#2

Junction Village/Christopher Heights of Concord HUD Environmental Review Documentation

1. Limited Subsurface Evaluation, ENSTRAT, 11/11/2013
2. MassGIS Natural Heritage Map
3. Flammable Hazards Worksheets
4. HUD Acceptable Separation Distance Assessment Tool

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

Limited Subsurface Evaluation
of

Lot off Winthrop Street
(aka a portion of 965 Elm Street)
Concord, Massachusetts

Prepared for: Concord Housing Development Corporation
Mr. David Hale
P.O. Box 195
Concord, Massachusetts 01742

ENSTRAT Project Number 2013-139

November 11, 2013

28 Lord Road • Suite 205 • Marlborough, Massachusetts 01752 • (508) 460-6100 Fax (508) 460-8115

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

November 11, 2013

Concord Housing Development Corporation
Mr. David Hale
P.O. Box 195
Concord, Massachusetts 01742

Dear Mr. Hale,

ENSTRAT, Inc. (ENSTRAT) is pleased to submit the following Limited Subsurface Evaluation of the property off Winthrop Street in Concord, Massachusetts (the Site). The Summary and Conclusions of this report are included as Section 3.0.

Please contact our office if you have any questions regarding this report.

Sincerely,
ENSTRAT, INC.

Thomas P. Luby, PG, LSP
Principal/Technical Manager

28 Lord Road • Suite 205 • Marlborough, Massachusetts 01752 • (508) 460-6100 Fax (508) 460-8115

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

TABLE OF CONTENTS

1.0 Introduction

At the request of Concord Housing Development Corporation, ENSTRAT has performed a Limited Subsurface Evaluation of the property off Winthrop Street in Concord, Massachusetts, hereafter referred to as the Site. It should be noted that this lot is part of a larger parcel associated with the state prison known as 965 Elm Street. The Limited Subsurface Evaluation was performed in order to evaluate the potential impact to soil and/or groundwater from on-Site former sewage lagoons, miscellaneous contractor storage and from a western abutting factory building. The activities conducted to complete this project are discussed in Section 1.2 of this report.

1.1 Previous Environmental Assessments

ENSTRAT, Inc. (ENSTRAT) reviewed a Phase I Environmental Site Assessment (ESA) report and a Summary of Test Pit Excavations/Soil Sampling Activities letter for the property off Winthrop Street (a.k.a. southern portion of the 965 Elm Street parcel) in Concord, Massachusetts (the Site), completed by Williamson Environmental LLC (Williamson) dated February 26, 2009 and September 1, 2009 respectively.

Based upon the findings presented in the reports, ENSTRAT was authorized to conduct a limited subsurface evaluation of soil and groundwater conditions focusing on identified concerns at the Site. The specific findings of the 2009 Williamson reports are summarized as follows:

The Site consists of 12.7 acres of undeveloped land located at the southern portion of a larger parcel (965 Elm Street) which includes a total of 64-acres. According to Williamson, at the time of the assessment, a portion of the Site was utilized for storage of aggregate materials generated by the Concord Department of Public Works and others. Additionally, a portion of the Site was previously utilized by the Massachusetts Correctional Institute (MCI) Concord facility for sewage disposal. The remainder of the Site historically consisted of undeveloped woodlands and/or wetlands and abuts the Assabet River to the west.

Williamson conducted subsurface activities including the excavation of two test pits in each of the six former sewage lagoons. Soil samples were reportedly collected from a depth of 4 to 6 feet and laboratory analyzed for volatile organic compounds (VOCs),

total petroleum hydrocarbons (TPH), polychlorinated biphenyls (PCBs), RCRA 13 total metals, and pH. Concentrations of compounds were not detected above the applicable MCP RCS-2 reportable concentrations. Williamson stated "in its present use, the soil at the Site is considered RCS-2, and therefore chromium concentrations detected within these soil samples does not constitute a reportable condition in accordance with MCP 310 CMR 40.0361." However, Williamson also indicated that if the Site was used for residential purposes in the future, the soil would be considered soil category RCS-1 and concentrations of total chromium detected in four of the soil samples exceeded RCS-1 reportable concentrations. A notification condition would have therefore been created when the use of the property changed to residential.

In August 2009 Williamson oversaw additional subsurface investigations including the excavation of three test pits close to the western boundary of the Site. One soil sample was collected from each of the test pits and field screened for VOCs; which were not detected. These three soil samples were also laboratory analyzed for VOCs, TPH, PCBs, RCRA 13 total metals, trivalent chromium, hexavalent chromium, and pH. All compounds that were detected were below RCS-1 reportable concentrations. Additional assessment activities were not conducted.

1.2 Purpose and Scope

The purpose of this Limited Subsurface Evaluation is to assess for the presence of chromium in soil and to assess soil and groundwater at the Site.

The activities conducted to complete this investigation included:

1) Preparing a Health and Safety Plan;
2) The completion of six (6) soil borings;
3) The installation of four (4) groundwater monitoring wells in four of the soil borings;
4) Collecting soil samples from the soil borings and field screening the samples for the presence of total volatile organic compounds (VOCs);
5) Collection and laboratory analysis of seven (7) soil samples for total chromium and hexavalent/trivalent chromium;
6) Collection of four (4) groundwater samples for extractable petroleum hydrocarbons (EPH) and VOCs;
7) Collection of one (1) additional groundwater sample from an area of the former sewage lagoon for MCP 13 dissolved metals;

8) Gauging and surveying groundwater levels; and
9) The preparation of this report.

The conclusions and any recommendations herein are based upon any reports reviewed and referenced herein, the information and data obtained to complete this Limited Subsurface Evaluation, and the Project Limitations included in the Appendices. This report was prepared for the exclusive use of Concord Housing Development Corporation under the terms and conditions of the contract dated October 18, 2013. Other warranties are not expressed or implied.

1.3 Pre-Drilling Activities and Metal Detector Survey

DigSafe was notified of the intent to conduct subsurface activities at the Site. Officials at DigSafe indicated utility companies within the DigSafe program would be notified to designate the location of their respective underground utility lines. The Site and surrounding streets and sidewalks were inspected for the utility line markings prior to the boring and monitoring well installations.

2.0 Subsurface Evaluation

2.1 Soil Boring & Monitoring Well Installations

On October 21, 2013, Soil Tech Environmental, LLC of Gardner, Massachusetts installed four groundwater monitoring wells (EN-1 through EN-4) and completed two additional soil borings (SB-1 and SB-2). The locations of the borings and monitoring wells are illustrated on Figure 2 in the Appendices. The monitoring wells were installed according to the standard protocols presented in the Appendices.

Well EN-1 was set at a depth of 20 feet below the ground surface (bgs) and is situated downgradient of the former railroad line and an off-Site factory. Well EN-2 was set at a depth of 20 feet bgs and was situated on the northwestern portion of the Site used for contractor storage. Wells EN-3 and EN-4 were set at a depth of 20 feet bgs and were situated within the former sewage lagoons. Soil borings SB-1 and SB-2 were advanced to a depth of 15 feet bgs and were situated in the former sewage lagoons. It should be noted that the monitoring wells and soil borings situated within the sewage lagoons

were approximately positioned to re-assess the highest concentrations of total chromium detected in 2009 by Williamson Environmental LLC (Williamson).

The monitoring wells were constructed with two-inch-diameter, Schedule 40 polyvinyl chloride (PVC) casing and 0.010-inch slotted PVC screen. The screened portions of the wells were positioned to span the top of the water table to detect the presence of floating product. The annular space around the well was backfilled with silica sand to approximately one-half foot to three feet above the screened interval, at which point an approximately one-foot-thick bentonite seal was placed. The monitoring wells were completed two feet above the ground surface and protected by locked standpipes. The tops of the well casings were capped with an expansion plug. Soil boring logs, including the monitoring well construction diagrams, are included in the Appendices for further reference.

2.3 Soil Sampling, Analyses, and Results

Subsurface materials encountered generally consisted of fine to coarse sand with some gravel and fill material (brick and wood). Groundwater was encountered between 13 feet to 15 feet below grade. Soil samples obtained during drilling activities were screened for total volatile organic vapors using a Thermo Environmental Instruments, Inc. 580S Organic Vapor Meter (OVM) photoionization detector (PID). This PID is equipped with a 10.6 electron-volt lamp and was calibrated to an isobutylene standard and adjusted with a response factor to benzene prior to screening. The sensitivity of the instrument to VOCs other than the calibration gas varies. However, most priority pollutant VOCs ionize at this potential and generate a response on the instrument. The samples were tested via the headspace scan technique; an outline of this method is included in the Appendices. The soil samples did not exhibit significant total volatile organic vapors (see boring logs in Appendices). Additionally, visual and/or olfactory indications of hazardous substances and/or petroleum products were not observed by ENSTRAT personnel.

Soil samples previously collected in 2009 by Williamson in the area of the sewage lagoons were at a depth of 4 to 6 feet bgs. However, current Site observations indicate that portions of the former sewage lagoons were filled to approximately five feet above their former conditions. It could not be determined if the area was filled at the time of the 2009 assessments. Therefore, in order to re-create testing by Williamson, ENSTRAT

collected soil samples within the former sewage lagoons from 4 to 6 feet below the current ground surface and at 9 to 11 feet below the former ground surface from EN-3, SB-1, and SB-2. The sewage lagoon where EN-4 is situated appears to be unchanged since 2009 and only one soil sample from 4 to 6 feet was collected from this boring. These seven soil samples were placed into appropriate glassware and cooled upon delivery to Alpha Analytical Laboratories on October 22, 2013. The samples were laboratory analyzed for hexavalent and trivalent chromium and total chromium.

Soil results indicate that total chromium was detected in all soil samples below MCP RCS-1 reportable concentrations, with the exception of soil from SB-1 (4'-6'), EN-3 (9'-11'), and EN-4 (4'-6'). However, based on the trivalent/hexavalent chromium analysis conducted on all of these soil samples, the total chromium concentrations represent the less toxic trivalent chromium, which is likely naturally occurring. A very low concentration of hexavalent chromium was detected in only one sample (EN-3/9'-11') at 0.87 mg/kg, which is well below MCP RCS-1 reportable concentration (30 mg/kg).

2.4 Groundwater Sampling, Analyses, and Results

Prior to groundwater sampling activities on October 28, 2013, at least three well volumes of groundwater were removed from the monitoring wells according to the Protocols included in the Appendices. Groundwater samples from all four monitoring wells did not exhibit significant olfactory or visual indications of hazardous substances and petroleum products. The groundwater samples were subsequently placed in appropriate containers and cooled prior to delivery to Alpha on October 28, 2013. It should be noted that groundwater from EN-4 was field filtered prior to collecting the sample for dissolved metals.

All four groundwater samples were laboratory analyzed for VOCs and EPH. Groundwater from EN-4 was also laboratory analyzed for MCP 14 dissolved metals. Laboratory Certificates of Analysis for these samples are included in the Appendices. Based upon a review of Massachusetts GIS 21E Map, the Site is not located within a Sole Source or potentially active Aquifer, a Zone II drinking water resource area, or within 500 feet of a private drinking water well. Therefore, groundwater at the Site is categorized as RCGW-2 for MADEP notification purposes.

Concentrations of VOCs and EPH were not detected in the groundwater samples above laboratory detection limits, with the exception of chloroform detected in groundwater from EN-1 well below the applicable RCGW-2 reportable concentration. Dissolved metals were not detected in groundwater with the exception of antimony, barium, and zinc detected in groundwater from EN-4. However, these concentrations were below the applicable RCGW-2 reportable concentrations. See Appendices for the laboratory certificate of analysis.

2.5 Groundwater Flow Direction

Water level measurements were obtained from the monitoring wells on October 28, 2013. The measurements were obtained from the top of the PVC well casing. The wells were gauged with a Solinst electronic interface probe to record depth to water measurements and to evaluate the presence of floating product. Free product was not detected in the monitoring wells.

ENSTRAT personnel surveyed the relative elevations of four of the monitoring wells on October 28, 2013. The elevations were based on an assumed elevation of 100.00 feet established on the well casing of EN-1. Groundwater elevations were estimated by subtracting the depth to groundwater measurements from the corresponding monitoring well casing elevations (see Table 1 in the Appendices). Based upon these and other data, groundwater on the Site appears to be flowing southeasterly toward Assabet River.

3.0 Summary, Conclusions and Recommendations

ENSTRAT conducted a Limited Subsurface Evaluation for the property at a Lot off Winthrop Street (a.k.a southern portion of 965 Elm Street parcel) in Concord, Massachusetts (the Site). After completing the evaluation, the following summary and conclusions are presented:

- Six soil boring were completed and four groundwater monitoring wells (EN-1 through EN-4) were installed as part of this project. The borings and wells were placed in accessible areas to assess the historical presence of sewage lagoons, use of the site for contractor storage, and downgradient of an abutting factory.

- Soil samples obtained during drilling activities were field-screened for VOCs; which were not detected. Soil samples did not exhibit visual or olfactory indications of hazardous substances and/or petroleum products. Soil samples from the area of the former sewage lagoons were laboratory analyzed for hexavalent/trivalent chromium and total chromium.

- Soil results indicate that total chromium was detected in all soil samples below MCP RCS-1 reportable concentrations, with the exception of soil from SB-1 (4'-6'), EN-3 (9'-11'), and EN-4 (4'-6'), which was detected above RCS-1 reportable concentrations. However, based on the trivalent/hexavalent chromium analysis that was also conducted on all of these soil samples, the total chromium concentrations represent trivalent chromium was is naturally occurring. Hexavalent chromium was detected in only one sample (EN-3/9'-11') at 0.87 mg/kg, which is well below MCP RCS-1 reportable concentrations.

- Groundwater samples from all four monitoring wells were laboratory analyzed for EPH and VOCs. Groundwater from well EN-4 (within former sewage lagoon area) was also analyzed for MCP 13 dissolved metals. Concentrations of VOCs, EPH, and dissolved metals were not detected in the groundwater samples above laboratory detection limits.

Conclusions and Recommendations

Based upon the results of this limited subsurface evaluation, conditions in soil and groundwater testing on the property are considered acceptable for residential development. ENSTRAT does not recommend additional assessment activities at this time.

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

Site Figures

MassDEP - Bureau of Waste Site Cleanup

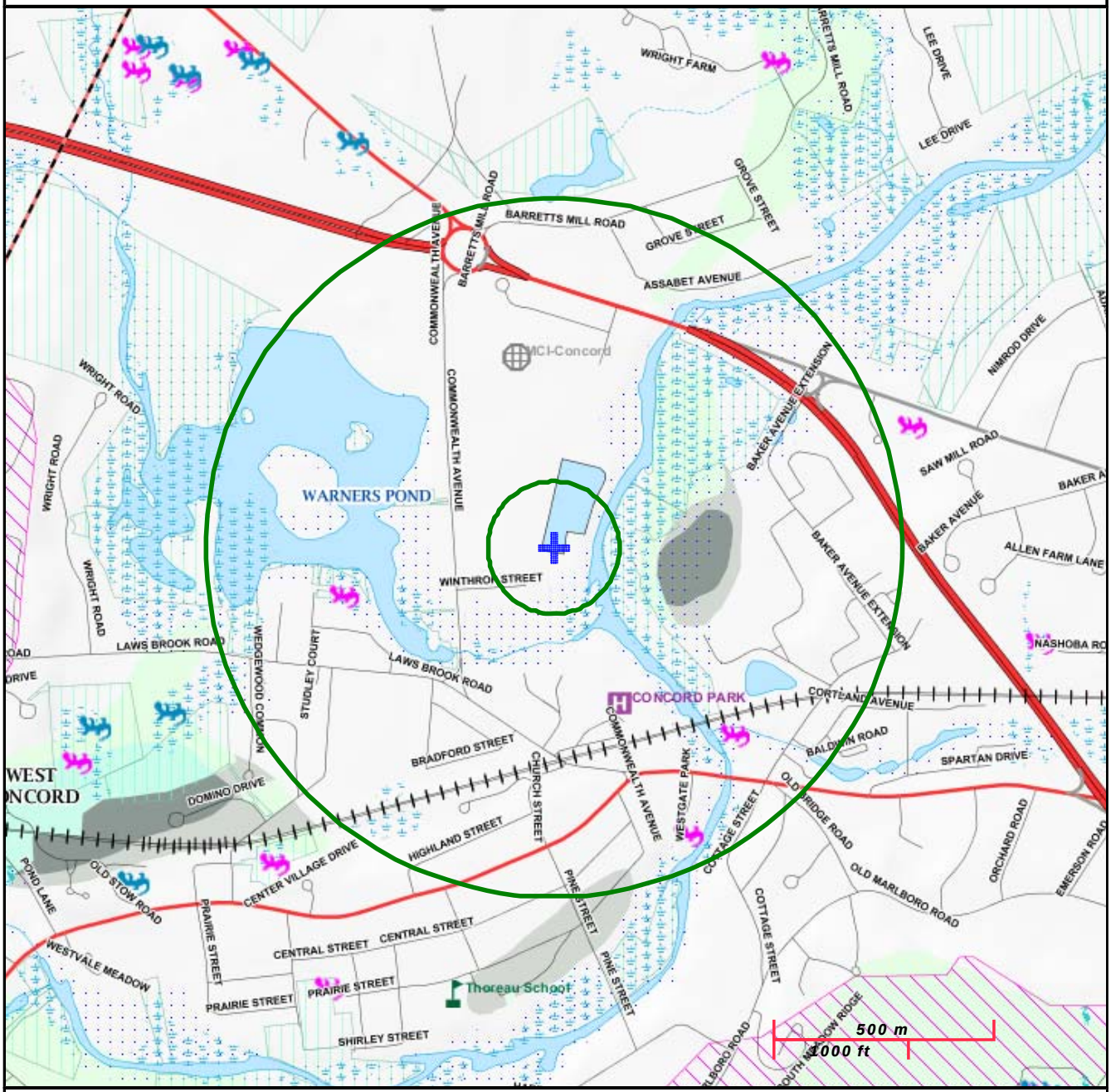
Site Information: MCP Numerical Ranking System Map: 500 feet & 0.5 Mile Radii

956 ELM STREET CONCORD, MA

NAD83 UTM Meters:
4703756mN , 303115mE (Zone: 19)
November 5, 2013

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately repsponsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at: http://www.mass.gov/mgis/.

MassDEP
Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Basins: Major,PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Aquifers: Medium Yield, High Yield, EPA Sole Source

Non Potential Drinking Water Source Area: Medium, High (Yield)

PWS Protection Areas: Zone II, IWPA, Zone A

Hydrography: Open Water, PWS Reservoir, Tidal Flat

Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMA 100yr Floodplain; Protected Open Space; ACEC

Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential

Solid Waste Landfill; PWS: Com.GW,SW, Emerg.,Non-Com.

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

PROJECT NUMBER:	LOCATION:	NORTH:	APPROX. SCALE:
2013-139	Property on Off Winthrop Street Concord, Massachusetts		Not To Scale
FIGURE NUMBER:	**FIGURE NAME:**	**DESIGNED BY:**	**DATE:**
2	Site Plan and Surrounding Properties	SP	October 2013

28 Lord Road • Suite 205 • Marlborough, Massachusetts 01752 • (508) 460-6100 Fax (508) 460-8115

Middlesex Registry of Deeds,
Southern District
Cambridge, Massachusetts
Plan No. 71 of 2013
Rec'd 1.31 2013
at 12 H 24 M P M

Attest
Register

FOR REGISTRY USE ONLY

ZONING INFORMATION

INDUSTRIAL PARK
MINIMUM AREA: 4 ACRES
MINIMUM LOT FRONTAGE: 50' OR 200'
MINIMUM FRONT YARD: 20' OR 100'
CORNER CLEARANCE: 10'
MAXIMUM HEIGHT: 40'
MAXIMUM LOT COVERAGE: 50%

LEGEND

MAP, BLOCK – ASSESSORS INFORMATION
– STONE OR CONCRETE BOUND
– IRON PIPE
– DRILL HOLE
– PROPERTY LINE
– ABUTTER PROPERTY LINE (±)
– EASEMENT LINE
– STONE WALL
– CONTOUR
100 – INDEX CONTOUR
– RIVERBANK
– WETLAND LINE
– WETLAND FLAG
– SIGN

GENERAL NOTES

1.) THIS PLAN SHOWS A PROPOSED CONVEYANCE AND THE LOT CREATED, PARCEL "A", IS NOT A BUILDING LOT.

2.) PARCEL "A" IS TO BE CONVEYED TO THE CONCORD HOUSING DEVELOPMENT CORPORATION.

3.) FIELD SURVEY WAS COMPLETED BY TOTAL STATION/EDM.

4.) THE HORIZONTAL (NAD 83) AND VERTICAL (NAVD 88) DATUMS WERE DERIVED FROM GPS OBSERVATIONS AND ARE BASED ON THE MASSACHUSETTS STATE PLANE COORDINATE SYSTEM.

5.) ALL UNDERGROUND UTILITY INFORMATION SHOWN HEREON WAS DETERMINED FROM SURFACE EVIDENCE AND PLANS OF RECORD. ALL UNDERGROUND UTILITIES SHOULD BE LOCATED IN THE FIELD PRIOR TO COMMENCEMENT OF ALL SITE WORK. CALL DIGSAFE AT 1-800-322-4844 A MINIMUM OF 72 HOURS PRIOR TO PLANNED ACTIVITY.

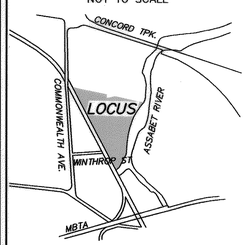
6.) ACCORDING TO FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) MAPS, THE MAJOR IMPROVEMENTS ON THIS SITE ARE DESIGNATED "ZONE X", AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. COMMUNITY PANEL 359 OF 656, MAP NUMBER 25017C0359E, EFFECTIVE DATE: JUNE 4, 2010.

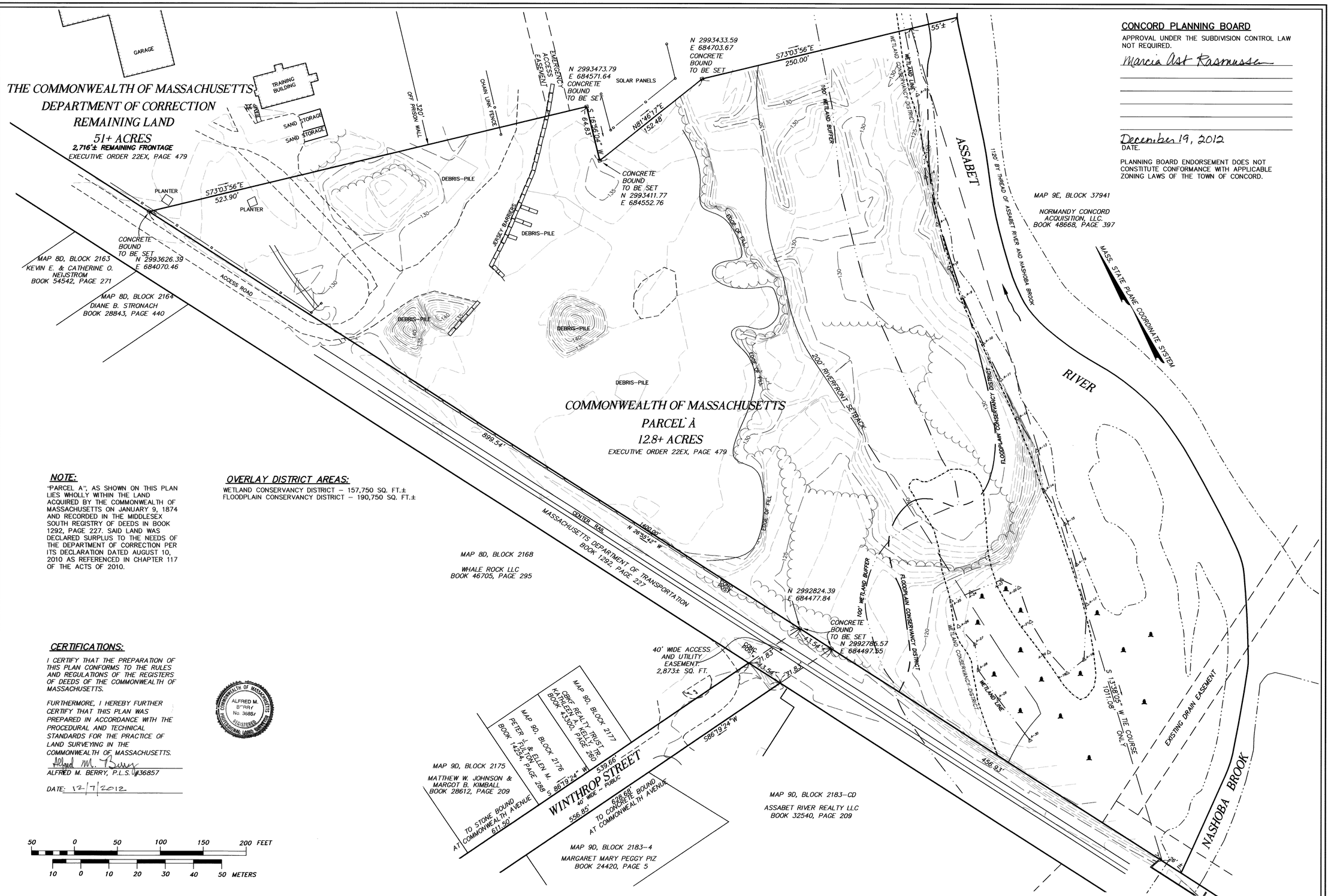
LOCUS REFERENCE

ASSESSOR'S MAP REFERENCE:
MAP 8D, BLOCK 2013
OWNER:
COMMONWEALTH OF MASSACHUSETTS.
EXECUTIVE ORDER 22EX, PAGE 479
BOOK 1292, PAGE 227

LOCATION MAP

NOT TO SCALE





NOTE:

"PARCEL A", AS SHOWN ON THIS PLAN LIES WHOLLY WITHIN THE LAND ACQUIRED BY THE COMMONWEALTH OF MASSACHUSETTS ON JANUARY 9, 1874 AND RECORDED IN THE MIDDLESEX SOUTH REGISTRY OF DEEDS IN BOOK 1292, PAGE 227. SAID LAND WAS DECLARED SURPLUS TO THE NEEDS OF THE DEPARTMENT OF CORRECTION PER ITS DECLARATION DATED AUGUST 10, 2010 AS REFERENCED IN CHAPTER 117 OF THE ACTS OF 2010.

