		*103*	*41-145*		

Quality Control
(Continued)

Total Petroleum Hydrocarbons

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0117 - EPA 3546										
Blank (B2G0117-BLK1)					Prepared: 07/06/22 Analyzed: 07/07/22					
Total Petroleum Hydrocarbons	ND		27	mg/kg						
Surrogate: Chlorooctadecane			*7.71*	mg/kg	*8.33*		*92.5*	*50-130*		
LCS (B2G0117-BS1)					Prepared: 07/06/22 Analyzed: 07/07/22					
Total Petroleum Hydrocarbons	477		27	mg/kg	667		71.5	44.7-125		
Surrogate: Chlorooctadecane			*7.19*	mg/kg	*8.33*		*86.2*	*50-130*		
LCS Dup (B2G0117-BSD1)					Prepared: 07/06/22 Analyzed: 07/07/22					
Total Petroleum Hydrocarbons	508		27	mg/kg	667		76.2	44.7-125	6.26	200
Surrogate: Chlorooctadecane			*7.02*	mg/kg	*8.33*		*84.2*	*50-130*		

Quality Control
(Continued)

TCLP Metals

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0256 - Metals Cold-Vapor Mercury										
Blank (B2G0256-BLK1)					Prepared & Analyzed: 07/07/22					
Mercury	ND		0.0002	mg/L						
Blank (B2G0256-BLK2)					Prepared & Analyzed: 07/07/22					
Mercury	ND		0.0002	mg/L						
LCS (B2G0256-BS1)					Prepared & Analyzed: 07/07/22					
Mercury	0.001		0.0002	mg/L	0.00100		102	85-115		
LCS (B2G0256-BS2)					Prepared & Analyzed: 07/07/22					
Mercury	0.001		0.0002	mg/L	0.00100		99.7	85-115		
LCS Dup (B2G0256-BSD1)					Prepared & Analyzed: 07/07/22					
Mercury	0.001		0.0002	mg/L	0.00100		102	85-115	0.00	20
LCS Dup (B2G0256-BSD2)					Prepared & Analyzed: 07/07/22					
Mercury	0.001		0.0002	mg/L	0.00100		99.7	85-115	0.00	20
Batch: B2G0271 - Metals Digestion Waters										
LCS (B2G0271-BS1)					Prepared & Analyzed: 07/07/22					
Arsenic	1.01		0.05	mg/L	1.00		101	85-115		
Silver	2.12		0.025	mg/L	2.00		106	85-115		
Barium	4.78		0.025	mg/L	5.00		95.7	85-115		
Cadmium	5.02		0.025	mg/L	5.00		100	85-115		
Chromium	4.91		0.025	mg/L	5.00		98.2	85-115		
Lead	4.78		0.025	mg/L	5.00		95.6	85-115		
Selenium	1.01		0.05	mg/L	1.00		101	85-115		

Quality Control
(Continued)

TCLP Metals (Continued)

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: B2G0271 - Metals Digestion Waters (Continued)										
Leach Fluid Blank (B2G0271-LBK1)					Prepared & Analyzed: 07/07/22					
Silver	ND		0.025	mg/L						
Arsenic	ND		0.05	mg/L						
Barium	ND		0.025	mg/L						
Cadmium	ND		0.025	mg/L						
Chromium	ND		0.025	mg/L						
Lead	ND		0.025	mg/L						
Selenium	ND		0.05	mg/L						

Notes and Definitions

Item	Definition
Wet	Sample results reported on a wet weight basis.
ND	Analyte NOT DETECTED at or above the reporting limit.

New England Testing Laboratory
59 Greenhill Street
West Warwick, RI 02893
1-888-863-8522

2 F 3 0046

Chain of Custody Record

Project No.	Project Name/Location:				Matrix					Tests**								
7041	Mulchay Field																	
Client: BETA Group Chicopee																		
Report To: Rob Smith, Charles Florian																		
Invoice To: BETA Accounts Payable																		
Date	Time	Comp	Grab	Sample I.D.	Aqueous	Soil	Other	No. of Containers	Preservative	MCP Total 14 Metals	PCBs, Vocs, SVOCs	Organochlorine Pesticide	Organohalogen Herbicide	TPH, PH	TCLP RCRA 8 Metals	Reactivity Cyanide + Sulfide	Conductivity	
6/28/22	10:30	X		North - Comp		X		5	Methanol/ice	X	X	X	X	X	X	X	X	
6/28/22	10:15	X		South - Comp		X		5	Methanol/ice	X	X	X	X	X	X	X	X	
6/28/22				Blank		X		1	ice		X							

Sampled By:	Date/Time	Received By:	Date/Time	Laboratory Remarks:	Special Instructions:
Charles Florian	1000 6/29/22		6/30 1325		CAM RCS1
Relinquished By:	Date/Time	Received By:	Date/Time	Temp. Received:	
	6/30 1550		6/30/22 15:30		

**Netlab Subcontracts the following tests: Radiologicals, Radon, TOC, Asbestos, UCMRs, Perchlorate, Bromate, Bromide, Sieve, Salmonella, Carbamates

Turnaround Time [Business Days]: **5 Days**

MassDEP Analytical Protocol Certification Form

Laboratory Name: New England Testing Laboratory, Inc. Project #: 7041

Project Location: Mulcahy Field RTN:

This Form provides certifications for the following data set: list Laboratory Sample ID Number(s): 2F30046

Matrices: ☐ Groundwater/Surface Water ☒ Soil/Sediment ☐ Drinking Water ☐ Air ☐ Other:

