Waste Management Division
PO Box 95, 29 Hazen Drive
Concord, NH 03302

Type of Submittal (Check One-Most Applicable)

☐ Work Scope ☐ Reimbursement Request	☐ Remedial Action • Remedial Action Plan • Bid Plans and Specifications • Remedial Action Implementation Report ☐ Treatment System and POE O&M ☐ Activity and Use Restriction
☐ UST Facility Report ☐ AST Facility Report	
☐ Emergency/Initial Response Action ☐ Groundwater Quality Assessment	☐ Temporary Surface Water Discharge Permit
☐ Initial Site Characterization ☐ Site Investigation • Site Investigation Report • Supplemental Site Investigation Report • GMZ Delineation • Source Area Investigation • Data Submittal • Annual Summary Report ☒ Unsolicited Brownfields Submittal ☐ Closure Documentation	☐ Groundwater Management Permit • Permit Application • Renewal Application • Deed Recordation Documentation • Abutter Notification Documentation • Release of Recordation ☐ Data Submittal ☐ Annual Summary Report

SITE-SPECIFIC QAPP ADDENDUM

Soil Removal
Ernie's Auto Sales Property
180 East Main Street
Tilton, New Hampshire
NHDES # 199311019

Judd R. Newcomb, CG, PG

Digitally signed by Judd R. Newcomb, CG, PG
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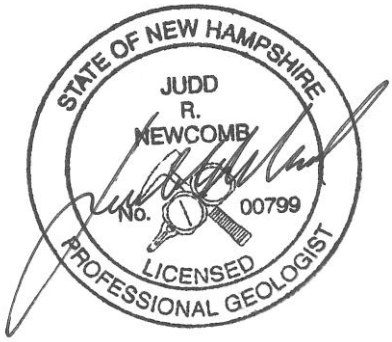

May 6, 2013

Recommended Risk Category (check one)

☐ 1. Immediate Human Health Risk (Impacted water supply well, etc.)	☐ 4. Surface Water Impact	☒ 7. Alternate Water Available/Low Level Groundwater Contamination (<1,000 X AGQS)
☐ 2. Potential Human Health Risk (Water supply well within 1,000' or Site within SWPA)	☐ 5. No Alternate Water Available/No Existing Wells in Area	☐ 8. No AGQS Violation/No Source Remaining
☐ 3. Free Product or Source Hazard	☐ 6. Alternate Water Available/High Level Groundwater Contamination (>1,000 X AGQS)	☐ Closure Recommended

1. TITLE AND APPROVAL PAGE

SITE-SPECIFIC QUALITY ASSURANCE PROJECT PLAN (SSQAPP) ADDENDUM TO GENERIC QAPP RFA #08166 AND #09036

PROPERTY:
Ernie's Auto Sales
180 East Main Street
Tilton, New Hampshire
EPA Brownfields Cleanup Grant # BF-96192501
NHDES # 199311019

PREPARED BY:
Credere Associates, LLC
776 Main Street
Westbrook, Maine 04092
(207) 828-1272

May 6, 2013

Below is a listing of the names, titles, signatures, and signature dates of officials approving this SSQAPP Addendum:

Kathy Castagna — 5/14/2013
Ms. Kathy Castagna — Date
EPA Brownfields Project Officer

Tina J Conlon — 5/14/2013
EPA Quality Assurance Officer — Date

Joyce Fulweiler — 5/14/2013
Joyce Fulweiler, Town of Tilton Administrator — Date
Brownfields Grantee

5/10/2013
Ms. Jennifer Marts, PG — Date
New Hampshire DES Project Manager

for Robert P Minicucci II — 5/10/13
Mr. Vincent R. Perelli — Date
New Hampshire DES QA Manager

Richard S. Vandenberg
Mr. Richard S. Vandenberg, CG, PG — Date
Credere Associates, LLC Project Manager & QA Manager

Rob Patten
Mr. Robert I Patten, PE, LEED-AP, LSP — Date
Credere Associates, LLC Program Manager

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2. INTRODUCTION

The Town of Tilton, New Hampshire received a United States Environmental Protection Agency (EPA) Brownfield Cleanup Grant for the former Ernie's Auto Sales property located at 180 East Main Street in Tilton (the Site). The 0.8-acre Site is a former gasoline station, auto repair garage, and used car dealership. The Town of Tilton completed the initial phase of this cleanup project in February 2013, which involved demolishing the severely dilapidated Site buildings. Credere Associates, LLC (Credere) is submitting this Site-Specific Quality Assurance Project Plan (SSQAPP) Addendum to perform the next phase of this project, which will include soil excavation and covering activities prior to the redevelopment of the Site as a park and trailhead.