OVERLAY DISTRICT AREAS:

WETLAND CONSERVANCY DISTRICT – 157,750 SQ. FT.±
FLOODPLAIN CONSERVANCY DISTRICT – 190,750 SQ. FT.±

CERTIFICATIONS:

I CERTIFY THAT THE PREPARATION OF THIS PLAN CONFORMS TO THE RULES AND REGULATIONS OF THE REGISTERS OF DEEDS OF THE COMMONWEALTH OF MASSACHUSETTS.

FURTHERMORE, I HEREBY FURTHER CERTIFY THAT THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE PROCEDURAL AND TECHNICAL STANDARDS FOR THE PRACTICE OF LAND SURVEYING IN THE COMMONWEALTH OF MASSACHUSETTS.

ALFRED M. BERRY, P.L.S. #36857

DATE: 12/7/2012

COMMONWEALTH OF MASSACHUSETTS – ALFRED M. BERRY – No. 36857 – REGISTERED PROFESSIONAL LAND SURVEYOR

50 0 50 100 150 200 FEET
10 0 10 20 30 40 50 METERS

CONCORD PLANNING BOARD

APPROVAL UNDER THE SUBDIVISION CONTROL LAW NOT REQUIRED.

Marcia Ast Rasmussen

December 19, 2012
DATE.

PLANNING BOARD ENDORSEMENT DOES NOT CONSTITUTE CONFORMANCE WITH APPLICABLE ZONING LAWS OF THE TOWN OF CONCORD.

SHEET NO. 1 OF 1	PLAN OF LAND IN CONCORD, MA PREPARED FOR THE COMMONWEALTH OF MASSACHUSETTS DIVISION OF CAPITAL ASSET MANAGEMENT AND MAINTENANCE ON BEHALF OF THE DEPARTMENT OF CORRECTION	SURVEYOR: AMB DRAFTING: AMB FIELD WORK: JEG, BC PROJECT NO. 11-6002 DRAWING NAME: 6002CHDC	ENGINEER: N/A DESIGN: N/A HORIZ SCALE: 1"=50' VERT SCALE: N/A DATE: NOVEMBER 9, 2012

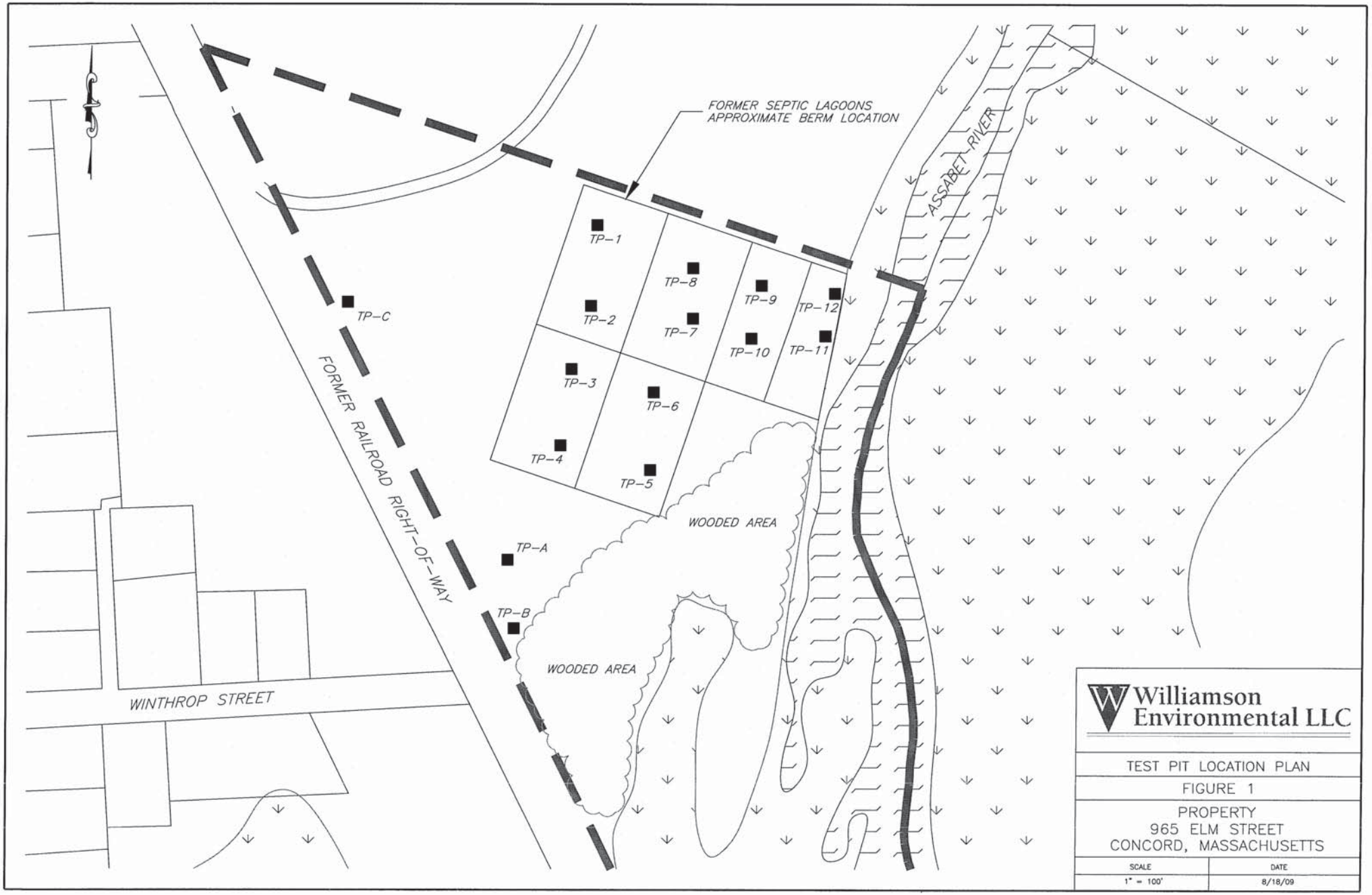
REVISIONS

APPROVAL NOT REQUIRED

Places Associates, Inc.
Planning, Landscape Architecture, Civil Engineering, Surveying
510 KING STREET, SUITE 9
LITTLETON, MA 01460
978.486.0334 Fax
978.486.0447
EMAIL places@verizon.net

12:24 PM
1/31/13
PL: 71

71


FORMER SEPTIC LAGOONS
APPROXIMATE BERM LOCATION
ASSABET RIVER
TP-1
TP-2
TP-3
TP-4
TP-5
TP-6
TP-7
TP-8
TP-9
TP-10
TP-11
TP-12
TP-A
TP-B
TP-C
WOODED AREA
WOODED AREA
FORMER RAILROAD RIGHT-OF-WAY
WINTHROP STREET
Williamson Environmental LLC
TEST PIT LOCATION PLAN
FIGURE 1
PROPERTY
965 ELM STREET
CONCORD, MASSACHUSETTS
SCALE
1" = 100'
DATE
8/18/09

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

Tables

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

Table 1 Groundwater Survey Data – October 28, 2013

Well I.D.	Elevation of Well Roadbox[1] (feet)	Depth to Ground Water (feet)	Groundwater Elevation (feet)
EN-1	100.0	18.0	82.00
EN-2	98.42	16.08	82.34
EN-3	99.92	18.50	81.42
EN-4	97.64	16.36	81.28

1 - Measured relative to an assumed elevation of 100.00 feet established on the well casing of EN-1.

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

Protocols

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

DECONTAMINATION PROCEDURES FOR NON-DISPOSABLE SAMPLING AND FIELD EQUIPMENT

1. The following decontamination procedures apply to equipment used by ENSTRAT for sampling soil, ground water, and other environmental media and do not apply to equipment not used for these specific purposes. However, non-sampling equipment may be decontaminated using the following procedures, if desired, or as necessary.

2. Decontamination procedures outlined herein are conducted by ENSTRAT personnel who have read and understand the decontamination process.

3. Non-disposable sampling and field equipment is decontaminated prior to and after sample collection.

4. The following decontamination procedures are followed for non-disposable soil and ground-water sampling equipment:

   A. Wash equipment with Alconox* detergent or equivalent and clean water (*Alconox is a registered trade name)

   B. Rinse equipment thoroughly with clean water

   C. As applicable, rinse equipment with reagent-grade methanol

   D. Give equipment a final rinse with clean water

5. If steam cleaning equipment is available at the work site, steam cleaning of the sampling equipment may be substituted for steps A and B above.

6. In some cases, heavily contaminated equipment may require soaking for an extended period of time in a detergent solution. After, soaking, procedure 3 is followed prior to returning the equipment to use.

28 Lord Road • Suite 205 • Marlborough, Massachusetts 01752 • (508) 460-6100 Fax (508) 460-8115

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

SOIL BORINGS

1. Soil borings are advanced by drill rig, vibratory probe, vacuum extraction, hand auger, or by other means available and applicable for the desired results (i.e. "drilling"). The term "drill rig" refers to mechanical drilling devices.

2. Drilling operations are observed by ENSTRAT personnel who have read and understand the particular drilling program in accordance with the following proper procedures and guidelines. ENSTRAT personnel may modify the program when certain unforeseen field conditions or events so dictate. ENSTRAT personnel are responsible for compiling field notes, documenting field conditions and keeping a boring log independent of the driller.

3. Drilling equipment is used, cleaned, and decontaminated in accordance with ENSTRAT's Decontamination Procedures for Non-Disposable Sampling and Field Equipment. The split spoon or probe sampler is cleaned between samples. The working end of the drill rig and all drilling equipment is clean upon arrival at the Site. The drill rig is generally observed by ENSTRAT personnel for potential contamination and malfunctioning equipment (i.e., gasoline, diesel fuel and/or hydraulic fluid leaks) before entering the Site. Potentially contaminated or malfunctioning equipment is satisfactorily remedied prior to the commencement of any boring at the Site.

4. Soil samples are collected from the surface and at subsequent five-foot intervals, unless otherwise specified. Soil samples may also be collected at any observed change in strata.

5. Soil samples collected from the boring are screened in the field for volatile organic compounds with a portable photoionization detector (PID) in accordance with ENSTRAT's Field Screening Procedure for Volatile Organic Compounds in Soil.

6. Unless otherwise specified, excavated material brought to the surface by the boring installation is left on-Site. If a ground-water monitoring well is installed in the boring, then excavated material is used to backfill the annular space above the bentonite seal (if applicable). If no ground-water monitoring well is installed in the boring, the entire boring is backfilled with the excavated material. Additional fill, if required, consists of clean fill, washed sand, or concrete, and is used to return the land to a level grade.

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

GROUNDWATER SAMPLING

1. Ground-water sampling is completed by ENSTRAT personnel who have read and understand the particular sampling program for accordance with the proper procedures and guidelines as follows. ENSTRAT personnel may modify the program as required by field conditions. ENSTRAT personnel document field conditions as necessary. Unless otherwise stated, groundwater samples are obtained from monitoring wells constructed in accordance with ENSTRAT's Monitoring Well Construction protocol.

2. Depth to water is determined in the monitoring well in accordance with ENSTRAT's Establishing Vertical Control protocol. Measurement of groundwater depth in the monitoring well is gauged with an electronic interface probe. Using the known or measured depth of the bottom of the well, the fluid volume in the well is calculated.

3. ENSTRAT primarily collects groundwater samples with a low-flow rate Geotech–Geopump 2 peristaltic pump. Low-flow refers to the velocity of water entering the pump intake. The Geopump is fitted with dedicated and disposable tubing consisting of ¼-inch O.D./0.17-inch I.D flexible silicon at the pump connected to high-density polyethylene inserted into the monitoring well. During the sampling process the water level in the well is monitored with the electronic interface probe and the pump flow rate is adjusted to minimize drawdown of the water level in the well. The objective is to minimize disturbance of solids in the bottom of the well and the surrounding aquifer.

4. An alternative method of sampling involves the use of a dedicated disposable polyethylene bailer. Sampling via a disposable bailer involves lowering the bailer into the water table, retrieval and emptying of the bailer into the collection bucket and repeating this procedure.

5. At least three well volumes of water are removed from each well in order to induce recharge into the well from the adjacent aquifer materials for representative groundwater sample collection. The initial water purged from the well is observed for general water quality conditions such as color and clarity and indications of a petroleum product or sheen.

6. Sample bottles are filled directly from the Geopump tubing or the disposable bailer. Care is taken to minimize disturbance of the sample during transfer. Volatile organic analysis (VOA) bottles are filled with no air spaces. Following sample collection, all sample bottles are clearly labeled and stored in a chilled cooler during delivery to the laboratory under appropriate chain-of-custody procedures.

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

MONITORING WELL CONSTRUCTION

1. Ground-water monitoring well constructions on the Site are observed by ENSTRAT personnel who have read and understand the particular ground-water monitoring program for accordance with proper construction procedures and guidelines as follows. ENSTRAT personnel are responsible for compiling field notes, documenting field conditions and keeping a well construction log independent of the driller.

2. Unless otherwise specified, well materials are threaded, one- or two-inch-diameter, flush jointed, schedule 40, polyvinyl chloride (PVC). Well screen length is ten feet and screen slot width is .010-inch. No PVC solvents or glues are used at any point during the monitoring well construction.

3. Well borings are typically advanced five feet below the water table or to refusal. If ground water is encountered at or near refusal, attempts may be made to advance the boring several feet into the refusal using specialized drilling methods. Unless otherwise specified, all well borings are advanced in accordance with ENSTRAT's Soil Borings protocol.

4. The well screen is set to intercept the water table surface. The top of the well screen is set above the highest anticipated seasonal water table, while the bottom of the well screen is set at the base of the boring.

5. The annular space around the well screen is backfilled with clean silica sand to approximately one foot above the top of the well screen. As necessary and if possible, a bentonite seal (typically one-foot-thick) is placed above the silica sand. The remaining annular space around the well casing is backfilled with native material to approximately six-twelve inches below grade. A protective roadbox is installed at the top of the well casing flush with the ground surface. The remaining annular space is filled with concrete to a level flush with the ground surface. Protective standpipes or other well finishing techniques are sometimes used in lieu of the standard roadboxes for Site specific purposes.

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

FIELD SCREENING PROCEDURE FOR VOLATILE ORGANIC COMPOUNDS (VOCS) IN SOIL

The following procedures are utilized when conducting field screening of soils utilizing a portable photoionization detector (PID). A Thermo Environmental Instruments Organic Vapor Meter (OVM) model 580B or 580S, or equivalent, is utilized. The PID uses a 10.6 eV or 11.8 eV lamp referenced to an isobutylene standard and the PID may be adjusted for a response factor, as necessary (e.g. Benzene – 0.5). Results are shown in real time as total ionizable compounds in parts per million by volume (ppmv or just ppm).

1. Half-fill a clean glass jar with the sample to be analyzed. Quickly cover the open top with a clean sheet of aluminum foil and apply screw cap to tightly seal the jar.

2. Allow headspace to develop (typically 10 minutes). Vigorously shake jars both at the beginning and end of the headspace development period. Where ambient temperatures are below 32F (0C) headspace development is done within a heated space.

3. After headspace development, remove screw lid and expose foil seal. Quickly puncture foil seal with instrument sampling probe, to a point about one-half of the headspace depth. Exercise care to avoid uptake of water droplets or soil particulates.

4. Record highest meter response as the jar headspace concentration. Erratic meter response may occur at high organic vapor concentration or conditions of elevated headspace moisture.

5. Operation, maintenance and calibration of the instrument is performed in accordance with the manufacturer's specifications. Instrument calibration is checked and recalibrated, as necessary.

28 Lord Road • Suite 205 • Marlborough, Massachusetts 01752 • (508) 460-6100 Fax (508) 460-8115

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

ESTABLISHING VERTICAL CONTROL

1. Vertical control on-Site is established by ENSTRAT personnel who are responsible for keeping adequate field notes and electronically checking final elevations.

2. A benchmark is established on-Site using an assumed elevation of 100.00 feet Establishment of the benchmark is completely arbitrary with no intended correlation to mean sea level or national geodetic vertical datum; the benchmark is used solely for the purposes of comparing elevations between and relative to the monitoring wells and other environmental sampling locations at the Site. All monitoring well elevations are established with respect to this benchmark.

3. Elevations are established to points on the monitoring wells as determined by field conditions. Elevations are checked by the "level loop" method or other suitable purposes. Acceptable level loop closure error is dependant upon Site conditions, but typically on the order of 0.02 feet.

4. Ground-water depths are gauged using an electronic interface probe. Gauging is done with respect to the points on the monitoring wells as established in step 3 of this protocol.

5. Final ground-water elevations are then calculated with respect to the benchmark established in step 1 of this protocol.

6. The benchmark and individual monitoring well elevations are periodically checked using similar procedures as discussed above. In addition, new survey points are added to the referenced elevations using similar methods.

28 Lord Road • Suite 205 • Marlborough, Massachusetts 01752 • (508) 460-6100 Fax (508) 460-8115

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

Soil Boring Logs

ENSTRAT, INC
Strategic Environmental Services

BORING LOG

Drill Rig:	Geoprobe	Date Drilled:	10/21/2013	Logged By:
Boring Dia:	4 Inches	Boring Number:	SB-1	SP

Sample	Blow Counts	Completion	PID (ppm)	Depth Feet	Lithology	Description
	NA		<1			brown medium to coarse sand and gravel
	NA		<1	5		dark brown fine to medium sand tan medium to coarse sand and gravel
	NA		<1	10		wet tan medium to corse sand and gravel
				15		
				20		
				25		
				30		
				35		

Completion Notes:

Groundwater observed at about 15' feet bgs

Site:

Off Winthrop Street
Concord, MA 01742

Project No.: 2013-139 | Page 1

ENSTRAT, INC
Strategic Environmental Services

BORING LOG

Drill Rig:	Geoprobe	Date Drilled:	10/21/2013	Logged By:
Boring Dia:	4 Inches	Boring Number:	EN-4	SP

Sample	Blow Counts	Completion	PID (ppm)	Depth Feet	Lithology	Description
	NA		<1			brown loam
						tan medium to coarse sand
				5		
	NA		<1			tan medium to corse sand and gravel
				10		
						tan medium to coarse sand with some fill material (brick and wood)
	NA		<1			
						wet tan medium to coarse sand and gravel
				15		
				20		
				25		
				30		
				35		

Completion Notes:

Groundwater observed at about 13 feet bgs

Site:

Off Winthrop Street
Concord, MA 01742

Project No.: 2013-139 | Page 1

ENSTRAT, INC
Strategic Environmental Services

BORING LOG

Drill Rig:	Geoprobe	Date Drilled:	10/21/2013	Logged By:
Boring Dia:	4 Inches	Boring Number:	EN-3	SP

Sample	Blow Counts	Completion	PID (ppm)	Depth Feet	Lithology	Description
	NA		<1			tan medium to coarse sand
	NA		<1	5		tan medium to coarse sand
	NA		<1	10		tan medium to corse sand and gravel
				15		wet tan medium to coarse sand and gravel
				20		
				25		
				30		
				35		

Completion Notes:

Groundwater observed at about 14' feet bgs

Site:

Off Winthrop Street
Concord, MA 01742

Project No.: 2013-139

ENSTRAT, INC
Strategic Environmental Services

BORING LOG

Drill Rig:	Geoprobe	Date Drilled:	10/21/2013	Logged By:
Boring Dia:	4 Inches	Boring Number:	EN-2	SP

Sample	Blow Counts	Completion	PID (ppm)	Depth Feet	Lithology	Description
	NA		<1			tan medium to coarse sand
	NA		<1	5		tan medium to coarse sand
	NA		<1	10		tan medium to corse sand and gravel
				15		wet tan medium to coarse sand and gravel
				20		
				25		
				30		
				35		

Completion Notes:

Groundwater observed at about 14' feet bgs

Site:

Off Winthrop Street
Concord, MA 01742

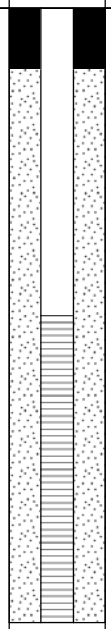
Project No.: 2013-139

BORING LOG

ENSTRAT, INC
Strategic Environmental Services

Drill Rig:	Geoprobe	Date Drilled:	10/21/2013	Logged By:
Boring Dia:	4 Inches	Boring Number:	EN-1	SP

Sample	Blow Counts	Completion	PID (ppm)	Depth Feet	Lithology	Description
	NA		<1			tan medium to coarse sand
	NA		<1	5		tan medium to coarse sand
	NA		<1	10		tan medium to corse sand and gravel
	NA		<1	15		wet tan medium to coarse sand
				20		wet tan fine sand
				25		
				30		
				35		



Completion Notes:

Groundwater observed at about 15' feet bgs

Site:

Off Winthrop Street
Concord, MA 01742

Project No.: 2013-139 Page 1

ENSTRAT, INC
Strategic Environmental Services

BORING LOG

Drill Rig:	Geoprobe	Date Drilled:	10/21/2013	Logged By:
Boring Dia:	4 Inches	Boring Number:	SB-2	SP

Sample	Blow Counts	Completion	PID (ppm)	Depth Feet	Lithology	Description
	NA		<1			brown medium to coarse sand and gravel
	NA		<1	5		dark brown fine to medium sand tan medium to coarse sand and gravel
	NA		<1	10		wet tan medium to corse sand and gravel
				15		
				20		
				25		
				30		
				35		

Completion Notes:

Groundwater observed at about 15' feet bgs

Site:

Off Winthrop Street
Concord, MA 01742

Project No.: 2013-139 | Page 1

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

Laboratory Data

ANALYTICAL REPORT

Lab Number:	L1321248
Client:	Enstrat 28 Lord Road Suite 205 Marlboro, MA 01752
ATTN:	Stacy Paquette
Phone:	(508) 460-6100
Project Name:	OFF WINTHROP STREET
Project Number:	2013-139
Report Date:	10/30/13

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), USDA (Permit #P-330-11-00240), NC (666), TX (T104704476), DOD (L2217), US Army Corps of Engineers.

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: OFF WINTHROP STREET
Project Number: 2013-139

Lab Number: L1321248
Report Date: 10/30/13

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1321248-01	SB-1 (4'-6')	CONCORD, MA	10/21/13 12:00
L1321248-02	SB-1 (9'-11')	CONCORD, MA	10/21/13 12:00
L1321248-03	SB-2 (4'-6')	CONCORD, MA	10/21/13 13:00
L1321248-04	SB-2 (9'-11')	CONCORD, MA	10/21/13 13:00
L1321248-05	EN-3 (4'-6')	CONCORD, MA	10/21/13 14:00
L1321248-06	EN-3 (9'-11')	CONCORD, MA	10/21/13 14:00
L1321248-07	EN-4 (4'-6')	CONCORD, MA	10/21/13 15:00

Project Name: OFF WINTHROP STREET **Lab Number:** L1321248

Project Number: 2013-139 **Report Date:** 10/30/13

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is 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?	NO
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
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
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
E 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).	N/A
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
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

A response to questions G, H and I is 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
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name: OFF WINTHROP STREET **Lab Number:** L1321248
Project Number: 2013-139 **Report Date:** 10/30/13

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name:	OFF WINTHROP STREET	**Lab Number:**	L1321248
Project Number:	2013-139	**Report Date:**	10/30/13

Case Narrative (continued)

MCP Related Narratives

Sample Receipt

In reference to question H:

A Matrix Spike was not submitted for the analyses of Total Metals and Hexavalent Chromium.