CAM Protocol (check all that apply below):

8260 VOC CAM II A ☒	7470/7471 Hg CAM III B ☒	MassDEP VPH (GC/PID/FID) CAM IV A ☐	8082 PCB CAM V A ☒	9014 Total Cyanide/PAC CAM VI A ☐	6860 Perchlorate CAM VIII B ☐
8270 SVOC CAM II B ☒	7010 Metals CAM III C ☐	MassDEP VPH (GC/MS) CAM IV C ☐	8081 Pesticides CAM V B ☒	7196 Hex Cr CAM VI B ☐	MassDEP APH CAM IX A ☐
6010 Metals CAM III A ☒	6020 Metals CAM III D ☐	MassDEP EPH CAM IV B ☐	8151 Herbicides CAM V C ☒	8330 Explosives CAM VIII A ☐	TO-15 VOC CAM IX B ☐

Affirmative Responses to Questions A through F are required for "Presumptive Certainty" status

A	Were all samples received in a condition consistent with those described on the Chain-of-Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?	☒ Yes ☐ No
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	☒ Yes ☐ No
C	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?	☒ Yes ☐ No
D	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☒ Yes ☐ No
E	VPH, EPH, APH, and TO-15 only a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? (Refer to the individual method(s) for a list of significant modifications). b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?	☐ Yes ☐ No ☐ Yes ☐ No
F	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to Questions A through E)?	☒ Yes ☐ No

Responses to Questions G, H and I below are required for "Presumptive Certainty" status

G	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?	☒ Yes ☐ No[1]

***Data User Note*: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.**

H	Were **all** QC performance standards specified in the CAM protocol(s) achieved?	☒ Yes ☐ No[1]
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	☒ Yes ☐ No[1]

[1]*All negative responses must be addressed in an attached laboratory narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, is accurate and complete.

Signature: _____ **Position:** Laboratory Director

Printed Name: Richard Warila **Date**: 7/11/2022

SOIL BORING LOGS

Logs are on the following pages. These logs are for the purpose of providing information about physical soil characteristics. They are not to be confused with separate borings and samples described in the report by Beta Group regarding soil contaminants.

These soil boring locations are indicated on the Existing Conditions sheet of the Drawings.

TEST BORING LOG

SOIL X, Corp.
148 Pioneer Drive
Leominster, MA 01453
(978) 840-0391

Earth Design Landscape, Architecture, LLC
Mulcahy Park, Worcester, MA

BORING B-8

Ground Elevation:
Date Started: January 2, 2020
Date Finished: January 2, 2020
Driller: George Guinto
Soil Engineer/Geologist:

GROUNDWATER OBSERVATIONS

DATE	DEPTH	CASING AT	STABILIZATION

Depth Ft.	Casing bl/ft	Sample No.	Sample Pen/Rec	Sample Depth	Sample Blows/6"	Strata Break	Visual Identification of Soil and / or Rock Sample
1		1	14"	0'0" - 2'0"	3-2-3-3		Loose, dry, fine to coarse SAND, trace fine to medium gravel, trace organic, ash, brick, (FILL).
5		2	14"	5'0" – 7'0"	1-2-1-2		
10		3	14"	10'0"- 12'0"	4-6-10-13	10'0"	Medium dense, wet, very fine SAND, trace silt.
15		4	10"	15'0" - 16'3"	17-31-75/3"	14'0"	Wet, very dense, fine to coarse SAND and gravel.
20						17'0"	End of Boring at 17'0" – Refusal with Spoon and Casing Water encountered at 10'0"
25							
30							
35							

Notes: GeoProbe 6610

Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 -30 M Dense, 30 -50 Dense, 50+ V Dense.
Cohesive: 0 -2 V Soft, 2 -4 Soft, 4 -8 M Stiff 8 -15 Stiff, 15 -30 V. Stiff, 30 + Hard.

Trace	0 to 10%
Little	10 to 20%
Some	20 to 35%
And	35% to 50%

	CASING	SAMPLE	CORE TYPE
ID SIZE (IN)		SS	
HAMMER WGT (LB)		140 lb.	
HAMMER FALL (IN)		30"	

TEST BORING LOG

SOIL X, Corp.
148 Pioneer Drive
Leominster, MA 01453
(978) 840-0391

Earth Design Landscape, Architecture, LLC
Mulcahy Park, Worcester, MA

BORING B-11

Ground Elevation:
Date Started: January 3, 2020
Date Finished: January 3, 2020
Driller: George Guinto
Soil Engineer/Geologist:

GROUNDWATER OBSERVATIONS			
DATE	DEPTH	CASING AT	STABILIZATION

Depth Ft.	Casing bl/ft	Sample No.	Pen/Rec	Sample Depth	Blows/6"	Strata Break	Visual Identification of Soil and / or Rock Sample
1		1	17"	0'0" - 2'0"	2-3-5-5		
5		2	14"	5'0" – 7'0"	1-1-1-1		Dry, medium dense to loose, dry, fine to coarse SAND, ash, trace brick, (FILL).
10		3	3"	10'0"- 11'0"	1-1		
		3A	6"	11'0"- 12'0"	6-8	11'0"	Dry, medium dense, fine to coarse SAND and gravel.
						12'0"	End of Boring at 12'0"
15							Water encountered at 10'0"
20							
25							
30							
35							

Notes: GeoProbe 6610

Cohesionless: 0 - 4 V. Loose, 4 - 10 Loose, 10 -30 M Dense, 30 -50 Dense, 50+ V Dense.
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