This SSQAPP presents the following information:

1. A summary of background information for the Site
2. The redevelopment plans for the Site
3. An updated Conceptual Site Model
4. The proposed sampling technique and rationale
5. Site-specific sampling methodology including proposed locations and analytical methods
6. Regulatory standards applicable to the Site
7. A proposed project schedule

This SSQAPP was prepared to be used in concert with Credere's Generic Quality Assurance Project Plan (QAPP) EPA RFA#08166 and #09036 that was prepared for all of Credere's EPA work in New Hampshire. The quality assurance and quality control (QA/QC) procedures outlined in Credere's Generic QAPP will be followed for this investigation program including sample collection, handling, and analysis, chain-of-custody, data management and documentation, data validation, and data usability assessments.

Figure 1 shows the general location of the Site in Tilton, New Hampshire, and **Figure 2** presents the proposed sample locations and pertinent Site features. **Figure 3** is Credere's organization chart for the project team, and **Figure 4** is a diagram depicting the updated conceptual model for the Site.

3. PROJECT BACKGROUND INFORMATION

Credere has completed a Phase I Environmental Site Assessment (ESA), a Phase II ESA, and a Supplemental Phase II ESA under EPA Brownfield assessment grant # BF-96111801. The following includes pertinent details from Credere's ESAs for the Site:

3.1 OWNERSHIP & SITE DESCRIPTION

The Site is owned by the Town of Tilton, New Hampshire. The Town acquired the property on January 31, 2011, following the completion of Phase I and Phase II ESAs in 2010.

The Site is composed of one 0.8-acre parcel of land located at 180 East Main Street in Tilton, New Hampshire and is situated adjacent to the Winnipesaukee River. The Site is currently a vacant lot with gravel, paved, and grassy areas. The Site building was recently demolished in February 2013.

The Site was formerly operated as gas station from approximately 1939 until the 1970s. An automobile body shop, used automobile repair shop, automobile salvage yard, used automotive sales, and a U-Haul truck rental business have also reportedly occupied the Site.

3.2 SUMMARY OF PHASE I ESA WORK

A Phase I ESA was completed by Credere for the Site dated November 2, 2010. The Phase I ESA was completed in accordance with ASTM Standard Practice E 1527-05. Based on the information obtained as a part of the Phase I ESA, the following recognized environmental conditions (RECs) were identified at the Site:

- REC-1 – The former use of the Site as a gas station between 1939 and the 1970s, past distribution, and past and present bulk storage of petroleum products (including a 275-gallon aboveground storage tank (AST) and a 55-gallon drum) may have resulted in releases of petroleum which may have impacted the environmental conditions of the Site.
- REC-2 – A release of petroleum was discovered on September 16, 1993, during the closure of two (2) 3,000-gallon and one (1) 4,000-gallon gasoline underground storage tanks (USTs) and one (1) 2,000-gallon waste oil UST. Though this release is considered by the New Hampshire Department of Environmental Services (NHDES) to be closed, the release represented a REC as impacted soil and/or groundwater may remain at the Site.
- REC-3 – The former use of the Site as an auto repair facility between the approximate dates of 1939 and 1978 represented a REC because hazardous materials and petroleum products were likely stored, used, and may have been disposed of on the Site and may have impacted the environmental conditions of the Site.
- REC-4 – The floor drain observed within the garage bay of the former garage building with an unknown discharge point represented a REC because the drain is a potential conduit to the

environment whereby releases of petroleum products and hazardous substances from former activities may have impacted the environmental conditions at the Site.

- REC-5 – A suspected dump and fill area was observed along the southern portion of the Site including items such as, but not limited to, urban fill, automobile parts, and utility pole sections. Petroleum products and/or hazardous substances associated with these materials may have been released and impacted the environmental conditions at the Site.
- REC-6 – Stressed vegetation was observed below a pole mounted electrical transformer located along the northern Site boundary. This condition represented a REC because it could be indicative of a release of petroleum-based and/or polychlorinated biphenyl (PCB)-containing dielectric fluid that may have impacted the environmental conditions of the Site.