Metals

In reference to question I:

All samples were analyzed for a subset of MCP elements per the Chain of Custody.

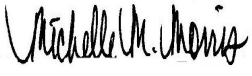
Chromium, Hexavalent

LCS/LCSD SRM Lot#: ERA D081-921

In reference to question A:

The analyses of pH and ORP were performed beyond the required 24hr holding time specified per the Sample Collection, Preservation, and Handling Procedures for Hexavalent Chromium (Cr(VI)) by WSC-CAM-VI B.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:  Michelle M. Morris

Title: Technical Director/Representative Date: 10/30/13

METALS

Project Name: OFF WINTHROP STREET
Lab Number: L1321248
Project Number: 2013-139
Report Date: 10/30/13

SAMPLE RESULTS

Lab ID: L1321248-01
Client ID: SB-1 (4'-6')
Sample Location: CONCORD, MA
Matrix: Soil
Percent Solids: 93%

Date Collected: 10/21/13 12:00
Date Received: 10/22/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Westborough Lab											
Chromium, Total	60		mg/kg	0.42	--	1	10/25/13 11:35	10/28/13 20:30	EPA 3050B	97,6010C	TT

Project Name: OFF WINTHROP STREET
Lab Number: L1321248
Project Number: 2013-139
Report Date: 10/30/13

SAMPLE RESULTS

Lab ID: L1321248-02
Client ID: SB-1 (9'-11')
Sample Location: CONCORD, MA
Matrix: Soil
Percent Solids: 92%

Date Collected: 10/21/13 12:00
Date Received: 10/22/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Westborough Lab											
Chromium, Total	23		mg/kg	0.42	--	1	10/25/13 11:35	10/28/13 20:33	EPA 3050B	97,6010C	TT

Project Name: OFF WINTHROP STREET
Lab Number: L1321248
Project Number: 2013-139
Report Date: 10/30/13

SAMPLE RESULTS

Lab ID: L1321248-03
Client ID: SB-2 (4'-6')
Sample Location: CONCORD, MA
Matrix: Soil
Percent Solids: 90%

Date Collected: 10/21/13 13:00
Date Received: 10/22/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Westborough Lab											
Chromium, Total	17		mg/kg	0.42	--	1	10/25/13 11:35	10/28/13 20:37	EPA 3050B	97,6010C	TT

Project Name: OFF WINTHROP STREET
Lab Number: L1321248
Project Number: 2013-139
Report Date: 10/30/13

SAMPLE RESULTS

Lab ID: L1321248-04
Client ID: SB-2 (9'-11')
Sample Location: CONCORD, MA
Matrix: Soil
Percent Solids: 92%

Date Collected: 10/21/13 13:00
Date Received: 10/22/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Westborough Lab											
Chromium, Total	22		mg/kg	0.41	--	1	10/25/13 11:35	10/28/13 20:40	EPA 3050B	97,6010C	TT

Project Name: OFF WINTHROP STREET
Lab Number: L1321248
Project Number: 2013-139
Report Date: 10/30/13

SAMPLE RESULTS

Lab ID: L1321248-05
Client ID: EN-3 (4'-6')
Sample Location: CONCORD, MA
Matrix: Soil
Percent Solids: 97%

Date Collected: 10/21/13 14:00
Date Received: 10/22/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Westborough Lab											
Chromium, Total	28		mg/kg	0.38	--	1	10/25/13 11:35	10/28/13 20:44	EPA 3050B	97,6010C	TT

Project Name: OFF WINTHROP STREET
Lab Number: L1321248
Project Number: 2013-139
Report Date: 10/30/13

SAMPLE RESULTS

Lab ID: L1321248-06
Client ID: EN-3 (9'-11')
Sample Location: CONCORD, MA
Matrix: Soil
Percent Solids: 96%

Date Collected: 10/21/13 14:00
Date Received: 10/22/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Westborough Lab											
Chromium, Total	34		mg/kg	0.41	--	1	10/25/13 11:35	10/28/13 20:47	EPA 3050B	97,6010C	TT

Project Name: OFF WINTHROP STREET
Lab Number: L1321248
Project Number: 2013-139
Report Date: 10/30/13

SAMPLE RESULTS

Lab ID: L1321248-07
Client ID: EN-4 (4'-6')
Sample Location: CONCORD, MA
Matrix: Soil
Percent Solids: 98%

Date Collected: 10/21/13 15:00
Date Received: 10/22/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Total Metals - Westborough Lab											
Chromium, Total	46		mg/kg	0.39	--	1	10/25/13 11:35	10/28/13 20:51	EPA 3050B	97,6010C	TT

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321248
Report Date: 10/30/13

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Total Metals - Westborough Lab for sample(s): 01-07 Batch: WG646999-1										
Chromium, Total	ND		mg/kg	0.40	--	1	10/25/13 11:35	10/28/13 19:51	97,6010C	TT

Prep Information

Digestion Method: EPA 3050B

Lab Control Sample Analysis

Batch Quality Control

Project Name: OFF WINTHROP STREET

Project Number: 2013-139

Lab Number: L1321248

Report Date: 10/30/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Total Metals - Westborough Lab Associated sample(s): 01-07 Batch: WG646999-2 WG646999-3 SRM Lot Number: 0518-10-02								
Chromium, Total	92		92		80-119	0		30

INORGANICS
&
MISCELLANEOUS

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321248
Report Date: 10/30/13

SAMPLE RESULTS

Lab ID: L1321248-01
Client ID: SB-1 (4'-6')
Sample Location: CONCORD, MA
Matrix: Soil
Date Collected: 10/21/13 12:00
Date Received: 10/22/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Chromium, Hexavalent	ND		mg/kg	0.86	--	1	10/23/13 15:00	10/24/13 15:36	97,7196A	ST
General Chemistry - Westborough Lab										
Chromium, Trivalent	60		mg/kg	0.86	--	1	-	10/29/13 10:08	107,-	JO
Solids, Total	92.9		%	0.100	NA	1	-	10/24/13 00:48	30,2540G	RT
pH (H)	7.7		SU	-	NA	1	-	10/23/13 13:30	1,9045D	ML
Oxidation/Reduction Potential	220		mv	-	NA	1	-	10/23/13 13:30	68,1498	ML

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321248
Report Date: 10/30/13

SAMPLE RESULTS

Lab ID: L1321248-02
Client ID: SB-1 (9'-11')
Sample Location: CONCORD, MA
Matrix: Soil

Date Collected: 10/21/13 12:00
Date Received: 10/22/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Chromium, Hexavalent	ND		mg/kg	0.87	--	1	10/23/13 15:00	10/24/13 15:36	97,7196A	ST
General Chemistry - Westborough Lab										
Chromium, Trivalent	23		mg/kg	0.87	--	1	-	10/29/13 10:08	107,-	JO
Solids, Total	91.5		%	0.100	NA	1	-	10/24/13 00:48	30,2540G	RT
pH (H)	8.4		SU	-	NA	1	-	10/23/13 13:30	1,9045D	ML
Oxidation/Reduction Potential	180		mv	-	NA	1	-	10/23/13 13:30	68,1498	ML

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321248
Report Date: 10/30/13

SAMPLE RESULTS

Lab ID: L1321248-03
Client ID: SB-2 (4'-6')
Sample Location: CONCORD, MA
Matrix: Soil

Date Collected: 10/21/13 13:00
Date Received: 10/22/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Chromium, Hexavalent	ND		mg/kg	0.89	--	1	10/23/13 15:00	10/24/13 15:37	97,7196A	ST
General Chemistry - Westborough Lab										
Chromium, Trivalent	17		mg/kg	0.89	--	1	-	10/29/13 10:08	107,-	JO
Solids, Total	89.6		%	0.100	NA	1	-	10/24/13 00:48	30,2540G	RT
pH (H)	8.3		SU	-	NA	1	-	10/23/13 13:30	1,9045D	ML
Oxidation/Reduction Potential	180		mv	-	NA	1	-	10/23/13 13:30	68,1498	ML

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321248
Report Date: 10/30/13

SAMPLE RESULTS

Lab ID: L1321248-04
Client ID: SB-2 (9'-11')
Sample Location: CONCORD, MA
Matrix: Soil

Date Collected: 10/21/13 13:00
Date Received: 10/22/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Chromium, Hexavalent	ND		mg/kg	0.87	--	1	10/23/13 15:00	10/24/13 15:37	97,7196A	ST
General Chemistry - Westborough Lab										
Chromium, Trivalent	22		mg/kg	0.87	--	1	-	10/29/13 10:08	107,-	JO
Solids, Total	92.3		%	0.100	NA	1	-	10/24/13 00:48	30,2540G	RT
pH (H)	7.7		SU	-	NA	1	-	10/23/13 13:30	1,9045D	ML
Oxidation/Reduction Potential	200		mv	-	NA	1	-	10/23/13 13:30	68,1498	ML

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321248
Report Date: 10/30/13

SAMPLE RESULTS

Lab ID: L1321248-05
Client ID: EN-3 (4'-6')
Sample Location: CONCORD, MA
Matrix: Soil
Date Collected: 10/21/13 14:00
Date Received: 10/22/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Chromium, Hexavalent	ND		mg/kg	0.82	--	1	10/23/13 15:00	10/24/13 15:38	97,7196A	ST
General Chemistry - Westborough Lab										
Chromium, Trivalent	28		mg/kg	0.82	--	1	-	10/29/13 10:08	107,-	JO
Solids, Total	97.1		%	0.100	NA	1	-	10/24/13 00:48	30,2540G	RT
pH (H)	4.5		SU	-	NA	1	-	10/23/13 13:30	1,9045D	ML
Oxidation/Reduction Potential	360		mv	-	NA	1	-	10/23/13 13:30	68,1498	ML

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321248
Report Date: 10/30/13

SAMPLE RESULTS

Lab ID: L1321248-06
Client ID: EN-3 (9'-11')
Sample Location: CONCORD, MA
Matrix: Soil

Date Collected: 10/21/13 14:00
Date Received: 10/22/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Chromium, Hexavalent	0.87		mg/kg	0.83	--	1	10/23/13 15:00	10/24/13 15:38	97,7196A	ST
General Chemistry - Westborough Lab										
Chromium, Trivalent	33		mg/kg	0.83	--	1	-	10/29/13 10:08	107,-	JO
Solids, Total	96.1		%	0.100	NA	1	-	10/24/13 00:48	30,2540G	RT
pH (H)	4.3		SU	-	NA	1	-	10/23/13 13:30	1,9045D	ML
Oxidation/Reduction Potential	360		mv	-	NA	1	-	10/23/13 13:30	68,1498	ML

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321248
Report Date: 10/30/13

SAMPLE RESULTS

Lab ID: L1321248-07
Client ID: EN-4 (4'-6')
Sample Location: CONCORD, MA
Matrix: Soil

Date Collected: 10/21/13 15:00
Date Received: 10/22/13
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab										
Chromium, Hexavalent	ND		mg/kg	0.82	--	1	10/23/13 15:00	10/24/13 15:39	97,7196A	ST
General Chemistry - Westborough Lab										
Chromium, Trivalent	46		mg/kg	0.82	--	1	-	10/29/13 10:08	107,-	JO
Solids, Total	97.8		%	0.100	NA	1	-	10/24/13 00:48	30,2540G	RT
pH (H)	6.8		SU	-	NA	1	-	10/23/13 13:30	1,9045D	ML
Oxidation/Reduction Potential	300		mv	-	NA	1	-	10/23/13 13:30	68,1498	ML

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321248
Report Date: 10/30/13

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP General Chemistry - Westborough Lab for sample(s): 01-07 Batch: WG646428-1										
Chromium, Hexavalent	ND		mg/kg	0.80	--	1	10/23/13 15:00	10/24/13 15:19	97,7196A	ST

Lab Control Sample Analysis

Batch Quality Control

Project Name: OFF WINTHROP STREET

Project Number: 2013-139

Lab Number: L1321248

Report Date: 10/30/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-07 Batch: WG646362-1								
pH	100		-		99-101	-		
General Chemistry - Westborough Lab Associated sample(s): 01-07 Batch: WG646364-1								
Oxidation/Reduction Potential	102		-		90-110	-		20
MCP General Chemistry - Westborough Lab Associated sample(s): 01-07 Batch: WG646428-2 WG646428-3								
Chromium, Hexavalent	93		88		70-129	6		20

Lab Duplicate Analysis
Batch Quality Control

Project Name: OFF WINTHROP STREET
Project Number: 2013-139

Lab Number: L1321248
Report Date: 10/30/13

Parameter	Native Sample	Duplicate Sample	Units	RPD	Qual	RPD Limits
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG646362-2 QC Sample: L1321248-01 Client ID: SB-1 (4'-6')						
pH (H)	7.7	7.6	SU	1		5
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG646364-2 QC Sample: L1321248-01 Client ID: SB-1 (4'-6')						
Oxidation/Reduction Potential	220	220	mv	0		20
General Chemistry - Westborough Lab Associated sample(s): 01-07 QC Batch ID: WG646498-1 QC Sample: L1321089-01 Client ID: DUP Sample						
Solids, Total	75.4	77.1	%	2		20

Project Name: OFF WINTHROP STREET
Project Number: 2013-139

Lab Number: L1321248
Report Date: 10/30/13

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information Custody Seal

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1321248-01A	Amber 250ml unpreserved	A	N/A	4.1	Y	Absent	MCP-CR-6010T-10(180),ORP-9045(1),MCP-HEXCR7196-10(30),TRICR-CALC(30),TS(7),PH-9045(1)
L1321248-02A	Amber 250ml unpreserved	A	N/A	4.1	Y	Absent	MCP-CR-6010T-10(180),ORP-9045(1),MCP-HEXCR7196-10(30),TRICR-CALC(30),TS(7),PH-9045(1)
L1321248-03A	Amber 250ml unpreserved	A	N/A	4.1	Y	Absent	MCP-CR-6010T-10(180),ORP-9045(1),MCP-HEXCR7196-10(30),TRICR-CALC(30),TS(7),PH-9045(1)
L1321248-04A	Amber 250ml unpreserved	A	N/A	4.1	Y	Absent	MCP-CR-6010T-10(180),ORP-9045(1),MCP-HEXCR7196-10(30),TRICR-CALC(30),TS(7),PH-9045(1)
L1321248-05A	Amber 250ml unpreserved	A	N/A	4.1	Y	Absent	MCP-CR-6010T-10(180),ORP-9045(1),MCP-HEXCR7196-10(30),TRICR-CALC(30),TS(7),PH-9045(1)
L1321248-06A	Amber 250ml unpreserved	A	N/A	4.1	Y	Absent	MCP-CR-6010T-10(180),ORP-9045(1),MCP-HEXCR7196-10(30),TRICR-CALC(30),TS(7),PH-9045(1)
L1321248-07A	Amber 250ml unpreserved	A	N/A	4.1	Y	Absent	MCP-CR-6010T-10(180),ORP-9045(1),MCP-HEXCR7196-10(30),TRICR-CALC(30),TS(7),PH-9045(1)

*Values in parentheses indicate holding time in days

Project Name:	OFF WINTHROP STREET	**Lab Number:**	L1321248
Project Number:	2013-139	**Report Date:**	10/30/13

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NI	- Not Ignitable.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

1	- The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A	- Spectra identified as "Aldol Condensation Product".
B	- The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.
C	- Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
D	- Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
E	- Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
G	- The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.
H	- The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
I	- The lower value for the two columns has been reported due to obvious interference.

Report Format: Data Usability Report

Project Name:	OFF WINTHROP STREET	**Lab Number:**	L1321248
Project Number:	2013-139	**Report Date:**	10/30/13

Data Qualifiers

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name:	OFF WINTHROP STREET	**Lab Number:**	L1321248
Project Number:	2013-139	**Report Date:**	10/30/13

REFERENCES

1 Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IV, 2007.

30 Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

68 Annual Book of ASTM (American Society for Testing and Materials) Standards following extraction by SW-846 EPA Method 9045C under the requirements of MADEP BWSC, WSC-CAM-VIB. August 2004.

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

107 Alpha Analytical - In-house calculation method.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certificate/Approval Program Summary

Last revised October 1, 2013 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. ***NELAP Accredited Solid Waste/Soil.***

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Selenium, Silver, Sodium, Thallium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. Organic Parameters: Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP) 504.1, Ethylene Dibromide (EDB) 504.1, 1,4-Dioxane (Mod 8270). Microbiology Parameters: Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223, Enumeration and P/A), E. Coli. – Colilert (SM9223, Enumeration and P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform-EC Medium (SM 9221E).

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), CT-Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. Microbiology Parameters: Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), E. Coli – Colilert (SM9223 Enumeration), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E), Enterococcus - Enterolert.

Solid Waste/Soil (Inorganic Parameters: pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. Organic Parameters: PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, CT-Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Dalapon, Volatile Organics (SW 8260), Acid Extractables (Phenols) (SW 8270), Benzidines (SW 8270), Phthalates (SW 8270), Nitrosamines (SW 8270), Nitroaromatics & Cyclic Ketones (SW 8270), PAHs (SW 8270), Haloethers (SW 8270), Chlorinated Hydrocarbons (SW 8270).)

State of Illinois Certificate/Lab ID: 003155. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM2120B, 2320B, 2510B, 2540C, SM4500CN-CE, 4500F-C, 4500H-B, 4500NO3-F, 5310C, EPA 200.7, 200.8, 245.1, 300.0. Organic Parameters: EPA 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: SM2120B, 2310B, 2320B, 2340B, 2510B, 2540B, 2540C, 2540D, SM4500CL-E, 4500CN-E, 4500F-C, 4500H-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500P-E, 4500S-D, 4500SO3-B, 5210B, 5220D, 5310C, 5540C, EPA 120.1, 1664A, 200.7, 200.8, 245.1, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1. Organic Parameters: EPA 608, 624, 625.)

Hazardous and Solid Waste (Inorganic Parameters: EPA 1010A, 1030, 1311, 1312, 6010C, 6020A, 7196A, 7470A, 7471B, 9012B, 9014, 9038, 9040C, 9045D, 9050A, 9065, 9251. Organic Parameters: 8011 (NPW only), 8015C, 8081B, 8082A, 8151A, 8260C, 8270D, 8315A, 8330.)

Maine Department of Human Services Certificate/Lab ID: 2009024.
Drinking Water (Inorganic Parameters: SM9215B, 9222D, 9223B, EPA 180.1, 353.2, SM2120B, 2130B, 2320B, 2510C, 2540C, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, 5310C, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. Organic Parameters: 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 8315A, 9010C, SM2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500Cl-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-C, 4500NH3-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500P-B, 4500P-E, 4500S2-D, 4500SO3-B, 5540C, 5210B, 5220D, 5310C, 9010B, 9030B, 9040C, 7470A, 7196A, 2340B, EPA 200.7, 6010C, 200.8, 6020A, 245.1, 1311, 1312, 3005A, Enterolert, 9223B, 9222D. Organic Parameters: 608, 624, 625, 8011, 8081B, 8082A, 8330, 8151A, 8260C, 8270D, 3510C, 3630C, 5030B, ME-DRO, ME-GRO, MA-EPH, MA-VPH.)

Solid Waste/Soil (Inorganic Parameters: 9010B, 9012A, 9014, 9040B, 9045C, 6010C, 6020A, 7471B, 7196A, 9050A, 1010, 1030, 9065, 1311, 1312, 3005A, 3050B, 9038, 9251. Organic Parameters: ME-DRO, ME-GRO, MA-EPH, MA-VPH, 8260C, 8270D, 8330, 8151A, 8081B, 8082A, 3540C, 3546, 3580A, 3620C, 3630C, 5030B, 5035.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.
*Drinking Water (*Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl) (EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate); (EPA 353.2 for: Nitrate-N, Nitrite-N); (SM4500NO3-F for: Nitrate-N and Nitrite-N); 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C, SM4500H-B. Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics); (504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), EPA 332. Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; ColilertQT SM9223B; MF-SM9222D.)

*Non-Potable Water (*Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn); (EPA 200.7 for: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn); 245.1, SM4500H,B, EPA 120.1, SM2510B, 2540C, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.
Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics),(608 for: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT,Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs-Water), (EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables), 600/4-81-045-PCB-Oil. Microbiology Parameters: (ColilertQT SM9223B; Enterolert-QT: SM9222D-MF.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM 9222B, 9223B, 9215B, EPA 200.7, 200.8, 300.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 332.0. Organic Parameters: 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 3005A, 200.7, 200.8, 245.1, SW-846 6010C, 6020A, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 350.2, 351.1, 353.2, 410.4, 420.1, 426C, 1664A, SW-846 9010B, 9010C, 9030, 9040B, 9040C, SM2120B, 2310B, 2320B, 2340B, 2540B, 2540D, 4500H+B, 4500CL-E, 4500CN-E, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500P-E, 4500-S2-D, 4500SO3-B, 5210B, 5220D, 2510B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D, 3060A. Organic Parameters: SW-846 3510C, 3630C, 5030B, 8260C, 8270D, 8330, EPA 624, 625, 608, SW-846 8082A, 8081B, 8015C, 8151A, 8330, 8270D-SIM.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010C, 6020A, 7196A, 7471B, 1010, 1010A, 1030, 9010C, 9012B, 9014, 9030B, 9040C, 9045C, 9045D, 9050, 9065, 9251, 1311, 1312, 3005A, 3050B, 3060A. Organic Parameters: SW-846 3540C, 3546, 3050B, 3580A, 3620D, 3630C, 5030B, 5035, 8260C, 8270D, 8270D-SIM, 8330, 8151A, 8015B, 8015C, 8082A, 8081B.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 2064. ***NELAP Accredited.***
Drinking Water (Organic Parameters: **EPA 524.2:** Di-isopropyl ether (DIPE), Ethyl-t-butyl ether (ETBE), Tert-amyl methyl ether (TAME)).

Non-Potable Water (Organic Parameters: **EPA 8260C:** 1,3,5-Trichlorobenzene. **EPA 8015C(M):** TPH.)

Solid & Chemical Materials (Organic Parameters: **EPA 8260C:** 1,3,5-Trichlorobenzene.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500CN-CE, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 200.8, 245.1, 2540C, SM2120B, 2320B, 2510B, 5310C, SM4500H-B. Organic Parameters: EPA 332, 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-E, EPA 300.0, SM2120B, 2340B, SM4500F-BC, EPA 200.7, 200.8, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310C, 4500-PE, EPA 420.1, SM4500P-B5+E, 2540B, 2540C, 2540D, EPA 120.1, SM2510B, 9222D, 9221B, 9221C, 9221E, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, 4500SO4-E, EPA 350.1, 350.2, SW-846 1312, 7470A, 5540C, SM4500H-B, 4500SO3-B, SM3500Cr-D, 4500CN-CE, EPA 245.1, SW-846 9040B, 9040C, 3005A, 3015, EPA 6010B, 6010C, 6020, 6020A, 7196A, 3060A, SW-846 9010C, 9030B. Organic Parameters: SW-846 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3510C, EPA 608, 624, 625, SW-846 3630C, 5030B, 5030C, 8011, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 1,4-Dioxane by NJ Modified 8270, 8015B, NJ EPH.)

Solid & Chemical Materials (Inorganic Parameters: SW-846, 6010B, 6010C, 6020, 6020A, 7196A, 3060A, 9030B, 1010, 1010A, 1030, 1311, 1312, 3005A, 3050B, 7471A, 7471B, 9010C, 9012B, 9014, 9038, 9040B, 9040C, 9045C, 9045D,

9050A, 9065, 9251. Organic Parameters: SW-846 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3540C, 3546, 3580A, 3620C, 3630C, 5030B, 5030C, 5035L, 5035H, NJ EPH.)

New York Department of Health Certificate/Lab ID: 11148. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.1, SM5310C, EPA 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500NO3-F, 2540C, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, 5310C, EPA 410.4, SM5220D, 2310B, 2320B, EPA 200.7, 300.0, SM4500CL-E, 4500F-C, SM15 426C, EPA 350.1, SM4500NH3-BH, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2340B, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010C, 6020A, EPA 7196A, SM3500Cr-D, EPA 245.1, 7470A, SM2120B, 4500CN-CE, EPA 1664A, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 8315A, 3005A, 9010C, 9030B. Organic Parameters: EPA 624, 8260C, 8270D, 8270D-SIM, 625, 608, 8081B, 8151A, 8330A, 8082A, EPA 3510C, 5030B, 5030C, 8015C, 8011.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010A, 1030, EPA 6010C, 6020A, 7196A, 7471B, 8315A, 9012B, 9014, 9065, 9050A, 9038, 9251, EPA 1311, 1312, 3005A, 3050B, 9010C, 9030B, 9040C, 9045D. Organic Parameters: EPA 8260C, 8270D, 8270D-SIM, 8015C, 8081B, 8151A, 8330A, 8082A, 3540C, 3546, 3580A, 5035A-H, 5035A-L.)

North Carolina Department of the Environment and Natural Resources Certificate/Lab ID : 666. (Inorganic Parameters: SM2310B, 2320B, 4500Cl-E, 4500Cn-E, 9012B, 9014, Lachat 10-204-00-1-X, 1010A, 1030, 4500NO3-F, 353.2, 4500P-E, 4500SO4-E, 300.0, 4500S-D, 5310B, 5310C, 6010C, 6020A, 200.7, 200.8, 3500Cr-B, 7196A, 245.1, 7470A, 7471B, 1311,1312. Organic Parameters: 608, 8081B, 8082A, 624, 8260B, 625, 8270D, 8151A, 8015C, 504.1, MA-EPH, MA-VPH.)

Drinking Water Program Certificate/Lab ID: 25700. (Inorganic Parameters: Chloride EPA 300.0. Organic Parameters: 524.2)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-03671. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: 200.7, 200.8, 300.0, 332.0, 2120B, 2320B, 2510B, 2540C, 4500-CN-CE, 4500F-C, 4500H+-B, 4500NO3-F, 5310C. Organic Parameters: EPA 524.2, 504.1)

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1312, 3005A,3015, 3060A, 200.7, 200.8, 410.4, 1664A, SM2540D, 5210B, 5220D, 4500-P,BE, 245.1, 300.0, 350.1, 350.2, 351.1, 353.2, 420.1, 6010C, 6020A, 7196A, 7470A, 9030B, 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 3500Cr-D, 426C, 4500CN-CE, 4500Cl-E, 4500F-B, 4500F-C, 4500H+-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500S-D, 4500SO3-B, 5310BCD, 5540C, 9010C, 9040C. Organic Parameters: EPA 3510C, 3630C, 5030B, 625, 624, 608, 8081B, 8082A, 8151A, 8260C, 8270D, 8270D-SIM, 8330, 8015C, NJ-EPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 350.1, 1010, 1030, 1311, 1312, 3005A, 3050B, 3060A, 6010C, 6020A, 7196A, 7471B, 9010C, 9012B, 9014, 9040B, 9045D, 9050A, 9065, SM 4500NH3-BH, 9030B, 9038, 9251. Organic Parameters: 3540C, 3546, 3580A, 3620C, 3630C, 5035, 8015C, 8081B, 8082A, 8151A, 8260C, 8270D, 8270D-SIM, 8330, NJ-EPH.)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. ***NELAP Accredited via NJ-DEP.***
Refer to MA-DEP Certificate for Potable and Non-Potable Water.
Refer to NJ-DEP Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476. ***NELAP Accredited.***
Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500 $S2^{-}$D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Virginia Division of Consolidated Laboratory Services Certificate/Lab ID: 460195. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: EPA 200.7, 200.8, 300.0, 2510B, 2120B, 2540C, 4500CN-CE, 245.1, 2320B, 4500F-C, 4500NO3-F, 4500H+B, 5310C. Organic Parameters: EPA 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 200.7, 200.8, 245.1, 300.0, 350.1, 351.1, 351.2, 3005A, 3015, 1312, 6010B, 6010C, 3060A, 353.2, 420.1, 2340B, 6020, 6020A, SM4500S-D, SM4500-CN-CE, Lachat 10-204-00-1-X, 7196A, 7470A, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 3500Cr-D, 426C, 4500Cl-E, 4500F-B, 4500F-C,

4500NH3-H, 4500NO2-B, 4500NO3-F, 4500 SO3-B, 4500H-B, 4500PE, 510AC, 5210B, 5310B 5310C, 5540C, 9010Cm 9030B, 9040C. Organic Parameters: EPA 3510C, 3630C, 5030B, 8260B, 608, 624, 625, 8011, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330,)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010A, 1030, 3060A, 3050B, 1311, 1312, 6010B, 6010C, 6020, , 7196A, 7471A, 7471B, 6020A, 9010C, 9012B, 9030B, 9014, 9038, 9040C, 9045D, 9251, 9050A, 9065. Organic Parameters: EPA 5030B, 5035, 3540C, 3546, 3550B, 3580A, 3620C, 3630C, 6020A, 8260B, 8260C, 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330.)

Department of Defense, L-A-B Certificate/Lab ID: L2217.
Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010C, 6020A, 245.1, 7470A, 9040B, 9010B, 180.1, 300.0, 332.0, 6860, 351.1, 353.2, 9060, 1664A, SM 4500CN-E, 4500H-B, 4500Norg-C, 4500NO3-F, 5310C, 2130B, 2320B, 2340B, 2540C, 5540C, 3005A, 3015, 9056, 7196A, 3500-Cr-D. Organic Parameters: EPA 8015C, 8151A, 8260C, 8270D, 8270D-SIM, 8330A, 8082A, 8081B, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010C, 6020A, 7471A, 6860, 1311, 1312, 3050B, 7196A, 9040B, 9045C, 9010C, 9012B, 9251, SM3500-CR-D, 4500CN-CE, 2540G, Organic Parameters: EPA 8015C, 8151A, 8260C, 8270D, 8270D-SIM, 8330A/B-prep, 8082A, 8081B, 3540C, 3546, 3580A, 5035A, MassDEP EPH, MassDEP VPH.)

The following analytes are not included in our current NELAP/TNI Scope of Accreditation:
EPA 524.2: Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran, 1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether. **EPA 8260B:** 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. **EPA 8260 Non-potable water matrix:** Iodomethane (methyl iodide), Methyl methacrylate. **EPA 8260 Soil matrix:** Tert-amyl methyl ether (TAME), Diisopropyl ether (DIPE), Azobenzene. **EPA 8330A:** PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **EPA 8270C:** Methyl naphthalene, Dimethyl naphthalene, Total Methylnapthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine. **EPA 625:** 4-Chloroaniline, 4-Methylphenol. Total Phosphorus in a soil matrix, TKN in a soil matrix, NO2 in a soil matrix, NO3 in a soil matrix. **EPA 9071:** Total Petroleum Hydrocarbons, Oil & Grease.

CHAIN OF CUSTODY

PAGE 1 OF 2

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Date Rec'd in Lab: 10/22/13

ALPHA Job #: L1321248

Client Information

Client: ENSTRAT INC
Address: 28 Lord Rd, Suite 205
Marlboro, MA 01752
Phone: 508 460 6100
Email: SPAQUETTE@ENSTRAT.NET

Project Information

Project Name: Off Winthrop Street
Project Location: Concord, MA
Project #: 2013-139
Project Manager: Stacy Paquette
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: 10/29/13

Report Information - Data Deliverables

☐ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☑ No CT RCP Analytical Methods
☐ Yes ☑ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☑ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☑ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

Additional Project Information:

* analyze for Hexavalent / trivalent Chromium first then total Chromium (only 1 container)

ANALYSIS

VOC: ☐ 8260 ☐ 624 ☐ 524.2
SVOC: ☐ ABN ☐ PAH
METALS: ☐ MCP 13 ☐ MCP 14 ☐ RCP 15
METALS: ☐ RCRA5 ☐ RCRA8 ☐ PP13
EPH: ☐ Ranges & Targets ☐ Ranges Only
VPH: ☐ Ranges & Targets ☐ Ranges Only
☐ PCB ☐ PEST
TPH: ☐ Quant Only ☐ Fingerprint
Hexavalent / trivalent Chromium
Total Chromium

SAMPLE INFO
Filtration
☐ Field
☐ Lab to do
Preservation
☐ Lab to do

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	Sample Comments	TOTAL # BOTTLES
21248.01	SB-1 (4'-6')	10/21/13	1200				1
.02	SB-1 (9'-11')	10/21/13	1200				1
.03	SB-2 (4'-6')		1300				1
.04	SB-2 (9'-11')		1300				1
.05	EN-3 (4'-6')		1400				1
.06	EN-3 (9'-11')		1400				1
.07	EN-4 (4'-6')	" "	1500				1

Container Type	A	A
Preservative	A	A

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate

Relinquished By:	Date/Time	Received By:	Date/Time
Stacy N Paquette	10		
	10/22/13 1600		10/22/13 15:40
			10/22/13 16:00

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

ANALYTICAL REPORT

Lab Number:	L1321719
Client:	Enstrat 28 Lord Road Suite 205 Marlboro, MA 01752
ATTN:	Stacy Paquette
Phone:	(508) 460-6100
Project Name:	OFF WINTHROP STREET
Project Number:	2013-139
Report Date:	11/04/13

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), USDA (Permit #P-330-11-00240), NC (666), TX (T104704476), DOD (L2217), US Army Corps of Engineers.

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com

Project Name: OFF WINTHROP STREET
Project Number: 2013-139

Lab Number: L1321719
Report Date: 11/04/13

Alpha Sample ID	Client ID	Sample Location	Collection Date/Time
L1321719-01	EN-1	CONCORD, MA	10/28/13 10:30
L1321719-02	EN-2	CONCORD, MA	10/28/13 11:30
L1321719-03	EN-3	CONCORD, MA	10/28/13 12:30
L1321719-04	EN-4	CONCORD, MA	10/28/13 13:00

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

MADEP MCP Response Action Analytical Report Certification

This form provides certifications for all samples performed by MCP methods. Please refer to the Sample Results and Container Information sections of this report for specification of MCP methods used for each analysis. The following questions pertain only to MCP Analytical Methods.

An affirmative response to questions A through F is 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
B	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?	YES
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
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
E 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).	YES
E b.	APH and TO-15 Methods only: Was the complete analyte list reported for each method?	N/A
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

A response to questions G, H and I is 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
H	Were all QC performance standards specified in the CAM protocol(s) achieved?	NO
I	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?	NO

For any questions answered "No", please refer to the case narrative section on the following page(s).

Please note that sample matrix information is located in the Sample Results section of this report.

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719
Project Number: 2013-139 **Report Date:** 11/04/13

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet all of the requirements of NELAC, for all NELAC accredited parameters. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. Performance criteria for CAM and RCP methods allow for some LCS compound failures to occur and still be within method compliance. In these instances, the specific failures are not narrated but are noted in the associated QC table. This information is also incorporated in the Data Usability format for our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY
For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719
Project Number: 2013-139 **Report Date:** 11/04/13

Case Narrative (continued)

MCP Related Narratives

Sample Receipt

The sample L1321719-04 was field filtered for Dissolved Metals.

Volatile Organics

In reference to question H:

The initial calibration, associated with L1321719-01 through -04, did not meet the method required minimum response factor on the lowest calibration standard for acetone (0.09797), 1,4-dioxane (0.00162), 4-methyl-2-pentanone (0.06504), as well as the average response factor for acetone, 1,4-dioxane, and 4-methyl-2-pentanone.

The continuing calibration standard, associated with L1321719-01 through -04, is outside the acceptance criteria for several compounds; however, it is within overall method allowances. A copy of the continuing calibration standard is included as an addendum to this report.

EPH

In reference to question I:

All samples were analyzed for a subset of MCP compounds per the Chain of Custody.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature: Cynthia McQueen

Title: Technical Director/Representative Date: 11/04/13

ORGANICS

VOLATILES

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

SAMPLE RESULTS

Lab ID:	L1321719-01	Date Collected:	10/28/13 10:30
Client ID:	EN-1	Date Received:	10/28/13
Sample Location:	CONCORD, MA	Field Prep:	Not Specified
Matrix:	Water		
Analytical Method:	97,8260C		
Analytical Date:	11/01/13 14:38		
Analyst:	RY		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	1.2		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

SAMPLE RESULTS

Lab ID: L1321719-01 Date Collected: 10/28/13 10:30

Client ID: EN-1 Date Received: 10/28/13

Sample Location: CONCORD, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

SAMPLE RESULTS

Lab ID: L1321719-01 Date Collected: 10/28/13 10:30

Client ID: EN-1 Date Received: 10/28/13

Sample Location: CONCORD, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	102		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	99		70-130

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

SAMPLE RESULTS

Lab ID:	L1321719-02	Date Collected:	10/28/13 11:30
Client ID:	EN-2	Date Received:	10/28/13
Sample Location:	CONCORD, MA	Field Prep:	Not Specified
Matrix:	Water		
Analytical Method:	97,8260C		
Analytical Date:	11/01/13 15:10		
Analyst:	RY		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

SAMPLE RESULTS

Lab ID: L1321719-02 Date Collected: 10/28/13 11:30

Client ID: EN-2 Date Received: 10/28/13

Sample Location: CONCORD, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

SAMPLE RESULTS

Lab ID: L1321719-02 Date Collected: 10/28/13 11:30

Client ID: EN-2 Date Received: 10/28/13

Sample Location: CONCORD, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	102		70-130
4-Bromofluorobenzene	101		70-130
Dibromofluoromethane	100		70-130

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

SAMPLE RESULTS

Lab ID:	L1321719-03	Date Collected:	10/28/13 12:30
Client ID:	EN-3	Date Received:	10/28/13
Sample Location:	CONCORD, MA	Field Prep:	Not Specified
Matrix:	Water		
Analytical Method:	97,8260C		
Analytical Date:	11/01/13 15:41		
Analyst:	RY		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

SAMPLE RESULTS

Lab ID: L1321719-03 Date Collected: 10/28/13 12:30

Client ID: EN-3 Date Received: 10/28/13

Sample Location: CONCORD, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

SAMPLE RESULTS

Lab ID: L1321719-03 Date Collected: 10/28/13 12:30

Client ID: EN-3 Date Received: 10/28/13

Sample Location: CONCORD, MA Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	100		70-130

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

SAMPLE RESULTS

Lab ID:	L1321719-04	Date Collected:	10/28/13 13:00
Client ID:	EN-4	Date Received:	10/28/13
Sample Location:	CONCORD, MA	Field Prep:	See Narrative
Matrix:	Water		
Analytical Method:	97,8260C		
Analytical Date:	11/01/13 16:13		
Analyst:	RY		

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methylene chloride	ND		ug/l	2.0	--	1
1,1-Dichloroethane	ND		ug/l	1.0	--	1
Chloroform	ND		ug/l	1.0	--	1
Carbon tetrachloride	ND		ug/l	1.0	--	1
1,2-Dichloropropane	ND		ug/l	1.0	--	1
Dibromochloromethane	ND		ug/l	1.0	--	1
1,1,2-Trichloroethane	ND		ug/l	1.0	--	1
Tetrachloroethene	ND		ug/l	1.0	--	1
Chlorobenzene	ND		ug/l	1.0	--	1
Trichlorofluoromethane	ND		ug/l	2.0	--	1
1,2-Dichloroethane	ND		ug/l	1.0	--	1
1,1,1-Trichloroethane	ND		ug/l	1.0	--	1
Bromodichloromethane	ND		ug/l	1.0	--	1
trans-1,3-Dichloropropene	ND		ug/l	0.50	--	1
cis-1,3-Dichloropropene	ND		ug/l	0.50	--	1
1,1-Dichloropropene	ND		ug/l	2.0	--	1
Bromoform	ND		ug/l	2.0	--	1
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Benzene	ND		ug/l	0.50	--	1
Toluene	ND		ug/l	1.0	--	1
Ethylbenzene	ND		ug/l	1.0	--	1
Chloromethane	ND		ug/l	2.0	--	1
Bromomethane	ND		ug/l	2.0	--	1
Vinyl chloride	ND		ug/l	1.0	--	1
Chloroethane	ND		ug/l	2.0	--	1
1,1-Dichloroethene	ND		ug/l	1.0	--	1
trans-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Trichloroethene	ND		ug/l	1.0	--	1
1,2-Dichlorobenzene	ND		ug/l	1.0	--	1
1,3-Dichlorobenzene	ND		ug/l	1.0	--	1
1,4-Dichlorobenzene	ND		ug/l	1.0	--	1

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

SAMPLE RESULTS

Lab ID: L1321719-04 Date Collected: 10/28/13 13:00

Client ID: EN-4 Date Received: 10/28/13

Sample Location: CONCORD, MA Field Prep: See Narrative

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
Methyl tert butyl ether	ND		ug/l	2.0	--	1
p/m-Xylene	ND		ug/l	2.0	--	1
o-Xylene	ND		ug/l	1.0	--	1
cis-1,2-Dichloroethene	ND		ug/l	1.0	--	1
Dibromomethane	ND		ug/l	2.0	--	1
1,2,3-Trichloropropane	ND		ug/l	2.0	--	1
Styrene	ND		ug/l	1.0	--	1
Dichlorodifluoromethane	ND		ug/l	2.0	--	1
Acetone	ND		ug/l	5.0	--	1
Carbon disulfide	ND		ug/l	2.0	--	1
2-Butanone	ND		ug/l	5.0	--	1
4-Methyl-2-pentanone	ND		ug/l	5.0	--	1
2-Hexanone	ND		ug/l	5.0	--	1
Bromochloromethane	ND		ug/l	2.0	--	1
Tetrahydrofuran	ND		ug/l	2.0	--	1
2,2-Dichloropropane	ND		ug/l	2.0	--	1
1,2-Dibromoethane	ND		ug/l	2.0	--	1
1,3-Dichloropropane	ND		ug/l	2.0	--	1
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--	1
Bromobenzene	ND		ug/l	2.0	--	1
n-Butylbenzene	ND		ug/l	2.0	--	1
sec-Butylbenzene	ND		ug/l	2.0	--	1
tert-Butylbenzene	ND		ug/l	2.0	--	1
o-Chlorotoluene	ND		ug/l	2.0	--	1
p-Chlorotoluene	ND		ug/l	2.0	--	1
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--	1
Hexachlorobutadiene	ND		ug/l	0.60	--	1
Isopropylbenzene	ND		ug/l	2.0	--	1
p-Isopropyltoluene	ND		ug/l	2.0	--	1
Naphthalene	ND		ug/l	2.0	--	1
n-Propylbenzene	ND		ug/l	2.0	--	1
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--	1
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--	1
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--	1
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--	1
Ethyl ether	ND		ug/l	2.0	--	1
Isopropyl Ether	ND		ug/l	2.0	--	1
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--	1
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--	1

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

SAMPLE RESULTS

Lab ID: L1321719-04 Date Collected: 10/28/13 13:00

Client ID: EN-4 Date Received: 10/28/13

Sample Location: CONCORD, MA Field Prep: See Narrative

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
MCP Volatile Organics - Westborough Lab						
1,4-Dioxane	ND		ug/l	250	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	105		70-130
Toluene-d8	101		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	102		70-130

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 11/01/13 12:32
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-04 Batch: WG648829-3					
Methylene chloride	ND		ug/l	2.0	--
1,1-Dichloroethane	ND		ug/l	1.0	--
Chloroform	ND		ug/l	1.0	--
Carbon tetrachloride	ND		ug/l	1.0	--
1,2-Dichloropropane	ND		ug/l	1.0	--
Dibromochloromethane	ND		ug/l	1.0	--
1,1,2-Trichloroethane	ND		ug/l	1.0	--
Tetrachloroethene	ND		ug/l	1.0	--
Chlorobenzene	ND		ug/l	1.0	--
Trichlorofluoromethane	ND		ug/l	2.0	--
1,2-Dichloroethane	ND		ug/l	1.0	--
1,1,1-Trichloroethane	ND		ug/l	1.0	--
Bromodichloromethane	ND		ug/l	1.0	--
trans-1,3-Dichloropropene	ND		ug/l	0.50	--
cis-1,3-Dichloropropene	ND		ug/l	0.50	--
1,1-Dichloropropene	ND		ug/l	2.0	--
Bromoform	ND		ug/l	2.0	--
1,1,2,2-Tetrachloroethane	ND		ug/l	1.0	--
Benzene	ND		ug/l	0.50	--
Toluene	ND		ug/l	1.0	--
Ethylbenzene	ND		ug/l	1.0	--
Chloromethane	ND		ug/l	2.0	--
Bromomethane	ND		ug/l	2.0	--
Vinyl chloride	ND		ug/l	1.0	--
Chloroethane	ND		ug/l	2.0	--
1,1-Dichloroethene	ND		ug/l	1.0	--
trans-1,2-Dichloroethene	ND		ug/l	1.0	--
Trichloroethene	ND		ug/l	1.0	--
1,2-Dichlorobenzene	ND		ug/l	1.0	--
1,3-Dichlorobenzene	ND		ug/l	1.0	--
1,4-Dichlorobenzene	ND		ug/l	1.0	--

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 11/01/13 12:32
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-04 Batch: WG648829-3					
Methyl tert butyl ether	ND		ug/l	2.0	--
p/m-Xylene	ND		ug/l	2.0	--
o-Xylene	ND		ug/l	1.0	--
cis-1,2-Dichloroethene	ND		ug/l	1.0	--
Dibromomethane	ND		ug/l	2.0	--
1,2,3-Trichloropropane	ND		ug/l	2.0	--
Styrene	ND		ug/l	1.0	--
Dichlorodifluoromethane	ND		ug/l	2.0	--
Acetone	ND		ug/l	5.0	--
Carbon disulfide	ND		ug/l	2.0	--
2-Butanone	ND		ug/l	5.0	--
4-Methyl-2-pentanone	ND		ug/l	5.0	--
2-Hexanone	ND		ug/l	5.0	--
Bromochloromethane	ND		ug/l	2.0	--
Tetrahydrofuran	ND		ug/l	2.0	--
2,2-Dichloropropane	ND		ug/l	2.0	--
1,2-Dibromoethane	ND		ug/l	2.0	--
1,3-Dichloropropane	ND		ug/l	2.0	--
1,1,1,2-Tetrachloroethane	ND		ug/l	1.0	--
Bromobenzene	ND		ug/l	2.0	--
n-Butylbenzene	ND		ug/l	2.0	--
sec-Butylbenzene	ND		ug/l	2.0	--
tert-Butylbenzene	ND		ug/l	2.0	--
o-Chlorotoluene	ND		ug/l	2.0	--
p-Chlorotoluene	ND		ug/l	2.0	--
1,2-Dibromo-3-chloropropane	ND		ug/l	2.0	--
Hexachlorobutadiene	ND		ug/l	0.60	--
Isopropylbenzene	ND		ug/l	2.0	--
p-Isopropyltoluene	ND		ug/l	2.0	--
Naphthalene	ND		ug/l	2.0	--
n-Propylbenzene	ND		ug/l	2.0	--

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321719
Report Date: 11/04/13

Method Blank Analysis
Batch Quality Control

Analytical Method: 97,8260C
Analytical Date: 11/01/13 12:32
Analyst: RY

Parameter	Result	Qualifier	Units	RL	MDL
MCP Volatile Organics - Westborough Lab for sample(s): 01-04 Batch: WG648829-3					
1,2,3-Trichlorobenzene	ND		ug/l	2.0	--
1,2,4-Trichlorobenzene	ND		ug/l	2.0	--
1,3,5-Trimethylbenzene	ND		ug/l	2.0	--
1,2,4-Trimethylbenzene	ND		ug/l	2.0	--
Ethyl ether	ND		ug/l	2.0	--
Isopropyl Ether	ND		ug/l	2.0	--
Ethyl-Tert-Butyl-Ether	ND		ug/l	2.0	--
Tertiary-Amyl Methyl Ether	ND		ug/l	2.0	--
1,4-Dioxane	ND		ug/l	250	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
1,2-Dichloroethane-d4	103		70-130
Toluene-d8	103		70-130
4-Bromofluorobenzene	100		70-130
Dibromofluoromethane	100		70-130