Additionally, Credere identified three (3) *de minimis* environmental conditions (DMEC) at the Site.

- DMEC-1 – Oil staining observed on the floor of the former cottage building represents a DMEC because it is evidence of a release; however, a pathway to the environment was not likely.
- DMEC-2 – Multiple small volume containers (less than 50-gallons each) of oil, gasoline, and automotive lubricants and cleaning materials represented a DMEC because of the poor conditions in which they were stored; however, a pathway to the environment was not likely.
- DMEC-3 – Multiple stains observed on the gravel parking lot represented a DMEC because they are evidence of small petroleum releases which may have impacted surficial soil at the Site. However, based on observed conditions, it was not likely that these small spills had significantly impacted environmental media at the Site.

The following four (4) ASTM Non-Scope considerations (NCs) were also noted during the Phase I ESA:

- NC-1 – Based on the age of the former Site buildings, potential asbestos-containing materials (ACMs) may have been present on the interior and exterior of the buildings.
- NC-2 – Based on the age of the former Site buildings, lead-based paint may have been present on the interior and exterior of the buildings.
- NC-3 – Based on the age of the former Site buildings, PCB-containing bulk products may have been present on the interior and exterior of the buildings.
- NC-4 – Based on the condition of the former Site buildings and the collapsed roof of the garage, mold was likely present in the buildings.

3.3 SUMMARY OF PHASE II ESA AND SUPPLEMENTAL PHASE II ESA WORK

Phase II ESA

A Phase II ESA was completed by Credere for the Site on June 2, 2011. Phase II ESA activities included performing a ground penetrating radar (GPR) survey to locate potential subsurface structures, conducting lead-based paint and asbestos surveys of the former two Site buildings, collecting samples of select building materials as a part of a PCB survey, and collecting surficial soil, subsurface soil, and groundwater samples to assess potential impacts from historical use of the Site.

From the data collected during the Phase II ESA, REC-1, REC-2, REC-4, REC-5, and REC-6 were dismissed. The rationale for dismissing these RECs is detailed in the June 2, 2011, report.

REC-3, which is associated with the former use of the Site as an auto repair facility, could not be conclusively confirmed or dismissed from the data collected. Arsenic and lead were detected in subsurface soil near the former garage building in one sample (SB-5 4-6') at a concentration that exceeded the applicable NHDES Soil Remediation Standards (SRS), and arsenic was detected in groundwater in two of the five monitoring wells sampled exceeding its Ambient Groundwater Quality Standard (AGQS). However, based on the data collected, it was not clear if these contaminants were related to prior activities at the Site or associated with background conditions. In particular, the arsenic in groundwater may have desorbed from the natural mineralogy caused by reducing conditions present in the groundwater associated with historical petroleum contamination.

Polycyclic aromatic hydrocarbons (PAHs) were detected in several surficial and one subsurface sample during the Phase II ESA. However, the PAHs were attributed the presence of asphalt, coal, and ash materials that were identified in collected samples. The presence of PAHs in association with asphalt, coal, and/or ash materials meets the NHDES definition of "background" as defined in Env-Or 602.03. It was Credere's interpretation that PAHs identified on the Site were not subject to the NHDES SRS, but they still represent a health risk that should be appropriately managed.

The following is a summary of the findings of the non-scope considerations:

- ACMs (NC-1) were identified in both former Site buildings.
- Lead-based paint (NC-2) was identified covering numerous surfaces in and on both the former cottage and garage buildings.
- PCBs (NC-3) were identified in bulk products within both buildings. Concentrations of PCBs identified in paint in both buildings (samples BM-2 and BM-4) exceeded 1 part per million (ppm) but were below 50 ppm.
- The presence of Mold (NC-4) was not assessed because it was determined that the former buildings were scheduled for demolition.

Supplemental Phase II ESA

A supplemental Phase II ESA was completed on October 3, 2012. The supplemental Phase II ESA was performed to delineate the extent of the previously identified arsenic and lead concentrations in soil at sample location SB-5 (4-6') and to perform a second round of groundwater sampling to verify the presence of dissolved arsenic concentrations in groundwater. Additional soil borings were drilled, soil samples were collected for field screening and laboratory analysis; and groundwater samples were collected from the existing monitoring wells for laboratory analysis.