Lab Control Sample Analysis

Batch Quality Control

Project Name: OFF WINTHROP STREET

Project Number: 2013-139

Lab Number: L1321719

Report Date: 11/04/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-04 Batch: WG648829-1 WG648829-2								
Methylene chloride	100		104		70-130	4		20
1,1-Dichloroethane	97		105		70-130	8		20
Chloroform	97		105		70-130	8		20
Carbon tetrachloride	**69**	Q	79		70-130	14		20
1,2-Dichloropropane	99		105		70-130	6		20
Dibromochloromethane	103		110		70-130	7		20
1,1,2-Trichloroethane	108		113		70-130	5		20
Tetrachloroethene	102		111		70-130	8		20
Chlorobenzene	101		109		70-130	8		20
Trichlorofluoromethane	94		103		70-130	9		20
1,2-Dichloroethane	100		105		70-130	5		20
1,1,1-Trichloroethane	95		104		70-130	9		20
Bromodichloromethane	95		102		70-130	7		20
trans-1,3-Dichloropropene	104		111		70-130	7		20
cis-1,3-Dichloropropene	101		107		70-130	6		20
1,1-Dichloropropene	97		106		70-130	9		20
Bromoform	101		106		70-130	5		20
1,1,2,2-Tetrachloroethane	110		116		70-130	5		20
Benzene	98		106		70-130	8		20
Toluene	101		109		70-130	8		20
Ethylbenzene	101		110		70-130	9		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: OFF WINTHROP STREET

Project Number: 2013-139

Lab Number: L1321719

Report Date: 11/04/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-04 Batch: WG648829-1 WG648829-2								
Chloromethane	111		120		70-130	8		20
Bromomethane	95		103		70-130	8		20
Vinyl chloride	98		110		70-130	12		20
Chloroethane	99		107		70-130	8		20
1,1-Dichloroethene	100		110		70-130	10		20
trans-1,2-Dichloroethene	98		106		70-130	8		20
Trichloroethene	98		105		70-130	7		20
1,2-Dichlorobenzene	106		111		70-130	5		20
1,3-Dichlorobenzene	104		108		70-130	4		20
1,4-Dichlorobenzene	104		108		70-130	4		20
Methyl tert butyl ether	81		86		70-130	6		20
p/m-Xylene	102		109		70-130	7		20
o-Xylene	104		110		70-130	6		20
cis-1,2-Dichloroethene	99		103		70-130	4		20
Dibromomethane	105		108		70-130	3		20
1,2,3-Trichloropropane	108		114		70-130	5		20
Styrene	105		111		70-130	6		20
Dichlorodifluoromethane	96		106		70-130	10		20
Acetone	**151**	Q	**161**	Q	70-130	6		20
Carbon disulfide	92		101		70-130	9		20
2-Butanone	**136**	Q	**139**	Q	70-130	2		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: OFF WINTHROP STREET

Project Number: 2013-139

Lab Number: L1321719

Report Date: 11/04/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-04 Batch: WG648829-1 WG648829-2								
4-Methyl-2-pentanone	106		117		70-130	10		20
2-Hexanone	126		127		70-130	1		20
Bromochloromethane	102		107		70-130	5		20
Tetrahydrofuran	114		120		70-130	5		20
2,2-Dichloropropane	83		90		70-130	8		20
1,2-Dibromoethane	109		116		70-130	6		20
1,3-Dichloropropane	107		113		70-130	5		20
1,1,1,2-Tetrachloroethane	96		105		70-130	9		20
Bromobenzene	104		109		70-130	5		20
n-Butylbenzene	101		106		70-130	5		20
sec-Butylbenzene	102		109		70-130	7		20
tert-Butylbenzene	101		108		70-130	7		20
o-Chlorotoluene	99		105		70-130	6		20
p-Chlorotoluene	100		106		70-130	6		20
1,2-Dibromo-3-chloropropane	115		118		70-130	3		20
Hexachlorobutadiene	98		104		70-130	6		20
Isopropylbenzene	103		111		70-130	7		20
p-Isopropyltoluene	104		109		70-130	5		20
Naphthalene	111		115		70-130	4		20
n-Propylbenzene	101		107		70-130	6		20
1,2,3-Trichlorobenzene	111		118		70-130	6		20

Lab Control Sample Analysis

Batch Quality Control

Project Name: OFF WINTHROP STREET

Project Number: 2013-139

Lab Number: L1321719

Report Date: 11/04/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Volatile Organics - Westborough Lab Associated sample(s): 01-04 Batch: WG648829-1 WG648829-2								
1,2,4-Trichlorobenzene	108		115		70-130	6		20
1,3,5-Trimethylbenzene	102		108		70-130	6		20
1,2,4-Trimethylbenzene	101		107		70-130	6		20
Ethyl ether	106		111		70-130	5		20
Isopropyl Ether	100		106		70-130	6		20
Ethyl-Tert-Butyl-Ether	97		103		70-130	6		20
Tertiary-Amyl Methyl Ether	102		107		70-130	5		20
1,4-Dioxane	114		111		70-130	3		20

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
1,2-Dichloroethane-d4	102		102		70-130
Toluene-d8	103		101		70-130
4-Bromofluorobenzene	97		97		70-130
Dibromofluoromethane	101		99		70-130

PETROLEUM HYDROCARBONS

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321719
Report Date: 11/04/13

SAMPLE RESULTS

Lab ID:	L1321719-01	Date Collected:	10/28/13 10:30
Client ID:	EN-1	Date Received:	10/28/13
Sample Location:	CONCORD, MA	Field Prep:	Not Specified
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	10/29/13 22:38
Analytical Date:	10/31/13 21:02	Cleanup Method1:	EPH-04-1
Analyst:	SR	Cleanup Date1:	10/30/13

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Extractable Petroleum Hydrocarbons - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	59		40-140
o-Terphenyl	71		40-140
2-Fluorobiphenyl	75		40-140
2-Bromonaphthalene	74		40-140

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321719
Report Date: 11/04/13

SAMPLE RESULTS

Lab ID:	L1321719-02	Date Collected:	10/28/13 11:30
Client ID:	EN-2	Date Received:	10/28/13
Sample Location:	CONCORD, MA	Field Prep:	Not Specified
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	10/29/13 22:38
Analytical Date:	11/01/13 08:14	Cleanup Method1:	EPH-04-1
Analyst:	SR	Cleanup Date1:	10/30/13

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Extractable Petroleum Hydrocarbons - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	41		40-140
o-Terphenyl	63		40-140
2-Fluorobiphenyl	66		40-140
2-Bromonaphthalene	66		40-140

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321719
Report Date: 11/04/13

SAMPLE RESULTS

Lab ID:	L1321719-03	Date Collected:	10/28/13 12:30
Client ID:	EN-3	Date Received:	10/28/13
Sample Location:	CONCORD, MA	Field Prep:	Not Specified
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	10/29/13 22:38
Analytical Date:	11/01/13 08:59	Cleanup Method1:	EPH-04-1
Analyst:	SR	Cleanup Date1:	10/30/13

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Extractable Petroleum Hydrocarbons - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	56		40-140
o-Terphenyl	62		40-140
2-Fluorobiphenyl	67		40-140
2-Bromonaphthalene	68		40-140

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321719
Report Date: 11/04/13

SAMPLE RESULTS

Lab ID:	L1321719-04	Date Collected:	10/28/13 13:00
Client ID:	EN-4	Date Received:	10/28/13
Sample Location:	CONCORD, MA	Field Prep:	See Narrative
Matrix:	Water	Extraction Method:	EPA 3510C
Analytical Method:	98,EPH-04-1.1	Extraction Date:	10/29/13 22:38
Analytical Date:	11/01/13 09:44	Cleanup Method1:	EPH-04-1
Analyst:	SR	Cleanup Date1:	10/30/13

Quality Control Information

Condition of sample received:	Satisfactory
Aqueous Preservative:	Laboratory Provided Preserved Container
Sample Temperature upon receipt:	Received on Ice
Sample Extraction method:	Extracted Per the Method

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor
Extractable Petroleum Hydrocarbons - Westborough Lab						
C9-C18 Aliphatics	ND		ug/l	100	--	1
C19-C36 Aliphatics	ND		ug/l	100	--	1
C11-C22 Aromatics	ND		ug/l	100	--	1
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--	1

Surrogate	% Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	56		40-140
o-Terphenyl	68		40-140
2-Fluorobiphenyl	74		40-140
2-Bromonaphthalene	73		40-140

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321719
Report Date: 11/04/13

Method Blank Analysis
Batch Quality Control

Analytical Method: 98,EPH-04-1.1
Analytical Date: 10/31/13 15:48
Analyst: SR

Extraction Method: EPA 3510C
Extraction Date: 10/29/13 22:38
Cleanup Method1: EPH-04-1
Cleanup Date1: 10/30/13

Parameter	Result	Qualifier	Units	RL	MDL
Extractable Petroleum Hydrocarbons - Westborough Lab for sample(s): 01-04 Batch: WG647931-1					
C9-C18 Aliphatics	ND		ug/l	100	--
C19-C36 Aliphatics	ND		ug/l	100	--
C11-C22 Aromatics	ND		ug/l	100	--
C11-C22 Aromatics, Adjusted	ND		ug/l	100	--

Surrogate	%Recovery	Qualifier	Acceptance Criteria
Chloro-Octadecane	56		40-140
o-Terphenyl	73		40-140
2-Fluorobiphenyl	75		40-140
2-Bromonaphthalene	73		40-140

Lab Control Sample Analysis

Batch Quality Control

Project Name: OFF WINTHROP STREET

Project Number: 2013-139

Lab Number: L1321719

Report Date: 11/04/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Extractable Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01-04 Batch: WG647931-2 WG647931-3								
C9-C18 Aliphatics	55		58		40-140	5		25
C19-C36 Aliphatics	67		71		40-140	6		25
C11-C22 Aromatics	78		78		40-140	0		25
Naphthalene	64		66		40-140	3		25
2-Methylnaphthalene	71		73		40-140	3		25
Acenaphthylene	65		68		40-140	5		25
Acenaphthene	72		74		40-140	3		25
Fluorene	74		75		40-140	1		25
Phenanthrene	77		78		40-140	1		25
Anthracene	74		75		40-140	1		25
Fluoranthene	79		79		40-140	0		25
Pyrene	80		81		40-140	1		25
Benzo(a)anthracene	75		75		40-140	0		25
Chrysene	76		76		40-140	0		25
Benzo(b)fluoranthene	76		79		40-140	4		25
Benzo(k)fluoranthene	81		76		40-140	6		25
Benzo(a)pyrene	73		75		40-140	3		25
Indeno(1,2,3-cd)Pyrene	77		76		40-140	1		25
Dibenzo(a,h)anthracene	58		57		40-140	2		25
Benzo(ghi)perylene	74		73		40-140	1		25
Nonane (C9)	40		42		30-140	5		25

Lab Control Sample Analysis

Batch Quality Control

Project Name: OFF WINTHROP STREET

Project Number: 2013-139

Lab Number: L1321719

Report Date: 11/04/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Extractable Petroleum Hydrocarbons - Westborough Lab Associated sample(s): 01-04 Batch: WG647931-2 WG647931-3								
Decane (C10)	49		52		40-140	6		25
Dodecane (C12)	59		62		40-140	5		25
Tetradecane (C14)	64		67		40-140	5		25
Hexadecane (C16)	67		71		40-140	6		25
Octadecane (C18)	71		75		40-140	5		25
Nonadecane (C19)	71		76		40-140	7		25
Eicosane (C20)	71		76		40-140	7		25
Docosane (C22)	71		76		40-140	7		25
Tetracosane (C24)	70		74		40-140	6		25
Hexacosane (C26)	69		73		40-140	6		25
Octacosane (C28)	67		70		40-140	4		25
Triacontane (C30)	68		71		40-140	4		25
Hexatriacontane (C36)	64		67		40-140	5		25

Surrogate	LCS %Recovery	Qual	LCSD %Recovery	Qual	Acceptance Criteria
Chloro-Octadecane	56		61		40-140
o-Terphenyl	73		72		40-140
2-Fluorobiphenyl	70		74		40-140
2-Bromonaphthalene	70		74		40-140
% Naphthalene Breakthrough	0		0		
% 2-Methylnaphthalene Breakthrough	0		0		

METALS

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321719
Report Date: 11/04/13

SAMPLE RESULTS

Lab ID: L1321719-04
Client ID: EN-4
Sample Location: CONCORD, MA
Matrix: Water
Date Collected: 10/28/13 13:00
Date Received: 10/28/13
Field Prep: See Narrative

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
MCP Dissolved Metals - Westborough Lab											
Antimony, Dissolved	0.0017		mg/l	0.0010	--	1	10/30/13 13:03	11/04/13 16:29	NA	97,6020A	BM
Arsenic, Dissolved	ND		mg/l	0.005	--	1	10/30/13 13:03	11/03/13 13:45	EPA 3005A	97,6010C	JH
Barium, Dissolved	0.10		mg/l	0.010	--	1	10/30/13 13:03	11/03/13 13:45	EPA 3005A	97,6010C	JH
Beryllium, Dissolved	ND		mg/l	0.005	--	1	10/30/13 13:03	11/03/13 13:45	EPA 3005A	97,6010C	JH
Cadmium, Dissolved	ND		mg/l	0.004	--	1	10/30/13 13:03	11/03/13 13:45	EPA 3005A	97,6010C	JH
Chromium, Dissolved	ND		mg/l	0.01	--	1	10/30/13 13:03	11/03/13 13:45	EPA 3005A	97,6010C	JH
Lead, Dissolved	ND		mg/l	0.010	--	1	10/30/13 13:03	11/03/13 13:45	EPA 3005A	97,6010C	JH
Mercury, Dissolved	ND		mg/l	0.0002	--	1	11/01/13 12:15	11/01/13 21:28	EPA 7470A	97,7470A	DR
Nickel, Dissolved	ND		mg/l	0.025	--	1	10/30/13 13:03	11/03/13 13:45	EPA 3005A	97,6010C	JH
Selenium, Dissolved	ND		mg/l	0.010	--	1	10/30/13 13:03	11/03/13 13:45	EPA 3005A	97,6010C	JH
Silver, Dissolved	ND		mg/l	0.007	--	1	10/30/13 13:03	11/03/13 13:45	EPA 3005A	97,6010C	JH
Thallium, Dissolved	ND		mg/l	0.0005	--	1	10/30/13 13:03	11/04/13 16:29	NA	97,6020A	BM
Vanadium, Dissolved	ND		mg/l	0.010	--	1	10/30/13 13:03	11/03/13 13:45	EPA 3005A	97,6010C	JH
Zinc, Dissolved	0.099		mg/l	0.050	--	1	10/30/13 13:03	11/03/13 13:45	EPA 3005A	97,6010C	JH

Project Name: OFF WINTHROP STREET **Lab Number:** L1321719

Project Number: 2013-139 **Report Date:** 11/04/13

Method Blank Analysis
Batch Quality Control

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Westborough Lab for sample(s): 04 Batch: WG648125-1										
Arsenic, Dissolved	ND		mg/l	0.005	--	1	10/30/13 13:03	11/03/13 13:33	97,6010C	JH
Barium, Dissolved	ND		mg/l	0.010	--	1	10/30/13 13:03	11/03/13 13:33	97,6010C	JH
Beryllium, Dissolved	ND		mg/l	0.005	--	1	10/30/13 13:03	11/03/13 13:33	97,6010C	JH
Cadmium, Dissolved	ND		mg/l	0.004	--	1	10/30/13 13:03	11/03/13 13:33	97,6010C	JH
Chromium, Dissolved	ND		mg/l	0.01	--	1	10/30/13 13:03	11/03/13 13:33	97,6010C	JH
Lead, Dissolved	ND		mg/l	0.010	--	1	10/30/13 13:03	11/03/13 13:33	97,6010C	JH
Nickel, Dissolved	ND		mg/l	0.025	--	1	10/30/13 13:03	11/03/13 13:33	97,6010C	JH
Selenium, Dissolved	ND		mg/l	0.010	--	1	10/30/13 13:03	11/03/13 13:33	97,6010C	JH
Silver, Dissolved	ND		mg/l	0.007	--	1	10/30/13 13:03	11/03/13 13:33	97,6010C	JH
Vanadium, Dissolved	ND		mg/l	0.010	--	1	10/30/13 13:03	11/03/13 13:33	97,6010C	JH
Zinc, Dissolved	ND		mg/l	0.050	--	1	10/30/13 13:03	11/03/13 13:33	97,6010C	JH

Prep Information

Digestion Method: EPA 3005A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Westborough Lab for sample(s): 04 Batch: WG648746-1										
Mercury, Dissolved	ND		mg/l	0.0002	--	1	11/01/13 12:15	11/01/13 21:01	97,7470A	DR

Prep Information

Digestion Method: EPA 7470A

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
MCP Dissolved Metals - Westborough Lab for sample(s): 04 Batch: WG649221-1										
Antimony, Dissolved	ND		mg/l	0.0010	--	1	10/30/13 13:03	11/04/13 16:10	97,6020A	BM
Thallium, Dissolved	ND		mg/l	0.0005	--	1	10/30/13 13:03	11/04/13 16:10	97,6020A	BM

Project Name: OFF WINTHROP STREET
Project Number: 2013-139
Lab Number: L1321719
Report Date: 11/04/13

Method Blank Analysis
Batch Quality Control

Prep Information

Digestion Method: NA

Lab Control Sample Analysis

Batch Quality Control

Project Name: OFF WINTHROP STREET

Project Number: 2013-139

Lab Number: L1321719

Report Date: 11/04/13

Parameter	LCS %Recovery	Qual	LCSD %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
MCP Dissolved Metals - Westborough Lab Associated sample(s): 04 Batch: WG648125-2 WG648125-3								
Arsenic, Dissolved	100		101		80-120	1		20
Barium, Dissolved	96		95		80-120	1		20
Beryllium, Dissolved	97		98		80-120	1		20
Cadmium, Dissolved	99		100		80-120	1		20
Chromium, Dissolved	95		100		80-120	5		20
Lead, Dissolved	100		102		80-120	2		20
Nickel, Dissolved	94		95		80-120	1		20
Selenium, Dissolved	103		103		80-120	0		20
Silver, Dissolved	101		101		80-120	0		20
Vanadium, Dissolved	99		100		80-120	1		20
Zinc, Dissolved	97		98		80-120	1		20
MCP Dissolved Metals - Westborough Lab Associated sample(s): 04 Batch: WG648746-2 WG648746-3								
Mercury, Dissolved	108		108		80-120	0		20
MCP Dissolved Metals - Westborough Lab Associated sample(s): 04 Batch: WG649221-2 WG649221-3								
Antimony, Dissolved	82		85		80-120	4		20
Thallium, Dissolved	96		97		80-120	1		20

Project Name: OFF WINTHROP STREET
Project Number: 2013-139

Lab Number: L1321719
Report Date: 11/04/13

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Reagent H2O Preserved Vials Frozen on: NA

Cooler Information **Custody Seal**

Cooler	
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1321719-01A	Vial HCl preserved	A	N/A	2.2	Y	Absent	MCP-8260-10(14)
L1321719-01B	Vial HCl preserved	A	N/A	2.2	Y	Absent	MCP-8260-10(14)
L1321719-01C	Vial HCl preserved	A	N/A	2.2	Y	Absent	MCP-8260-10(14)
L1321719-01D	Amber 1000ml HCl preserved	A	<2	2.2	Y	Absent	EPH-10(14)
L1321719-01E	Amber 1000ml HCl preserved	A	<2	2.2	Y	Absent	EPH-10(14)
L1321719-02A	Vial HCl preserved	A	N/A	2.2	Y	Absent	MCP-8260-10(14)
L1321719-02B	Vial HCl preserved	A	N/A	2.2	Y	Absent	MCP-8260-10(14)
L1321719-02C	Vial HCl preserved	A	N/A	2.2	Y	Absent	MCP-8260-10(14)
L1321719-02D	Amber 1000ml HCl preserved	A	<2	2.2	Y	Absent	EPH-10(14)
L1321719-02E	Amber 1000ml HCl preserved	A	<2	2.2	Y	Absent	EPH-10(14)
L1321719-03A	Vial HCl preserved	A	N/A	2.2	Y	Absent	MCP-8260-10(14)
L1321719-03B	Vial HCl preserved	A	N/A	2.2	Y	Absent	MCP-8260-10(14)
L1321719-03C	Vial HCl preserved	A	N/A	2.2	Y	Absent	MCP-8260-10(14)
L1321719-03D	Amber 1000ml HCl preserved	A	<2	2.2	Y	Absent	EPH-10(14)
L1321719-03E	Amber 1000ml HCl preserved	A	<2	2.2	Y	Absent	EPH-10(14)
L1321719-04A	Vial HCl preserved	A	N/A	2.2	Y	Absent	MCP-8260-10(14)
L1321719-04B	Vial HCl preserved	A	N/A	2.2	Y	Absent	MCP-8260-10(14)
L1321719-04C	Vial HCl preserved	A	N/A	2.2	Y	Absent	MCP-8260-10(14)
L1321719-04D	Amber 1000ml HCl preserved	A	<2	2.2	Y	Absent	EPH-10(14)
L1321719-04E	Amber 1000ml HCl preserved	A	<2	2.2	Y	Absent	EPH-10(14)

*Values in parentheses indicate holding time in days

Project Name: OFF WINTHROP STREET
Project Number: 2013-139

Lab Number: L1321719
Report Date: 11/04/13

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1321719-04F	Plastic 250ml HNO3 preserved	A	<2	2.2	Y	Absent	MCP-CD-6010S-10(180),MCP-7470S-10(28),MCP-AG-6010S-10(180),MCP-SB-6020S-10(180),MCP-ZN-6010S-10(180),MCP-AS-6010S-10(180),MCP-CR-6010S-10(180),MCP-TL-6020S-10(180),MCP-BA-6010S-10(180),MCP-BE-6010S-10(180),MCP-PB-6010S-10(180),MCP-NI-6010S-10(180),MCP-SE-6010S-10(180),MCP-V-6010S-10(180)

Container Comments

L1321719-04F

*Values in parentheses indicate holding time in days

Project Name:	OFF WINTHROP STREET	**Lab Number:**	L1321719
Project Number:	2013-139	**Report Date:**	11/04/13

GLOSSARY

Acronyms

EDL - Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).

EPA - Environmental Protection Agency.

LCS - Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

LCSD - Laboratory Control Sample Duplicate: Refer to LCS.

LFB - Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.

MDL - Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

MS - Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.

MSD - Matrix Spike Sample Duplicate: Refer to MS.

NA - Not Applicable.

NC - Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.

NI - Not Ignitable.

RL - Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.

RPD - Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.

SRM - Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.

Footnotes

1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

A - Spectra identified as "Aldol Condensation Product".

B - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit.

C - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.

D - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.

E - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.

G - The concentration may be biased high due to matrix interferences (i.e, co-elution) with non-target compound(s). The result should be considered estimated.

H - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.

I - The lower value for the two columns has been reported due to obvious interference.

Report Format: Data Usability Report

Project Name:	OFF WINTHROP STREET	**Lab Number:**	L1321719
Project Number:	2013-139	**Report Date:**	11/04/13

Data Qualifiers

M - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.

NJ - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.

P - The RPD between the results for the two columns exceeds the method-specified criteria.

Q - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)

R - Analytical results are from sample re-analysis.

RE - Analytical results are from sample re-extraction.

S - Analytical results are from modified screening analysis.

J - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).

ND - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report

Project Name:	OFF WINTHROP STREET	**Lab Number:**	L1321719
Project Number:	2013-139	**Report Date:**	11/04/13

REFERENCES

97 EPA Test Methods (SW-846) with QC Requirements & Performance Standards for the Analysis of EPA SW-846 Methods under the Massachusetts Contingency Plan, WSC-CAM-IIA, IIB, IIIA, IIIB, IIIC, IIID, VA, VB, VC, VIA, VIB, VIIIA and VIIIB, July 2010.

98 Method for the Determination of Extractable Petroleum Hydrocarbons (EPH), MassDEP, May 2004, Revision 1.1 with QC Requirements & Performance Standards for the Analysis of EPH under the Massachusetts Contingency Plan, WSC-CAM-IVB, July 2010.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.

Certificate/Approval Program Summary

Last revised October 1, 2013 - Westboro Facility

The following list includes only those analytes/methods for which certification/approval is currently held.
For a complete listing of analytes for the referenced methods, please contact your Alpha Customer Service Representative.

Connecticut Department of Public Health Certificate/Lab ID: PH-0574. ***NELAP Accredited Solid Waste/Soil.***

Drinking Water (Inorganic Parameters: Color, pH, Turbidity, Conductivity, Alkalinity, Chloride, Free Residual Chlorine, Fluoride, Calcium Hardness, Sulfate, Nitrate, Nitrite, Aluminum, Antimony, Arsenic, Barium, Beryllium, Cadmium, Calcium, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Nickel, Selenium, Silver, Sodium, Thallium, Zinc, Total Dissolved Solids, Total Organic Carbon, Total Cyanide, Perchlorate. Organic Parameters: Volatile Organics 524.2, Total Trihalomethanes 524.2, 1,2-Dibromo-3-chloropropane (DBCP) 504.1, Ethylene Dibromide (EDB) 504.1, 1,4-Dioxane (Mod 8270). Microbiology Parameters: Total Coliform-MF mEndo (SM9222B), Total Coliform – Colilert (SM9223, Enumeration and P/A), E. Coli. – Colilert (SM9223, Enumeration and P/A), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform-EC Medium (SM 9221E).

Wastewater/Non-Potable Water (Inorganic Parameters: Color, pH, Conductivity, Acidity, Alkalinity, Chloride, Total Residual Chlorine, Fluoride, Total Hardness, Silica, Sulfate, Sulfide, Ammonia, Kjeldahl Nitrogen, Nitrate, Nitrite, O-Phosphate, Total Phosphorus, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Strontium, Thallium, Tin, Titanium, Vanadium, Zinc, Total Residue (Solids), Total Dissolved Solids, Total Suspended Solids (non-filterable), BOD, CBOD, COD, TOC, Total Cyanide, Phenolics, Foaming Agents (MBAS), Bromide, Oil and Grease. Organic Parameters: PCBs, Organochlorine Pesticides, Technical Chlordane, Toxaphene, Acid Extractables (Phenols), Benzidines, Phthalate Esters, Nitrosamines, Nitroaromatics & Isophorone, Polynuclear Aromatic Hydrocarbons, Haloethers, Chlorinated Hydrocarbons, Volatile Organics, TPH (HEM/SGT), CT-Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH. Microbiology Parameters: Total Coliform – MF mEndo (SM9222B), Total Coliform – MTF (SM9221B), E. Coli – Colilert (SM9223 Enumeration), HPC – Pour Plate (SM9215B), Fecal Coliform – MF m-FC (SM9222D), Fecal Coliform – A-1 Broth (SM9221E), Enterococcus - Enterolert.

Solid Waste/Soil (Inorganic Parameters: pH, Sulfide, Aluminum, Antimony, Arsenic, Barium, Beryllium, Boron, Cadmium, Calcium, Chromium, Hexavalent Chromium, Cobalt, Copper, Iron, Lead, Magnesium, Manganese, Mercury, Molybdenum, Nickel, Potassium, Selenium, Silver, Sodium, Thallium, Tin, Vanadium, Zinc, Total Cyanide, Ignitability, Phenolics, Corrosivity, TCLP Leach (1311), SPLP Leach (1312 metals only), Reactivity. Organic Parameters: PCBs, PCBs in Oil, Organochlorine Pesticides, Technical Chlordane, Toxaphene, CT-Extractable Petroleum Hydrocarbons (ETPH), MA-EPH, MA-VPH, Dicamba, 2,4-D, 2,4,5-T, 2,4,5-TP(Silvex), Dalapon, Volatile Organics (SW 8260), Acid Extractables (Phenols) (SW 8270), Benzidines (SW 8270), Phthalates (SW 8270), Nitrosamines (SW 8270), Nitroaromatics & Cyclic Ketones (SW 8270), PAHs (SW 8270), Haloethers (SW 8270), Chlorinated Hydrocarbons (SW 8270).)

State of Illinois Certificate/Lab ID: 003155. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM2120B, 2320B, 2510B, 2540C, SM4500CN-CE, 4500F-C, 4500H-B, 4500NO3-F, 5310C, EPA 200.7, 200.8, 245.1, 300.0. Organic Parameters: EPA 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: SM2120B, 2310B, 2320B, 2340B, 2510B, 2540B, 2540C, 2540D, SM4500CL-E, 4500CN-E, 4500F-C, 4500H-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500P-E, 4500S-D, 4500SO3-B, 5210B, 5220D, 5310C, 5540C, EPA 120.1, 1664A, 200.7, 200.8, 245.1, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1. Organic Parameters: EPA 608, 624, 625.)

Hazardous and Solid Waste (Inorganic Parameters: EPA 1010A, 1030, 1311, 1312, 6010C, 6020A, 7196A, 7470A, 7471B, 9012B, 9014, 9038, 9040C, 9045D, 9050A, 9065, 9251. Organic Parameters: 8011 (NPW only), 8015C, 8081B, 8082A, 8151A, 8260C, 8270D, 8315A, 8330.)

Maine Department of Human Services Certificate/Lab ID: 2009024.
Drinking Water (Inorganic Parameters: SM9215B, 9222D, 9223B, EPA 180.1, 353.2, SM2120B, 2130B, 2320B, 2510C, 2540C, 4500Cl-D, 4500CN-C, 4500CN-E, 4500F-C, 4500H+B, 4500NO3-F, 5310C, EPA 200.7, EPA 200.8, 245.1, EPA 300.0. Organic Parameters: 504.1, 524.2.)

Wastewater/Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 8315A, 9010C, SM2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500Cl-E, 4500CN-C, 4500CN-E, 4500F-B, 4500F-C, 4500H+B, 4500Norg-C, 4500NH3-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500P-B, 4500P-E, 4500S2-D, 4500SO3-B, 5540C, 5210B, 5220D, 5310C, 9010B, 9030B, 9040C, 7470A, 7196A, 2340B, EPA 200.7, 6010C, 200.8, 6020A, 245.1, 1311, 1312, 3005A, Enterolert, 9223B, 9222D. Organic Parameters: 608, 624, 625, 8011, 8081B, 8082A, 8330, 8151A, 8260C, 8270D, 3510C, 3630C, 5030B, ME-DRO, ME-GRO, MA-EPH, MA-VPH.)

Solid Waste/Soil (Inorganic Parameters: 9010B, 9012A, 9014, 9040B, 9045C, 6010C, 6020A, 7471B, 7196A, 9050A, 1010, 1030, 9065, 1311, 1312, 3005A, 3050B, 9038, 9251. Organic Parameters: ME-DRO, ME-GRO, MA-EPH, MA-VPH, 8260C, 8270D, 8330, 8151A, 8081B, 8082A, 3540C, 3546, 3580A, 3620C, 3630C, 5030B, 5035.)

Massachusetts Department of Environmental Protection Certificate/Lab ID: M-MA086.
*Drinking Water (*Inorganic Parameters: (EPA 200.8 for: Sb,As,Ba,Be,Cd,Cr,Cu,Pb,Ni,Se,Tl) (EPA 200.7 for: Ba,Be,Ca,Cd,Cr,Cu,Na,Ni) 245.1, (300.0 for: Nitrate-N, Fluoride, Sulfate); (EPA 353.2 for: Nitrate-N, Nitrite-N); (SM4500NO3-F for: Nitrate-N and Nitrite-N); 4500F-C, 4500CN-CE, EPA 180.1, SM2130B, SM4500Cl-D, 2320B, SM2540C, SM4500H-B. Organic Parameters: (EPA 524.2 for: Trihalomethanes, Volatile Organics); (504.1 for: 1,2-Dibromoethane, 1,2-Dibromo-3-Chloropropane), EPA 332. Microbiology Parameters: SM9215B; ENZ. SUB. SM9223; ColilertQT SM9223B; MF-SM9222D.)

*Non-Potable Water (*Inorganic Parameters:, (EPA 200.8 for: Al,Sb,As,Be,Cd,Cr,Cu,Pb,Mn,Ni,Se,Ag,Tl,Zn); (EPA 200.7 for: Al,Sb,As,Be,Cd,Ca,Cr,Co,Cu,Fe,Pb,Mg,Mn,Mo,Ni,K,Se,Ag,Na,Sr,Ti,Tl,V,Zn); 245.1, SM4500H,B, EPA 120.1, SM2510B, 2540C, 2340B, 2320B, 4500CL-E, 4500F-BC, 426C, SM4500NH3-BH, (EPA 350.1 for: Ammonia-N), LACHAT 10-107-06-1-B for Ammonia-N, SM4500NO3-F, 353.2 for Nitrate-N, SM4500NH3-BC-NES, EPA 351.1, SM4500P-E, 4500P-B,E, 5220D, EPA 410.4, SM 5210B, 5310C, 4500CL-D, EPA 1664, SM14 510AC, EPA 420.1, SM4500-CN-CE, SM2540D.
Organic Parameters: (EPA 624 for Volatile Halocarbons, Volatile Aromatics),(608 for: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT,Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs-Water), (EPA 625 for SVOC Acid Extractables and SVOC Base/Neutral Extractables), 600/4-81-045-PCB-Oil. Microbiology Parameters: (ColilertQT SM9223B; Enterolert-QT: SM9222D-MF.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 200307. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM 9222B, 9223B, 9215B, EPA 200.7, 200.8, 300.0, SM4500CN-E, 4500H+B, 4500NO3-F, 2320B, 2510B, 2540C, 4500F-C, 5310C, 2120B, EPA 332.0. Organic Parameters: 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM9222D, 9221B, 9222B, 9221E-EC, EPA 3005A, 200.7, 200.8, 245.1, SW-846 6010C, 6020A, 7196A, 7470A, SM3500-CR-D, EPA 120.1, 300.0, 350.1, 350.2, 351.1, 353.2, 410.4, 420.1, 426C, 1664A, SW-846 9010B, 9010C, 9030, 9040B, 9040C, SM2120B, 2310B, 2320B, 2340B, 2540B, 2540D, 4500H+B, 4500CL-E, 4500CN-E, 4500NH3-H, 4500NO3-F, 4500NO2-B, 4500P-E, 4500-S2-D, 4500SO3-B, 5210B, 5220D, 2510B, 2540C, 4500F-C, 5310C, 5540C, LACHAT 10-204-00-1-A, LACHAT 10-107-06-2-D, 3060A. Organic Parameters: SW-846 3510C, 3630C, 5030B, 8260C, 8270D, 8330, EPA 624, 625, 608, SW-846 8082A, 8081B, 8015C, 8151A, 8330, 8270D-SIM.)

Solid & Chemical Materials (Inorganic Parameters: SW-846 6010C, 6020A, 7196A, 7471B, 1010, 1010A, 1030, 9010C, 9012B, 9014, 9030B, 9040C, 9045C, 9045D, 9050, 9065, 9251, 1311, 1312, 3005A, 3050B, 3060A. Organic Parameters: SW-846 3540C, 3546, 3050B, 3580A, 3620D, 3630C, 5030B, 5035, 8260C, 8270D, 8270D-SIM, 8330, 8151A, 8015B, 8015C, 8082A, 8081B.)

New Hampshire Department of Environmental Services Certificate/Lab ID: 2064. ***NELAP Accredited.***
Drinking Water (Organic Parameters: **EPA 524.2:** Di-isopropyl ether (DIPE), Ethyl-t-butyl ether (ETBE), Tert-amyl methyl ether (TAME)).

Non-Potable Water (Organic Parameters: **EPA 8260C:** 1,3,5-Trichlorobenzene. **EPA 8015C(M):** TPH.)

Solid & Chemical Materials (Organic Parameters: **EPA 8260C:** 1,3,5-Trichlorobenzene.)

New Jersey Department of Environmental Protection Certificate/Lab ID: MA935. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9222B, 9221E, 9223B, 9215B, 4500CN-CE, 4500NO3-F, 4500F-C, EPA 300.0, 200.7, 200.8, 245.1, 2540C, SM2120B, 2320B, 2510B, 5310C, SM4500H-B. Organic Parameters: EPA 332, 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: SM5210B, EPA 410.4, SM5220D, 4500Cl-E, EPA 300.0, SM2120B, 2340B, SM4500F-BC, EPA 200.7, 200.8, 351.1, LACHAT 10-107-06-2-D, EPA 353.2, SM4500NO3-F, 4500NO2-B, EPA 1664A, SM5310C, 4500-PE, EPA 420.1, SM4500P-B5+E, 2540B, 2540C, 2540D, EPA 120.1, SM2510B, 9222D, 9221B, 9221C, 9221E, 9222B, 9215B, 2310B, 2320B, 4500NH3-H, 4500-S D, 4500SO4-E, EPA 350.1, 350.2, SW-846 1312, 7470A, 5540C, SM4500H-B, 4500SO3-B, SM3500Cr-D, 4500CN-CE, EPA 245.1, SW-846 9040B, 9040C, 3005A, 3015, EPA 6010B, 6010C, 6020, 6020A, 7196A, 3060A, SW-846 9010C, 9030B. Organic Parameters: SW-846 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3510C, EPA 608, 624, 625, SW-846 3630C, 5030B, 5030C, 8011, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 1,4-Dioxane by NJ Modified 8270, 8015B, NJ EPH.)

Solid & Chemical Materials (Inorganic Parameters: SW-846, 6010B, 6010C, 6020, 6020A, 7196A, 3060A, 9030B, 1010, 1010A, 1030, 1311, 1312, 3005A, 3050B, 7471A, 7471B, 9010C, 9012B, 9014, 9038, 9040B, 9040C, 9045C, 9045D,

9050A, 9065, 9251. Organic Parameters: SW-846 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8330, 8260B, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 3540C, 3546, 3580A, 3620C, 3630C, 5030B, 5030C, 5035L, 5035H, NJ EPH.)

New York Department of Health Certificate/Lab ID: 11148. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: SM9223B, 9222B, 9215B, EPA 200.8, 200.7, 245.1, SM5310C, EPA 332.0, SM2320B, EPA 300.0, SM2120B, 4500CN-E, 4500F-C, 4500NO3-F, 2540C, SM 2510B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: SM9221E, 9222D, 9221B, 9222B, 9215B, 5210B, 5310C, EPA 410.4, SM5220D, 2310B, 2320B, EPA 200.7, 300.0, SM4500CL-E, 4500F-C, SM15 426C, EPA 350.1, SM4500NH3-BH, EPA 351.1, LACHAT 10-107-06-2, EPA 353.2, SM4500-NO3-F, 4500-NO2-B, 4500P-E, 2340B, 2540C, 2540B, 2540D, EPA 200.8, EPA 6010C, 6020A, EPA 7196A, SM3500Cr-D, EPA 245.1, 7470A, SM2120B, 4500CN-CE, EPA 1664A, EPA 420.1, SM14 510C, EPA 120.1, SM2510B, SM4500S-D, SM5540C, EPA 8315A, 3005A, 9010C, 9030B. Organic Parameters: EPA 624, 8260C, 8270D, 8270D-SIM, 625, 608, 8081B, 8151A, 8330A, 8082A, EPA 3510C, 5030B, 5030C, 8015C, 8011.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010A, 1030, EPA 6010C, 6020A, 7196A, 7471B, 8315A, 9012B, 9014, 9065, 9050A, 9038, 9251, EPA 1311, 1312, 3005A, 3050B, 9010C, 9030B, 9040C, 9045D. Organic Parameters: EPA 8260C, 8270D, 8270D-SIM, 8015C, 8081B, 8151A, 8330A, 8082A, 3540C, 3546, 3580A, 5035A-H, 5035A-L.)

North Carolina Department of the Environment and Natural Resources Certificate/Lab ID : 666. (Inorganic Parameters: SM2310B, 2320B, 4500Cl-E, 4500Cn-E, 9012B, 9014, Lachat 10-204-00-1-X, 1010A, 1030, 4500NO3-F, 353.2, 4500P-E, 4500SO4-E, 300.0, 4500S-D, 5310B, 5310C, 6010C, 6020A, 200.7, 200.8, 3500Cr-B, 7196A, 245.1, 7470A, 7471B, 1311,1312. Organic Parameters: 608, 8081B, 8082A, 624, 8260B, 625, 8270D, 8151A, 8015C, 504.1, MA-EPH, MA-VPH.)

Drinking Water Program Certificate/Lab ID: 25700. (Inorganic Parameters: Chloride EPA 300.0. Organic Parameters: 524.2)

Pennsylvania Department of Environmental Protection Certificate/Lab ID : 68-03671. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: 200.7, 200.8, 300.0, 332.0, 2120B, 2320B, 2510B, 2540C, 4500-CN-CE, 4500F-C, 4500H+-B, 4500NO3-F, 5310C. Organic Parameters: EPA 524.2, 504.1)

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1312, 3005A,3015, 3060A, 200.7, 200.8, 410.4, 1664A, SM2540D, 5210B, 5220D, 4500-P,BE, 245.1, 300.0, 350.1, 350.2, 351.1, 353.2, 420.1, 6010C, 6020A, 7196A, 7470A, 9030B, 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 3500Cr-D, 426C, 4500CN-CE, 4500Cl-E, 4500F-B, 4500F-C, 4500H+-B, 4500NH3-H, 4500NO2-B, 4500NO3-F, 4500S-D, 4500SO3-B, 5310BCD, 5540C, 9010C, 9040C. Organic Parameters: EPA 3510C, 3630C, 5030B, 625, 624, 608, 8081B, 8082A, 8151A, 8260C, 8270D, 8270D-SIM, 8330, 8015C, NJ-EPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 350.1, 1010, 1030, 1311, 1312, 3005A, 3050B, 3060A, 6010C, 6020A, 7196A, 7471B, 9010C, 9012B, 9014, 9040B, 9045D, 9050A, 9065, SM 4500NH3-BH, 9030B, 9038, 9251. Organic Parameters: 3540C, 3546, 3580A, 3620C, 3630C, 5035, 8015C, 8081B, 8082A, 8151A, 8260C, 8270D, 8270D-SIM, 8330, NJ-EPH.)

Rhode Island Department of Health Certificate/Lab ID: LAO00065. ***NELAP Accredited via NJ-DEP.***
Refer to MA-DEP Certificate for Potable and Non-Potable Water.
Refer to NJ-DEP Certificate for Potable and Non-Potable Water.

Texas Commisson on Environmental Quality Certificate/Lab ID: T104704476. ***NELAP Accredited.***
Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664, 200.7, 200.8, 245.1, 245.2, 300.0, 350.1, 351.1, 353.2, 410.4, 420.1, 6010, 6020, 7196, 7470, 9040, SM 2120B, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 426C, 4500CL-E, 4500CN-E, 4500F-C, 4500H+B, 4500NH3-H, 4500NO2B, 4500P-E, 4500 $S2^{-}$D, 510C, 5210B, 5220D, 5310C, 5540C. Organic Parameters: EPA 608, 624, 625, 8081, 8082, 8151, 8260, 8270, 8330.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1311, 1312, 9012, 9014, 9040, 9045, 9050, 9065.)

Virginia Division of Consolidated Laboratory Services Certificate/Lab ID: 460195. ***NELAP Accredited.***
Drinking Water (Inorganic Parameters: EPA 200.7, 200.8, 300.0, 2510B, 2120B, 2540C, 4500CN-CE, 245.1, 2320B, 4500F-C, 4500NO3-F, 4500H+B, 5310C. Organic Parameters: EPA 504.1, 524.2.)

Non-Potable Water (Inorganic Parameters: EPA 120.1, 1664A, 200.7, 200.8, 245.1, 300.0, 350.1, 351.1, 351.2, 3005A, 3015, 1312, 6010B, 6010C, 3060A, 353.2, 420.1, 2340B, 6020, 6020A, SM4500S-D, SM4500-CN-CE, Lachat 10-204-00-1-X, 7196A, 7470A, 2310B, 2320B, 2510B, 2540B, 2540C, 2540D, 3500Cr-D, 426C, 4500Cl-E, 4500F-B, 4500F-C,

4500NH3-H, 4500NO2-B, 4500NO3-F, 4500 SO3-B, 4500H-B, 4500PE, 510AC, 5210B, 5310B 5310C, 5540C, 9010Cm 9030B, 9040C. Organic Parameters: EPA 3510C, 3630C, 5030B, 8260B, 608, 624, 625, 8011, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8260C, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330,)

Solid & Hazardous Waste (Inorganic Parameters: EPA 1010A, 1030, 3060A, 3050B, 1311, 1312, 6010B, 6010C, 6020, , 7196A, 7471A, 7471B, 6020A, 9010C, 9012B, 9030B, 9014, 9038, 9040C, 9045D, 9251, 9050A, 9065. Organic Parameters: EPA 5030B, 5035, 3540C, 3546, 3550B, 3580A, 3620C, 3630C, 6020A, 8260B, 8260C, 8015B, 8015C, 8081A, 8081B, 8082, 8082A, 8151A, 8270C, 8270D, 8270C-SIM, 8270D-SIM, 8330.)

Department of Defense, L-A-B Certificate/Lab ID: L2217.
Drinking Water (Inorganic Parameters: SM 4500H-B. Organic Parameters: EPA 524.2, 504.1.)

Non-Potable Water (Inorganic Parameters: EPA 200.7, 200.8, 6010C, 6020A, 245.1, 7470A, 9040B, 9010B, 180.1, 300.0, 332.0, 6860, 351.1, 353.2, 9060, 1664A, SM 4500CN-E, 4500H-B, 4500Norg-C, 4500NO3-F, 5310C, 2130B, 2320B, 2340B, 2540C, 5540C, 3005A, 3015, 9056, 7196A, 3500-Cr-D. Organic Parameters: EPA 8015C, 8151A, 8260C, 8270D, 8270D-SIM, 8330A, 8082A, 8081B, 3510C, 5030B, MassDEP EPH, MassDEP VPH.)

Solid & Hazardous Waste (Inorganic Parameters: EPA 200.7, 6010C, 6020A, 7471A, 6860, 1311, 1312, 3050B, 7196A, 9040B, 9045C, 9010C, 9012B, 9251, SM3500-CR-D, 4500CN-CE, 2540G, Organic Parameters: EPA 8015C, 8151A, 8260C, 8270D, 8270D-SIM, 8330A/B-prep, 8082A, 8081B, 3540C, 3546, 3580A, 5035A, MassDEP EPH, MassDEP VPH.)

The following analytes are not included in our current NELAP/TNI Scope of Accreditation:
EPA 524.2: Acetone, 2-Butanone (Methyl ethyl ketone (MEK)), Tert-butyl alcohol, 2-Hexanone, Tetrahydrofuran, 1,3,5-Trichlorobenzene, 4-Methyl-2-pentanone (MIBK), Carbon disulfide, Diethyl ether. **EPA 8260B:** 1,2,4,5-Tetramethylbenzene, 4-Ethyltoluene. **EPA 8260 Non-potable water matrix:** Iodomethane (methyl iodide), Methyl methacrylate. **EPA 8260 Soil matrix:** Tert-amyl methyl ether (TAME), Diisopropyl ether (DIPE), Azobenzene. **EPA 8330A:** PETN, Picric Acid, Nitroglycerine, 2,6-DANT, 2,4-DANT. **EPA 8270C:** Methyl naphthalene, Dimethyl naphthalene, Total Methylnapthalenes, Total Dimethylnaphthalenes, 1,4-Diphenylhydrazine. **EPA 625:** 4-Chloroaniline, 4-Methylphenol. Total Phosphorus in a soil matrix, TKN in a soil matrix, NO2 in a soil matrix, NO3 in a soil matrix. **EPA 9071:** Total Petroleum Hydrocarbons, Oil & Grease.