Seven (7) soil borings were installed during the supplemental Phase II ESA work. Laboratory analysis of the collected soil samples collected demonstrated that the extent of lead and arsenic contamination exceeding the SRS was limited to the immediate area around previously drilled boring SB-5. However, X-ray fluorescence (XRF) field screening results of samples that were not laboratory analyzed revealed that some additional arsenic exceeding SRS may be present in the vicinity of soil borings SB-12 and SB-14.

Dissolved arsenic was detected at concentrations above AGQS in three of five wells sampled However, it was inconclusive whether the detected arsenic in groundwater was the result of a release of hazardous substances related to Site activities, the result of changes in the geochemistry of groundwater related to past releases of petroleum, or were related to a background condition. Regardless, the presence of arsenic in groundwater was determined to represent a potential health risk to future Site workers and users.

3.4 SUMMARY OF COMPLETED CLEANUP AND REMAINING ENVIRONMENTAL CONDITIONS

Completed Cleanup

The Site buildings were demolished and disposed in January and February 2013. During demolition, the identified asbestos, lead-based paint, PCBs, and suspected mold were properly managed and disposed.

Existing Environmental Conditions

Based on the work completed to date at the Site, the following remaining conditions will be addressed during the upcoming cleanup work:

1. Arsenic and lead contaminated soil present in the area of SB-5 at a depth of 4 to 6 feet below ground surface (bgs) exceeding SRS will be excavated for off-site disposal.
2. PAH contaminated soil is present in the area of five (5) surficial soil samples (SS-2, SS-4, SS-5, SS-7, and TP-1) and one subsurface soil sample (SB-5). Potential health risks posed by this PAH-impacted soil will be mitigated by the installation of a cover system at the Site.
3. Two (2) abandoned hydraulic lift cylinders that were identified beneath the demolished Site buildings likely contain hydraulic oil and require proper removal and disposal.
4. A plume of arsenic contaminated groundwater is present in groundwater exceeding NHDES Ambient Groundwater Quality Standards (AGQS). It is assumed that concentrations of arsenic observed in groundwater will steadily decrease following Site cleanup activities.

It should be noted, that during demolition activities, two (2) abandoned hydraulic lift cylinders were identified beneath the Site buildings that also require removal. Credere will submit a Remedial Action Implementation Report (RAIR) to NHDES and EPA describing the demolition, waste removal, and waste disposal practices once the soil removal and covering work and hydraulic lift removal is completed.

4. REDEVELOPMENT SCENARIO

The Tilton Conservation Commission, in conjunction with the Winnipesaukee River Trails Association, is in the process of developing the Site into a park with a trailhead and parking lot for the existing riverfront trail system.

5. CONCEPTUAL SITE MODEL

The previous Phase II and Supplemental Phase II ESAs were designed to provide an understanding of environmental conditions and to further assess the RECs previously identified at the Site. The following section is a description of the Conceptual Site Model (CSM), which incorporates information from the Phase II Investigations and contains the following components:

- Physical Setting
- Contaminants of Concern
- Migration Pathways
- Exposure Pathways
- Potential Receptors
- Remaining data gaps, if any

5.1 PHYSICAL SETTING

5.1.1 Topography and drainage

Based upon a review of the 1987 Northfield, NH 7.5 minute Quadrangle, the Site is between 440 and 460 feet above mean sea level (MSL). Topography at the Site generally slopes in two directions. The north side of the Site slopes gently to the northwest, while the south side tends to slope radially to the south and west. Stormwater on the north side of the Site likely follows surficial topography resulting in a northwesterly flow which terminates at a catch basin located in the northwestern corner of the Site. This catch basin reportedly discharges via a culvert into a drainage ditch. The ultimate outfall of this drainage ditch is the Winnipesaukee River. Stormwater on the south side of the Site generally follows the topography radially to the south and west and flows directly into the Winnipesaukee River.

Regional topography within a 0.5-mile radius of the Site consists of rolling hills sloping towards the Winnipesaukee River ranging from 400 to 600 feet above MSL.