CHAIN OF CUSTODY

PAGE 1 OF 1

8 Walkup Drive
Westboro, MA 01581
Tel: 508-898-9220

320 Forbes Blvd
Mansfield, MA 02048
Tel: 508-822-9300

Date Rec'd in Lab: 10/28/13

ALPHA Job #: L1321719

Client Information

Client: ENSTRAT, INC
Address: 28 Lord Rd, Suite 205
Marlboro, MA 01752
Phone: 508 460 6100
Email: SPAQUETTE@ENSTRAT.NET

Project Information

Project Name: Off Winthrop St
Project Location: Concord, MA
Project #: 2013-139
Project Manager: Stacy Paquette
ALPHA Quote #:

Turn-Around Time

☑ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: 11/4/13

Additional Project Information:

Report Information - Data Deliverables

☐ ADEx ☑ EMAIL

Billing Information

☑ Same as Client info PO #:

Regulatory Requirements & Project Information Requirements

☑ Yes ☐ No MA MCP Analytical Methods ☐ Yes ☑ No CT RCP Analytical Methods
☐ Yes ☑ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☑ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☑ No NPDES RGP
☐ Other State /Fed Program _____ Criteria _____

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler Initials	VOC: ☑ 8260 ☐ 624	SVOC: ☐ 524.2 ☐ ABN	METALS: ☐ PAH ☐ MCP 13	METALS: ☑ MCP 14 ☐ RCP 15 ☐ RCRA5 ☐ RCRA8	EPH: ☐ PP13 ☐ Ranges & Targets ☑ Ranges Only	VPH: ☐ Ranges & Targets ☐ Ranges Only	☐ PCB ☐ PEST	TPH: ☐ Quant Only ☐ Fingerprint	Sample Comments	TOTAL # BOTTLES
21719-01	EN-1	10/28/13	1030	GW	SP	✓				✓					5
02	EN-2	"	1130	"	"	✓				✓					5
03	EN-3	"	1230	"	"	✓				✓					5
04	EN-4	"	100	"	"	✓		✓		✓					6
Container Type						✓		P		A					
Preservative						B		C		B					

SAMPLE INFO
Filtration ☑ Field ☐ Lab to do
Preservation ☐ Lab to do

Container Type
P= Plastic
A= Amber glass
V= Vial
G= Glass
B= Bacteria cup
C= Cube
O= Other
E= Encore
D= BOD Bottle

Preservative
A= None
B= HCl
C= HNO_3
D= H_2SO_4
E= NaOH
F= MeOH
G= $NaHSO_4$
H = $Na_2S_2O_3$
I= Ascorbic Acid
J = NH_4Cl
K= Zn Acetate
O= Other

Relinquished By:	Date/Time	Received By:	Date/Time
Stacy Paquette	10/28/13 2400	[signature]	10/28/13 15:50
[signature]	10/28/13 1630	William McAlender	10/28/13 1630

All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

FORM NO: 01-01 (rev. 12-Mar-2012)

7A
Volatile Organics CONTINUING CALIBRATION CHECK

Lab Name: Alpha Analytical Labs

SDG No.: L1321719

Instrument ID: Quimby.i Calibration Date: 01-NOV-2013 Time: 10:57

Lab File ID: 1101A02 Init. Calib. Date(s): 30-OCT-2 30-OCT-2

Sample No: 8260 CCAL Init. Calib. Times : 19:37 22:46

Compound	RRF	RRF	MIN RRF	%D	MAX %D	
dichlorodifluoromethane	.38912	.37205	.1	4	20	
chloromethane	.3589	.39964	.1	-11	20	
vinyl chloride	.35814	.35027	.1	2	20	
bromomethane	100	94.895	.1	5	20	
chloroethane	.24039	.23742	.1	1	20	
trichlorofluoromethane	.62467	.58625	.1	6	20	
ethyl ether	.15706	.16573	.05	-6	20	
acetone	.09054	.13638	.1	-51	20	F
1,1,-dichloroethene	.32663	.32635	.1	0	20	
methylene chloride	.36869	.36871	.1	0	20	
carbon disulfide	.94159	.86208	.1	8	20	
methyl tert butyl ether	.66306	.53823	.1	19	20	
trans-1,2-dichloroethene	.36067	.35506	.1	2	20	
Diisopropyl Ether	1.2948	1.3009	.05	0	20	
1,1-dichloroethane	.69768	.67983	.2	3	20	
Ethyl-Tert-Butyl-Ether	.96721	.94229	.05	3	20	
2-butanone	.11094	.15059	.1	-36	20	F
2,2-dichloropropane	.48885	.40669	.05	17	20	
cis-1,2-dichloroethene	.39491	.38955	.1	1	20	
chloroform	.70176	.68314	.2	3	20	
bromochloromethane	.18322	.18742	.05	-2	20	
tetrahydrofuran	.06104	.06969	.05	-14	20	
1,1,1-trichloroethane	.64485	.61194	.1	5	20	
1,1-dichloropropene	.54015	.52546	.05	3	20	
carbontetrachloride	.55352	.38228	.1	31	20	F
Tertiary-Amyl Methyl Ether	.67505	.68592	.05	-2	20	
1,2-dichloroethane	.50656	.50902	.1	0	20	
benzene	1.4567	1.4250	.5	2	20	
trichloroethene	.38505	.37639	.2	2	20	
1,2-dichloropropane	.36382	.36122	.1	1	20	
bromodichloromethane	.50651	.48212	.2	5	20	
1,4-dioxane	.00183	.00207	.05	-14	20	F
dibromomethane	.17693	.1862	.05	-5	20	
4-methyl-2-pentanone	.0791	.08354	.1	-6	20	F
cis-1,3-dichloropropene	.52481	.53138	.2	-1	20	
toluene	1.1136	1.1231	.4	-1	20	
trans-1,3-dichloropropene	.4923	.51065	.1	-4	20	
1,1,2-trichloroethane	.22353	.24257	.1	-9	20	

FORM VII MCP-8260-10

7A
CONTINUING CALIBRATION CHECK

Lab Name: Alpha Analytical Labs

SDG No.: L1321719

Instrument ID: Quimby.i Calibration Date: 01-NOV-2013 Time: 10:57

Lab File ID: 1101A02 Init. Calib. Date(s): 30-OCT-2 30-OCT-2

Sample No: 8260 CCAL Init. Calib. Times : 19:37 22:46

Compound	RRF	RRF	MIN RRF	%D	MAX %D	
2-hexanone	.17037	.21417	.1	-26	20	F
1,3-dichloropropane	.51093	.54676	.05	-7	20	
tetrachloroethene	.58435	.59323	.2	-2	20	
chlorodibromomethane	.40272	.41412	.1	-3	20	
1,2-dibromoethane	.2999	.32592	.1	-9	20	
chlorobenzene	1.3393	1.3591	.5	-1	20	
1,1,1,2-tetrachloroethane	.46998	.45242	.05	4	20	
ethyl benzene	2.3086	2.3386	.1	-1	20	
p/m xylene	.94444	.96417	.1	-2	20	
o xylene	.89455	.9278	.3	-4	20	
styrene	1.4316	1.5067	.31	-5	20	
isopropylbenzene	2.5468	2.6131	.1	-3	20	
bromoform	.39163	.39681	.1	-1	20	
1,1,2,2,-tetrachloroethane	.50803	.55791	.3	-10	20	
1,2,3-trichloropropane	.42695	.46357	.05	-9	20	
n-propylbenzene	4.3048	4.3506	.05	-1	20	
bromobenzene	1.0024	1.0418	.05	-4	20	
1,3,5-trimethybenzene	3.5420	3.5976	.05	-2	20	
2-chlorotoluene	3.0682	3.0477	.05	1	20	
4-chorotoluene	2.8547	2.8658	.05	0	20	
tert-butylbenzene	3.1452	3.1867	.05	-1	20	
1,2,4-trimethylbenzene	3.3033	3.3428	.05	-1	20	
sec-butylbenzene	4.4457	4.5137	.05	-2	20	
p-isopropyltoluene	3.7677	3.9049	.05	-4	20	
1,3-dichlorobenzene	2.0081	2.0859	.6	-4	20	
1,4-dichlorobenzene	1.9667	2.0360	.5	-4	20	
n-butylbenzene	3.5219	3.5702	.05	-1	20	
1,2-dichlorobenzene	1.754	1.8697	.4	-7	20	
1,2-dibromo-3-chloropropane	.08292	.09556	.05	-15	20	
1,2,4-trichlorobenzene	.92005	.99904	.2	-9	20	
hexachlorobutadiene	.49988	.49251	.05	1	20	
naphthalene	1.4274	1.5859	.05	-11	20	
1,2,3-trichlorobenzene	.73187	.81576	.05	-11	20	
dibromofluoromethane	.26669	.27019	.05	-1	20	
1,2-dichloroethane-d4	.29247	.29754	.05	-2	20	
toluene-d8	1.1303	1.1599	.05	-3	20	
4-bromofluorobenzene	.81021	.78715	.05	3	20	

FORM VII MCP-8260-10

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

Project Limitations

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

PROJECT LIMITATIONS

1. This report assessed physical characteristics in regards to the presence of specific hazardous substances or petroleum products in the environment. Compliance of past or present owners or operators with any federal, state, or local laws and regulations was not verified.
2. Observations described in this assessment were made under the conditions stated within this report. The conclusions presented were based solely upon the services described and not upon scientific procedures which were beyond the scope of this assessment or the budgetary and time constraints imposed by the Client. Where access to portions of the Site were unavailable, limited, or obscured by ground cover conditions, such as snow, ice, or other obstructions, ENSTRAT, Inc. renders no opinion as to the presence of oil or hazardous materials in these areas. ENSTRAT, Inc. reserves the right to modify the conclusions of this report should further information become available.
3. Certain information provided by state and local officials, as well as other parties herein referenced, was used to develop this report. The accuracy or completeness of the information provided by these sources was not independently verified.
4. Present and past ownership information may have been obtained through a review of a land title records provided to ENSTRAT, Inc. by others. Ownership deed searches conducted by ENSTRAT, Inc. personnel do not constitute a certified title search or include extensive research for information concerning pending litigation and court orders imposing limits on usage of the Site.
5. Groundwater flow may have been estimated from a review of the USGS topographic map that includes the Site. However, ground-water flow directions interpreted from this source are only meant to be a regional estimate and should not be confused with a Site specific estimate that requires installing and surveying monitoring wells at the Site.
6. Variations in types and concentrations of contaminants and fluctuations in their flow paths may occur due to seasonal water table changes, past disposal practices, time, and other factors. Contaminant concentrations and groundwater-level measurements detected in test pits, borings, and observation wells were made at the time and under the conditions cited in the report. In the event additional chemical data becomes available, the conclusions and recommendations of this report may need modification.
7. Some elements of this report may be based on preliminary "screening" data obtained in the field. A quantitative analysis may be required in the event more specific information is necessary to evaluate conditions.
8. Some projects may contain conclusions based upon data obtained from a limited number of soil and water samples taken from widely - spaced subsurface explorations. The nature and extent of variations in the soil and water between these explorations may not become evident until further exploration is completed. Should variations or other latent conditions appear evident, a reevaluation of the conclusions and recommendations may be required.
9. No other quantitative laboratory testing was performed other than that specified in the report. Where an outside laboratory has conducted such analyses, an independent evaluation to ascertain the reliability of this data has not been conducted.
10. Testing and analysis to determine the presence or concentration of asbestos-containing materials, radon, mold, lead paint, and UFFI were not within the scope of this assessment and were not conducted unless specifically included in scope of services. Air quality sampling, property boundary surveys, evaluation of septic system compliance, and PCB analyses were not conducted as part of this project.
11. Chemical analyses were performed for specific constituents only as cited in this report and were based upon the information available at the time of this study. Chemical constituents not cited and outside the scope of this assessment may be present in the soil, ground water or surface water.
12. The direction of groundwater flow in bedrock fractures and joints is not reliably estimated from surface topography. Therefore, the impact of oil or hazardous materials on the Site from abutting and surrounding properties via bedrock fractures cannot be evaluated without the installation of deep bedrock monitoring wells.
13. Reports and other materials resulting from ENSTRAT, Inc.'s efforts on this project and Site are not intended or represented to be suitable for reuse by the Client or others on extensions or modifications of this project or for any other projects or sites. Such reuse by the Client or others, without the adaptation of ENSTRAT, Inc. for the specific purpose intended, shall be at the user's sole risk, without liability on the part of ENSTRAT, Inc. Copies of this report will not be provided by ENSTRAT, Inc. to any other party unless required by law.
14. This report is not compliant with and is not intended to be compliant with All Appropriate Inquiry (AAI) under ASTM 1527-05, and should not be relied upon as such.

ENSTRAT®
STRATEGIC ENVIRONMENTAL SERVICES

Quality Assurance/Quality Control

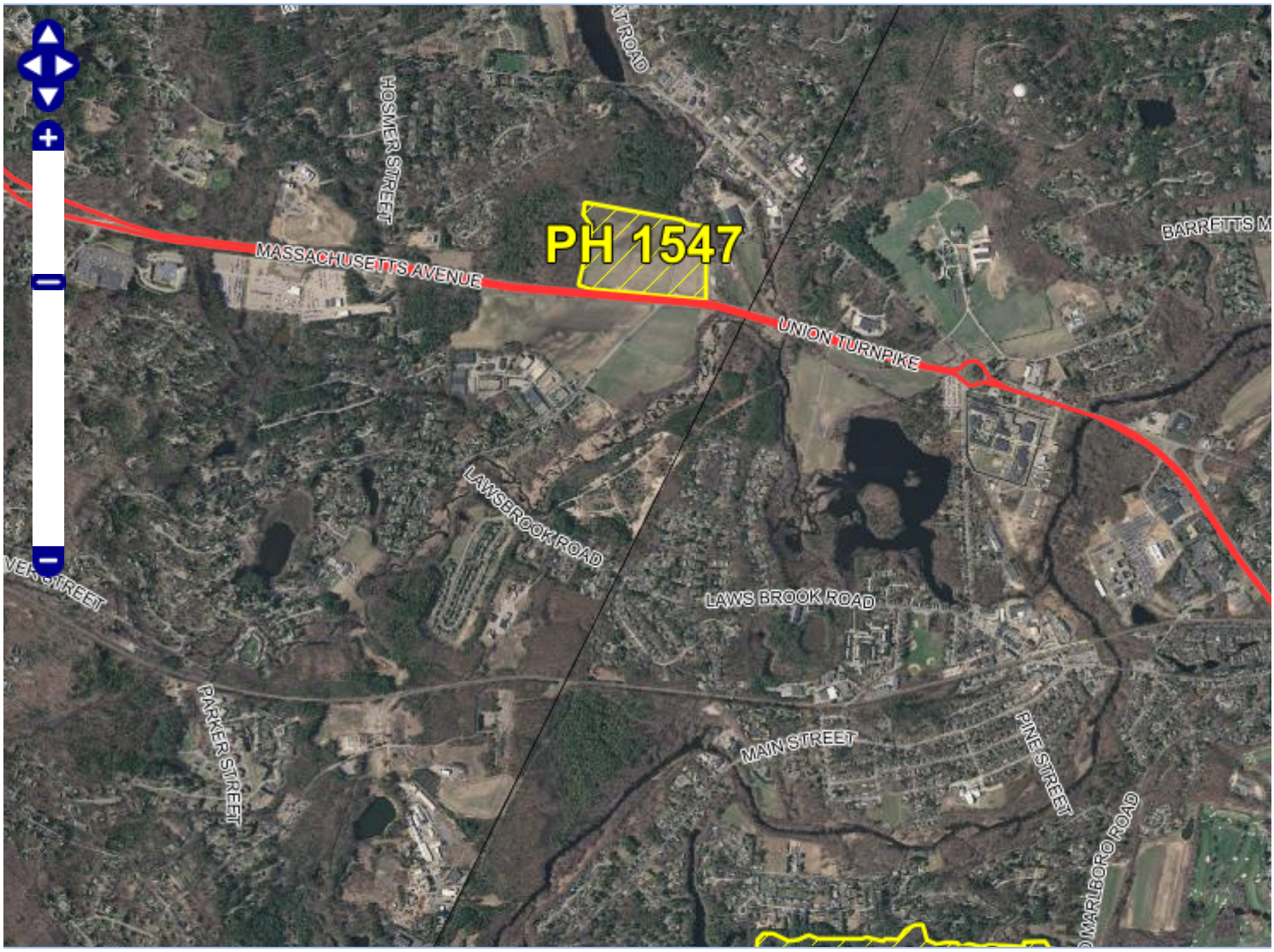
The following persons have reviewed this report as part of the Quality Assurance and Quality Control protocols of ENSTRAT, Inc.:

Thomas P. Luby, PG, LSP
President/Technical Manager

Stacy A. Paquette
Environmental Scientist

OLIVER: MassGIS's Online Mapping Tool [Please take our user survey]

Search for a location | Zoom to a town



0 m

Acceptable Separation Distance (ASD) Electronic Assessment Tool

The Environmental Planning Division (EPD) has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. The ASD is the distance from above ground stationary containerized hazards of an explosive or fire prone nature, to where a HUD assisted project can be located. The ASD is consistent with the Department's standards of blast overpressure (0.5 psi-buildings) and thermal radiation (450 BTU/ft^2- hr) people and 10,000 BTU/ft^2 -hr - buildings). Calculation of the ASD is the first step to assess site suitability for proposed HUD-assisted projects near stationary hazards. Additional guidance on ASDs is available in the Department's guidebook "Siting of HUD- Assisted Projects Near Hazardous Facilities" and the regulation 24 CFR Part 51, Subpart C, Sitting of HUD-Assisted Projects Near Hazardous Operations Handling Conventional Fuels or Chemicals of an Explosive or Flammable Nature.

Providing Feedback & Corrections

After using the ASD Assessment Tool following the directions in this User Guide, users are encouraged to provide feedback on how the ASD Assessment Tool may be improved. Users are also encouraged to send comments or corrections for the improvement of the tool. Please send your comments or other input to:

ATEC@hud.gov

Related Information

Assessment Tools for Environmental Compliance

- **ASDs User Guide**
- **ASD Flow Chart**

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the ASD result fields with the mouse.

Acceptable Separation Distance Assessment Tool - 133 Keyes Rd

Is the container above ground?	Yes: ☑ No: ☐
Is the container under pressure?	Yes: ☐ No: ☑
Does the container hold a cryogenic liquified gas?	Yes: ☐ No: ☐
Is the container diked?	Yes: ☐ No: ☑
	5000

What is the volume (gal) of the container?	
What is the Diked Area Length (ft)?	
What is the Diked Area Width (ft)?	
Calculate Acceptable Separation Distance	
Diked Area (sqft)	
ASD for Blast Over Pressure (ASDBOP)	
ASD for Thermal Radiation for People (ASDPPU)	540.74
ASD for Thermal Radiation for Buildings (ASDBPU)	105.81
ASD for Thermal Radiation for People (ASDPNPD)	
ASD for Thermal Radiation for Buildings (ASDBNPD)	

For mitigation options, please click on the following link:
Mitigation Options

Acceptable Separation Distance (ASD) Electronic Assessment Tool

The Environmental Planning Division (EPD) has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. The ASD is the distance from above ground stationary containerized hazards of an explosive or fire prone nature, to where a HUD assisted project can be located. The ASD is consistent with the Department's standards of blast overpressure (0.5 psi-buildings) and thermal radiation (450 BTU/ft^2- hr) people and 10,000 BTU/ft^2 -hr - buildings). Calculation of the ASD is the first step to assess site suitability for proposed HUD-assisted projects near stationary hazards. Additional guidance on ASDs is available in the Department's guidebook "Siting of HUD- Assisted Projects Near Hazardous Facilities" and the regulation 24 CFR Part 51, Subpart C, Sitting of HUD-Assisted Projects Near Hazardous Operations Handling Conventional Fuels or Chemicals of an Explosive or Flammable Nature.

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the ASD result fields with the mouse.

Acceptable Separation Distance Assessment Tool - 147 Lowell Rd

Is the container above ground?	Yes: ☑ No: ☐
Is the container under pressure?	Yes: ☐ No: ☑
Does the container hold a cryogenic liquified gas?	Yes: ☐ No: ☐
Is the container diked?	Yes: ☐ No: ☑
	112000

Providing Feedback & Corrections

After using the ASD Assessment Tool following the directions in this User Guide, users are encouraged to provide feedback on how the ASD Assessment Tool may be improved. Users are also encouraged to send comments or corrections for the improvement of the tool. Please send your comments or other input to:

ATEC@hud.gov

Related Information

Assessment Tools for Environmental Compliance

- **ASDs User Guide**
- **ASD Flow Chart**

What is the volume (gal) of the container?	
What is the Diked Area Length (ft)?	
What is the Diked Area Width (ft)?	
Calculate Acceptable Separation Distance	
Diked Area (sqft)	
ASD for Blast Over Pressure (ASDBOP)	
ASD for Thermal Radiation for People (ASDPPU)	1974.71
ASD for Thermal Radiation for Buildings (ASDBPU)	445.40
ASD for Thermal Radiation for People (ASDPNPD)	
ASD for Thermal Radiation for Buildings (ASDBNPD)	

For mitigation options, please click on the following link:
Mitigation Options

Acceptable Separation Distance (ASD) Electronic Assessment Tool

The Environmental Planning Division (EPD) has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. The ASD is the distance from above ground stationary containerized hazards of an explosive or fire prone nature, to where a HUD assisted project can be located. The ASD is consistent with the Department's standards of blast overpressure (0.5 psi-buildings) and thermal radiation (450 BTU/ft^2 - hr - people and 10,000 BTU/ft^2 - hr - buildings). Calculation of the ASD is the first step to assess site suitability for proposed HUD-assisted projects near stationary hazards. Additional guidance on ASDs is available in the Department's guidebook "Siting of HUD- Assisted Projects Near Hazardous Facilities" and the regulation 24 CFR Part 51, Subpart C, Sitting of HUD-Assisted Projects Near Hazardous Operations Handling Conventional Fuels or Chemicals of an Explosive or Flammable Nature.

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the ASD result fields with the mouse.

Acceptable Separation Distance Assessment Tool

Is the container above ground?	**Yes:** ☑ **No:** ☐
Is the container under pressure?	**Yes:** ☑ **No:** ☐
Does the container hold a cryogenic liquified gas?	**Yes:** ☐ **No:** ☑
Is the container diked?	**Yes:** ☐ **No:** ☐
What is the volume (gal) of the container?	1952
What is the Diked Area Length (ft)?	
What is the Diked Area Width (ft)?	
Calculate Acceptable Separation Distance	
Diked Area (sqft)	
ASD for Blast Over Pressure (ASDBOP)	272.22

ASD for Blast Over Pressure (ASDBOP)	273.23
ASD for Thermal Radiation for People (ASDPPU)	365.44
ASD for Thermal Radiation for Buildings (ASDBPU)	68.50
ASD for Thermal Radiation for People (ASDPNPD)	
ASD for Thermal Radiation for Buildings (ASDBNPD)	

For mitigation options, please click on the following link: Mitigation Options **(/resource/3846/acceptable-separation-distance-asd-hazard-mitigation-options/)**

Providing Feedback & Corrections

After using the ASD Assessment Tool following the directions in this User Guide, users are encouraged to provide feedback on how the ASD Assessment Tool may be improved. Users are also encouraged to send comments or corrections for the improvement of the tool.

Please send comments or other input using the **Contact Us (https://www.hudexchange.info/contact-us/)** form.

Related Information

- **ASD User Guide (/resource/3839/acceptable-separation-distance-asd-assessment-tool-user-guide/)**
- **ASD Flow Chart (/resource/3840/acceptable-separation-distance-asd-flowchart/)**

Acceptable Separation Distance (ASD) Electronic Assessment Tool

The Environmental Planning Division (EPD) has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. The ASD is the distance from above ground stationary containerized hazards of an explosive or fire prone nature, to where a HUD assisted project can be located. The ASD is consistent with the Department's standards of blast overpressure (0.5 psi-buildings) and thermal radiation (450 BTU/ft^2 - hr - people and 10,000 BTU/ft^2 - hr - buildings). Calculation of the ASD is the first step to assess site suitability for proposed HUD-assisted projects near stationary hazards. Additional guidance on ASDs is available in the Department's guidebook "Siting of HUD- Assisted Projects Near Hazardous Facilities" and the regulation 24 CFR Part 51, Subpart C, Sitting of HUD-Assisted Projects Near Hazardous Operations Handling Conventional Fuels or Chemicals of an Explosive or Flammable Nature.

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the ASD result fields with the mouse.

Acceptable Separation Distance Assessment Tool

Is the container above ground?	**Yes:** ☑ **No:** ☐
Is the container under pressure?	**Yes:** ☑ **No:** ☐
Does the container hold a cryogenic liquified gas?	**Yes:** ☐ **No:** ☑
Is the container diked?	**Yes:** ☐ **No:** ☐
What is the volume (gal) of the container?	630
What is the Diked Area Length (ft)?	
What is the Diked Area Width (ft)?	
Calculate Acceptable Separation Distance	
Diked Area (sqft)	
ASD for Blast Over Pressure (ASDBOP)	180.00

ASD for Blast Over Pressure (ASDBOP)	188.00
ASD for Thermal Radiation for People (ASDPPU)	228.14
ASD for Thermal Radiation for Buildings (ASDBPU)	40.61
ASD for Thermal Radiation for People (ASDPNPD)	
ASD for Thermal Radiation for Buildings (ASDBNPD)	

For mitigation options, please click on the following link: Mitigation Options **(/resource/3846/acceptable-separation-distance-asd-hazard-mitigation-options/)**

Providing Feedback & Corrections

After using the ASD Assessment Tool following the directions in this User Guide, users are encouraged to provide feedback on how the ASD Assessment Tool may be improved. Users are also encouraged to send comments or corrections for the improvement of the tool.

Please send comments or other input using the **Contact Us (https://www.hudexchange.info/contact-us/)** form.

Related Information

- **ASD User Guide (/resource/3839/acceptable-separation-distance-asd-assessment-tool-user-guide/)**
- **ASD Flow Chart (/resource/3840/acceptable-separation-distance-asd-flowchart/)**

Acceptable Separation Distance (ASD) Electronic Assessment Tool

The Environmental Planning Division (EPD) has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. The ASD is the distance from above ground stationary containerized hazards of an explosive or fire prone nature, to where a HUD assisted project can be located. The ASD is consistent with the Department's standards of blast overpressure (0.5 psi-buildings) and thermal radiation (450 BTU/ft^2 - hr - people and 10,000 BTU/ft^2 - hr - buildings). Calculation of the ASD is the first step to assess site suitability for proposed HUD-assisted projects near stationary hazards. Additional guidance on ASDs is available in the Department's guidebook "Siting of HUD- Assisted Projects Near Hazardous Facilities" and the regulation 24 CFR Part 51, Subpart C, Sitting of HUD-Assisted Projects Near Hazardous Operations Handling Conventional Fuels or Chemicals of an Explosive or Flammable Nature.

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the ASD result fields with the mouse.

Acceptable Separation Distance Assessment Tool

Is the container above ground?	**Yes:** ☑ **No:** ☐
Is the container under pressure?	**Yes:** ☑ **No:** ☐
Does the container hold a cryogenic liquified gas?	**Yes:** ☐ **No:** ☑
Is the container diked?	**Yes:** ☐ **No:** ☐
What is the volume (gal) of the container?	5602
What is the Diked Area Length (ft)?	
What is the Diked Area Width (ft)?	
Calculate Acceptable Separation Distance	
Diked Area (sqft)	
ASD for Blast Over Pressure (ASDBOP)	287.17

ASD for Blast Over Pressure (ASDBOP)	387.17
ASD for Thermal Radiation for People (ASDPPU)	566.97
ASD for Thermal Radiation for Buildings (ASDBPU)	111.52
ASD for Thermal Radiation for People (ASDPNPD)	
ASD for Thermal Radiation for Buildings (ASDBNPD)	

For mitigation options, please click on the following link: Mitigation Options **(/resource/3846/acceptable-separation-distance-asd-hazard-mitigation-options/)**

Providing Feedback & Corrections

After using the ASD Assessment Tool following the directions in this User Guide, users are encouraged to provide feedback on how the ASD Assessment Tool may be improved. Users are also encouraged to send comments or corrections for the improvement of the tool.

Please send comments or other input using the **Contact Us (https://www.hudexchange.info/contact-us/)** form.

Related Information

- **ASD User Guide (/resource/3839/acceptable-separation-distance-asd-assessment-tool-user-guide/)**
- **ASD Flow Chart (/resource/3840/acceptable-separation-distance-asd-flowchart/)**

Acceptable Separation Distance (ASD) Electronic Assessment Tool

The Environmental Planning Division (EPD) has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. The ASD is the distance from above ground stationary containerized hazards of an explosive or fire prone nature, to where a HUD assisted project can be located. The ASD is consistent with the Department's standards of blast overpressure (0.5 psi-buildings) and thermal radiation (450 BTU/ft^2 - hr - people and 10,000 BTU/ft^2 - hr - buildings). Calculation of the ASD is the first step to assess site suitability for proposed HUD-assisted projects near stationary hazards. Additional guidance on ASDs is available in the Department's guidebook "Siting of HUD- Assisted Projects Near Hazardous Facilities" and the regulation 24 CFR Part 51, Subpart C, Sitting of HUD-Assisted Projects Near Hazardous Operations Handling Conventional Fuels or Chemicals of an Explosive or Flammable Nature.

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the ASD result fields with the mouse.

Acceptable Separation Distance Assessment Tool

Is the container above ground?	**Yes:** ☑ **No:** ☐
Is the container under pressure?	**Yes:** ☑ **No:** ☐
Does the container hold a cryogenic liquified gas?	**Yes:** ☐ **No:** ☑
Is the container diked?	**Yes:** ☐ **No:** ☐
What is the volume (gal) of the container?	1367
What is the Diked Area Length (ft)?	
What is the Diked Area Width (ft)?	
Calculate Acceptable Separation Distance	
Diked Area (sqft)	
ASD for Blast Over Pressure (ASDBOP)	242.88

ASD for Blast Over Pressure (ASDBOP)	242.88
ASD for Thermal Radiation for People (ASDPPU)	315.04
ASD for Thermal Radiation for Buildings (ASDBPU)	58.10
ASD for Thermal Radiation for People (ASDPNPD)	
ASD for Thermal Radiation for Buildings (ASDBNPD)	

For mitigation options, please click on the following link: Mitigation Options **(/resource/3846/acceptable-separation-distance-asd-hazard-mitigation-options/)**

Providing Feedback & Corrections

After using the ASD Assessment Tool following the directions in this User Guide, users are encouraged to provide feedback on how the ASD Assessment Tool may be improved. Users are also encouraged to send comments or corrections for the improvement of the tool.

Please send comments or other input using the **Contact Us (https://www.hudexchange.info/contact-us/)** form.

Related Information

- **ASD User Guide (/resource/3839/acceptable-separation-distance-asd-assessment-tool-user-guide/)**
- **ASD Flow Chart (/resource/3840/acceptable-separation-distance-asd-flowchart/)**

Acceptable Separation Distance (ASD) Electronic Assessment Tool

The Environmental Planning Division (EPD) has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. The ASD is the distance from above ground stationary containerized hazards of an explosive or fire prone nature, to where a HUD assisted project can be located. The ASD is consistent with the Department's standards of blast overpressure (0.5 psi-buildings) and thermal radiation (450 BTU/ft^2 - hr - people and 10,000 BTU/ft^2 - hr - buildings). Calculation of the ASD is the first step to assess site suitability for proposed HUD-assisted projects near stationary hazards. Additional guidance on ASDs is available in the Department's guidebook "Siting of HUD- Assisted Projects Near Hazardous Facilities" and the regulation 24 CFR Part 51, Subpart C, Sitting of HUD-Assisted Projects Near Hazardous Operations Handling Conventional Fuels or Chemicals of an Explosive or Flammable Nature.

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the ASD result fields with the mouse.

Acceptable Separation Distance Assessment Tool

Is the container above ground?	**Yes:** ☑ **No:** ☐
Is the container under pressure?	**Yes:** ☑ **No:** ☐
Does the container hold a cryogenic liquified gas?	**Yes:** ☐ **No:** ☑
Is the container diked?	**Yes:** ☐ **No:** ☐
What is the volume (gal) of the container?	223
What is the Diked Area Length (ft)?	
What is the Diked Area Width (ft)?	
Calculate Acceptable Separation Distance	
Diked Area (sqft)	
ASD for Blast Over Pressure (ASDBOP)	133.27

ASD for Blast Over Pressure (ASDBOP)	133.37
ASD for Thermal Radiation for People (ASDPPU)	148.01
ASD for Thermal Radiation for Buildings (ASDBPU)	25.13
ASD for Thermal Radiation for People (ASDPNPD)	
ASD for Thermal Radiation for Buildings (ASDBNPD)	

For mitigation options, please click on the following link: Mitigation Options **(/resource/3846/acceptable-separation-distance-asd-hazard-mitigation-options/)**

Providing Feedback & Corrections

After using the ASD Assessment Tool following the directions in this User Guide, users are encouraged to provide feedback on how the ASD Assessment Tool may be improved. Users are also encouraged to send comments or corrections for the improvement of the tool.

Please send comments or other input using the **Contact Us (https://www.hudexchange.info/contact-us/)** form.

Related Information

- **ASD User Guide (/resource/3839/acceptable-separation-distance-asd-assessment-tool-user-guide/)**
- **ASD Flow Chart (/resource/3840/acceptable-separation-distance-asd-flowchart/)**

Acceptable Separation Distance (ASD) Electronic Assessment Tool

The Environmental Planning Division (EPD) has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. The ASD is the distance from above ground stationary containerized hazards of an explosive or fire prone nature, to where a HUD assisted project can be located. The ASD is consistent with the Department's standards of blast overpressure (0.5 psi-buildings) and thermal radiation (450 BTU/ft^2 - hr - people and 10,000 BTU/ft^2 - hr - buildings). Calculation of the ASD is the first step to assess site suitability for proposed HUD-assisted projects near stationary hazards. Additional guidance on ASDs is available in the Department's guidebook "Siting of HUD- Assisted Projects Near Hazardous Facilities" and the regulation 24 CFR Part 51, Subpart C, Sitting of HUD-Assisted Projects Near Hazardous Operations Handling Conventional Fuels or Chemicals of an Explosive or Flammable Nature.

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the ASD result fields with the mouse.

Acceptable Separation Distance Assessment Tool

Is the container above ground?	**Yes:** ☑ **No:** ☐
Is the container under pressure?	**Yes:** ☑ **No:** ☐
Does the container hold a cryogenic liquified gas?	**Yes:** ☑ **No:** ☐
Is the container diked?	**Yes:** ☐ **No:** ☑
What is the volume (gal) of the container?	2000
What is the Diked Area Length (ft)?	
What is the Diked Area Width (ft)?	
Calculate Acceptable Separation Distance	
Diked Area (sqft)	
ASD for Blast Over Pressure (ASDBOP)	

ASD for Blast Over Pressure (ASDBOP)	
ASD for Thermal Radiation for People (ASDPPU)	369.16
ASD for Thermal Radiation for Buildings (ASDBPU)	69.27
ASD for Thermal Radiation for People (ASDPNPD)	
ASD for Thermal Radiation for Buildings (ASDBNPD)	

For mitigation options, please click on the following link: Mitigation Options **(/resource/3846/acceptable-separation-distance-asd-hazard-mitigation-options/)**

Providing Feedback & Corrections

After using the ASD Assessment Tool following the directions in this User Guide, users are encouraged to provide feedback on how the ASD Assessment Tool may be improved. Users are also encouraged to send comments or corrections for the improvement of the tool.

Please send comments or other input using the **Contact Us (https://www.hudexchange.info/contact-us/)** form.

Related Information

- **ASD User Guide (/resource/3839/acceptable-separation-distance-asd-assessment-tool-user-guide/)**
- **ASD Flow Chart (/resource/3840/acceptable-separation-distance-asd-flowchart/)**

Acceptable Separation Distance (ASD) Electronic Assessment Tool

The Environmental Planning Division (EPD) has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. The ASD is the distance from above ground stationary containerized hazards of an explosive or fire prone nature, to where a HUD assisted project can be located. The ASD is consistent with the Department's standards of blast overpressure (0.5 psi-buildings) and thermal radiation (450 BTU/ft^2 - hr - people and 10,000 BTU/ft^2 - hr - buildings). Calculation of the ASD is the first step to assess site suitability for proposed HUD-assisted projects near stationary hazards. Additional guidance on ASDs is available in the Department's guidebook "Siting of HUD- Assisted Projects Near Hazardous Facilities" and the regulation 24 CFR Part 51, Subpart C, Sitting of HUD-Assisted Projects Near Hazardous Operations Handling Conventional Fuels or Chemicals of an Explosive or Flammable Nature.

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the ASD result fields with the mouse.

Acceptable Separation Distance Assessment Tool

Is the container above ground?	**Yes:** ☑ **No:** ☐
Is the container under pressure?	**Yes:** ☐ **No:** ☐
Does the container hold a cryogenic liquified gas?	**Yes:** ☐ **No:** ☐
Is the container diked?	**Yes:** ☐ **No:** ☐
What is the volume (gal) of the container?	
What is the Diked Area Length (ft)?	
What is the Diked Area Width (ft)?	
Calculate Acceptable Separation Distance	
Diked Area (sqft)	
ASD for Blast Over Pressure (ASDBOP)	

ASD for Blast Over Pressure (ASDBOP)	
ASD for Thermal Radiation for People (ASDPPU)	721.77
ASD for Thermal Radiation for Buildings (ASDBPU)	145.78
ASD for Thermal Radiation for People (ASDPNPD)	
ASD for Thermal Radiation for Buildings (ASDBNPD)	

For mitigation options, please click on the following link: Mitigation Options **(/resource/3846/acceptable-separation-distance-asd-hazard-mitigation-options/)**

Providing Feedback & Corrections

After using the ASD Assessment Tool following the directions in this User Guide, users are encouraged to provide feedback on how the ASD Assessment Tool may be improved. Users are also encouraged to send comments or corrections for the improvement of the tool.

Please send comments or other input using the **Contact Us (https://www.hudexchange.info/contact-us/)** form.

Related Information

- **ASD User Guide (/resource/3839/acceptable-separation-distance-asd-assessment-tool-user-guide/)**
- **ASD Flow Chart (/resource/3840/acceptable-separation-distance-asd-flowchart/)**

Acceptable Separation Distance (ASD) Electronic Assessment Tool

The Environmental Planning Division (EPD) has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. The ASD is the distance from above ground stationary containerized hazards of an explosive or fire prone nature, to where a HUD assisted project can be located. The ASD is consistent with the Department's standards of blast overpressure (0.5 psi-buildings) and thermal radiation (450 BTU/ft^2 - hr - people and 10,000 BTU/ft^2 - hr - buildings). Calculation of the ASD is the first step to assess site suitability for proposed HUD-assisted projects near stationary hazards. Additional guidance on ASDs is available in the Department's guidebook "Siting of HUD- Assisted Projects Near Hazardous Facilities" and the regulation 24 CFR Part 51, Subpart C, Sitting of HUD-Assisted Projects Near Hazardous Operations Handling Conventional Fuels or Chemicals of an Explosive or Flammable Nature.

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the ASD result fields with the mouse.

Acceptable Separation Distance Assessment Tool

Is the container above ground?	**Yes:** ☑ **No:** ☐
Is the container under pressure?	**Yes:** ☑ **No:** ☐
Does the container hold a cryogenic liquified gas?	**Yes:** ☐ **No:** ☑
Is the container diked?	**Yes:** ☐ **No:** ☐
What is the volume (gal) of the container?	630
What is the Diked Area Length (ft)?	
What is the Diked Area Width (ft)?	
Calculate Acceptable Separation Distance	
Diked Area (sqft)	
ASD for Blast Over Pressure (ASDBOP)	182.00

ASD for Blast Over Pressure (ASDBOP)	188.00
ASD for Thermal Radiation for People (ASDPPU)	228.14
ASD for Thermal Radiation for Buildings (ASDBPU)	40.61
ASD for Thermal Radiation for People (ASDPNPD)	
ASD for Thermal Radiation for Buildings (ASDBNPD)	

For mitigation options, please click on the following link: Mitigation Options **(/resource/3846/acceptable-separation-distance-asd-hazard-mitigation-options/)**

Providing Feedback & Corrections

After using the ASD Assessment Tool following the directions in this User Guide, users are encouraged to provide feedback on how the ASD Assessment Tool may be improved. Users are also encouraged to send comments or corrections for the improvement of the tool.

Please send comments or other input using the **Contact Us (https://www.hudexchange.info/contact-us/)** form.

Related Information

- **ASD User Guide (/resource/3839/acceptable-separation-distance-asd-assessment-tool-user-guide/)**
- **ASD Flow Chart (/resource/3840/acceptable-separation-distance-asd-flowchart/)**

Acceptable Separation Distance (ASD) Electronic Assessment Tool

The Environmental Planning Division (EPD) has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. The ASD is the distance from above ground stationary containerized hazards of an explosive or fire prone nature, to where a HUD assisted project can be located. The ASD is consistent with the Department's standards of blast overpressure (0.5 psi-buildings) and thermal radiation (450 BTU/ft^2 - hr - people and 10,000 BTU/ft^2 - hr - buildings). Calculation of the ASD is the first step to assess site suitability for proposed HUD-assisted projects near stationary hazards. Additional guidance on ASDs is available in the Department's guidebook "Siting of HUD- Assisted Projects Near Hazardous Facilities" and the regulation 24 CFR Part 51, Subpart C, Sitting of HUD-Assisted Projects Near Hazardous Operations Handling Conventional Fuels or Chemicals of an Explosive or Flammable Nature.

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the ASD result fields with the mouse.

Acceptable Separation Distance Assessment Tool

Is the container above ground?	**Yes:** ☑ **No:** ☐
Is the container under pressure?	**Yes:** ☑ **No:** ☐
Does the container hold a cryogenic liquified gas?	**Yes:** ☐ **No:** ☑
Is the container diked?	**Yes:** ☐ **No:** ☐
What is the volume (gal) of the container?	5602
What is the Diked Area Length (ft)?	
What is the Diked Area Width (ft)?	
Calculate Acceptable Separation Distance	
Diked Area (sqft)	
ASD for Blast Over Pressure (ASDBOP)	287.17

ASD for Blast Over Pressure (ASDBOP)	387.17
ASD for Thermal Radiation for People (ASDPPU)	566.97
ASD for Thermal Radiation for Buildings (ASDBPU)	111.52
ASD for Thermal Radiation for People (ASDPNPD)	
ASD for Thermal Radiation for Buildings (ASDBNPD)	

For mitigation options, please click on the following link: Mitigation Options **(/resource/3846/acceptable-separation-distance-asd-hazard-mitigation-options/)**

Providing Feedback & Corrections

After using the ASD Assessment Tool following the directions in this User Guide, users are encouraged to provide feedback on how the ASD Assessment Tool may be improved. Users are also encouraged to send comments or corrections for the improvement of the tool.

Please send comments or other input using the **Contact Us (https://www.hudexchange.info/contact-us/)** form.

Related Information

- **ASD User Guide (/resource/3839/acceptable-separation-distance-asd-assessment-tool-user-guide/)**
- **ASD Flow Chart (/resource/3840/acceptable-separation-distance-asd-flowchart/)**

Acceptable Separation Distance (ASD) Electronic Assessment Tool

The Environmental Planning Division (EPD) has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. The ASD is the distance from above ground stationary containerized hazards of an explosive or fire prone nature, to where a HUD assisted project can be located. The ASD is consistent with the Department's standards of blast overpressure (0.5 psi-buildings) and thermal radiation (450 BTU/ft^2 - hr - people and 10,000 BTU/ft^2 - hr - buildings). Calculation of the ASD is the first step to assess site suitability for proposed HUD-assisted projects near stationary hazards. Additional guidance on ASDs is available in the Department's guidebook "Siting of HUD- Assisted Projects Near Hazardous Facilities" and the regulation 24 CFR Part 51, Subpart C, Sitting of HUD-Assisted Projects Near Hazardous Operations Handling Conventional Fuels or Chemicals of an Explosive or Flammable Nature.

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the ASD result fields with the mouse.

Acceptable Separation Distance Assessment Tool

Is the container above ground?	**Yes:** ☑ **No:** ☐
Is the container under pressure?	**Yes:** ☑ **No:** ☐
Does the container hold a cryogenic liquified gas?	**Yes:** ☐ **No:** ☑
Is the container diked?	**Yes:** ☐ **No:** ☐
What is the volume (gal) of the container?	1367
What is the Diked Area Length (ft)?	
What is the Diked Area Width (ft)?	
Calculate Acceptable Separation Distance	
Diked Area (sqft)	
ASD for Blast Over Pressure (ASDBOP)	242.88

ASD for Blast Over Pressure (ASDBOP)	242.88
ASD for Thermal Radiation for People (ASDPPU)	315.04
ASD for Thermal Radiation for Buildings (ASDBPU)	58.10
ASD for Thermal Radiation for People (ASDPNPD)	
ASD for Thermal Radiation for Buildings (ASDBNPD)	

For mitigation options, please click on the following link: Mitigation Options **(/resource/3846/acceptable-separation-distance-asd-hazard-mitigation-options/)**

Providing Feedback & Corrections

After using the ASD Assessment Tool following the directions in this User Guide, users are encouraged to provide feedback on how the ASD Assessment Tool may be improved. Users are also encouraged to send comments or corrections for the improvement of the tool.

Please send comments or other input using the **Contact Us (https://www.hudexchange.info/contact-us/)** form.

Related Information

- **ASD User Guide (/resource/3839/acceptable-separation-distance-asd-assessment-tool-user-guide/)**
- **ASD Flow Chart (/resource/3840/acceptable-separation-distance-asd-flowchart/)**

Acceptable Separation Distance (ASD) Electronic Assessment Tool

The Environmental Planning Division (EPD) has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. The ASD is the distance from above ground stationary containerized hazards of an explosive or fire prone nature, to where a HUD assisted project can be located. The ASD is consistent with the Department's standards of blast overpressure (0.5 psi-buildings) and thermal radiation (450 BTU/ft^2 - hr - people and 10,000 BTU/ft^2 - hr - buildings). Calculation of the ASD is the first step to assess site suitability for proposed HUD-assisted projects near stationary hazards. Additional guidance on ASDs is available in the Department's guidebook "Siting of HUD- Assisted Projects Near Hazardous Facilities" and the regulation 24 CFR Part 51, Subpart C, Sitting of HUD-Assisted Projects Near Hazardous Operations Handling Conventional Fuels or Chemicals of an Explosive or Flammable Nature.

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the ASD result fields with the mouse.

Acceptable Separation Distance Assessment Tool

Is the container above ground?	**Yes:** ☑ **No:** ☐
Is the container under pressure?	**Yes:** ☑ **No:** ☐
Does the container hold a cryogenic liquified gas?	**Yes:** ☐ **No:** ☑
Is the container diked?	**Yes:** ☐ **No:** ☐
What is the volume (gal) of the container?	223
What is the Diked Area Length (ft)?	
What is the Diked Area Width (ft)?	
Calculate Acceptable Separation Distance	
Diked Area (sqft)	
ASD for Blast Over Pressure (ASDBOP)	133.27

ASD for Blast Over Pressure (ASDBOP)	133.37
ASD for Thermal Radiation for People (ASDPPU)	148.01
ASD for Thermal Radiation for Buildings (ASDBPU)	25.13
ASD for Thermal Radiation for People (ASDPNPD)	
ASD for Thermal Radiation for Buildings (ASDBNPD)	

For mitigation options, please click on the following link: Mitigation Options **(/resource/3846/acceptable-separation-distance-asd-hazard-mitigation-options/)**

Providing Feedback & Corrections

After using the ASD Assessment Tool following the directions in this User Guide, users are encouraged to provide feedback on how the ASD Assessment Tool may be improved. Users are also encouraged to send comments or corrections for the improvement of the tool.

Please send comments or other input using the **Contact Us (https://www.hudexchange.info/contact-us/)** form.

Related Information

- **ASD User Guide (/resource/3839/acceptable-separation-distance-asd-assessment-tool-user-guide/)**
- **ASD Flow Chart (/resource/3840/acceptable-separation-distance-asd-flowchart/)**

Acceptable Separation Distance (ASD) Electronic Assessment Tool

The Environmental Planning Division (EPD) has developed an electronic-based assessment tool that calculates the Acceptable Separation Distance (ASD) from stationary hazards. The ASD is the distance from above ground stationary containerized hazards of an explosive or fire prone nature, to where a HUD assisted project can be located. The ASD is consistent with the Department's standards of blast overpressure (0.5 psi-buildings) and thermal radiation (450 BTU/ft^2 - hr - people and 10,000 BTU/ft^2 - hr - buildings). Calculation of the ASD is the first step to assess site suitability for proposed HUD-assisted projects near stationary hazards. Additional guidance on ASDs is available in the Department's guidebook "Siting of HUD- Assisted Projects Near Hazardous Facilities" and the regulation 24 CFR Part 51, Subpart C, Sitting of HUD-Assisted Projects Near Hazardous Operations Handling Conventional Fuels or Chemicals of an Explosive or Flammable Nature.

Note: Tool tips, containing field specific information, have been added in this tool and may be accessed by hovering over the ASD result fields with the mouse.

Acceptable Separation Distance Assessment Tool

Is the container above ground?	**Yes:** ☑ **No:** ☐
Is the container under pressure?	**Yes:** ☑ **No:** ☐
Does the container hold a cryogenic liquified gas?	**Yes:** ☑ **No:** ☐
Is the container diked?	**Yes:** ☐ **No:** ☑
What is the volume (gal) of the container?	2000
What is the Diked Area Length (ft)?	
What is the Diked Area Width (ft)?	
Calculate Acceptable Separation Distance	
Diked Area (sqft)	
ASD for Blast Over Pressure (ASDBOP)	

ASD for Blast Over Pressure (ASDBOP)	
ASD for Thermal Radiation for People (ASDPPU)	369.16
ASD for Thermal Radiation for Buildings (ASDBPU)	69.27
ASD for Thermal Radiation for People (ASDPNPD)	
ASD for Thermal Radiation for Buildings (ASDBNPD)	

For mitigation options, please click on the following link: Mitigation Options **(/resource/3846/acceptable-separation-distance-asd-hazard-mitigation-options/)**

Providing Feedback & Corrections

After using the ASD Assessment Tool following the directions in this User Guide, users are encouraged to provide feedback on how the ASD Assessment Tool may be improved. Users are also encouraged to send comments or corrections for the improvement of the tool.

Please send comments or other input using the **Contact Us (https://www.hudexchange.info/contact-us/)** form.

Related Information

- **ASD User Guide (/resource/3839/acceptable-separation-distance-asd-assessment-tool-user-guide/)**
- **ASD Flow Chart (/resource/3840/acceptable-separation-distance-asd-flowchart/)**