5.1.2 Surficial Geology

According to the *Geohydrology and Groundwater Quality Data of Stratified-Drift Aquifers in the Winnipesaukee River Basin, Central New Hampshire*, United States Geological Survey (USGS), Water-Resources Investigations Report 94-4150, by Joseph D. Ayotte (1997), the surficial geology at the Site consists of glacial till over bedrock.

Surficial materials observed at the Site during Phase II ESA activities revealed predominantly loose to dense sand with some gravel at depth, which is consistent with stratified drift aquifers and glacial till.

5.1.3 Bedrock Geology

According to the *Generalized Bedrock Geologic Map of New Hampshire* compiled by the USGS, the Site is underlain primarily by metamorphic rocks of the Silurian age, consisting of aluminous schist, quartzite, calc-silicate granofels, and bimodal metavolcanic rocks. According to the USGS, the average depth to bedrock is 35-feet bgs, but can be up to 200-feet bgs in localized areas. No bedrock was encountered during soil boring and test pit activities during Credere's previous Phase II ESA at the Site, which had maximum depths of approximately 14 feet bgs.

5.1.4 Groundwater Characteristics

According to the *Geohydrology and Groundwater Quality Data of Stratified-Drift Aquifers in the Winnipesaukee River Basin, Central New Hampshire*, USGS, Water-Resources Investigations Report 94-4150, by Joseph D. Ayotte (1997), the Site is located over the Gardners Grove aquifer (a portion of the Tri-Town Aquifer), which is classified as a major aquifer by the USGS and a groundwater protection district by the NHDES. Drilled wells within the vicinity of the Site encountered groundwater at depths ranging from 8-feet to 20-feet bgs.

Groundwater in overburden materials at the Site was observed at depths ranging from 7.52 to 10.65 feet bgs during the July 26, 2011, sampling event. Based on groundwater elevations observed during the Phase II and Supplemental Phase II ESAs, groundwater at the Site generally flows to the southwest at a gradient of approximately 3%. It should be noted that local groundwater flow may be highly varied due to precipitation events, stormwater runoff, infiltration/recharge, the presence of subsurface structures and utilities, and varying subsurface hydrogeologic conditions.

5.2 CONTAMINANTS OF CONCERN

The contaminants of concern discussed in this CSM are those compounds that were detected above applicable state and/or federal standards and guidelines, or those which pose a potential risk to human health or the environment.

- Arsenic and lead previously detected in subsurface soil from soil boring SB-5 at a depth of 4 to 6 feet bgs are COCs for the Site. Based on concentrations of these COCs, which exceed their applicable NHDES SRS, compared to the lower concentrations in surrounding soil borings SB-8 through SB-11, which do not exceed the applicable NHDES SRS, it appears that the metals detected in SB-5 are the result of Site activities and are not representative of background conditions.
- Arsenic detected at concentrations exceeding the applicable NHDES AGQS in groundwater samples collected from multiple monitoring wells on the Site (MW-2, MW-3, and MW-5) is a COC for the Site. It is Credere's opinion that the detected arsenic appears to have been mobilized by changes in groundwater chemistry associated with historical petroleum releases to the subsurface at the Site or may be the result of a background condition.

- Multiple PAH compounds including benzo(a)anthracene, benzo(b)fluoranthene, benzo(a)pyrene, and indeno(1,2.3-cd)pyrene previously detected in surficial soils across the Site and in subsurface soils at a depth of 4 to 6 feet bgs in boring SB-5 are COCs for the Site. Additionally, the laboratory PQL for dibenzo(a,h)anthracene was higher than the SRS in subsurface soil sample SB-5(4-6); therefore, this analyte is also conservatively considered to be a COC. The presence of PAHs in surficial soil has been attributed to a background condition, but PAHs are carried through this CSM because they represent a health risk.
- Due to the identification of two (2) abandoned hydraulic lift cylinders beneath the demolished Site buildings, hydraulic oil is also a COC for subsurface soil at the Site.

5.3 DEFINITIONS OF EXPOSURE PATHWAYS AND POTENTIAL RECEPTORS

To aid in a thorough understanding of the environmental concerns present at the Site, a graphical presentation of the identified COCs and potential migration pathways to receptors is included as **Figure 4**. Exposure Pathways and Potential Receptors depicted on the CSM figure are defined below.

Exposure pathways describe how a human or environmental receptor comes into contact with contaminants that may be present at the Site. Exposure pathways presented in the CSM include the following:

- Inhalation: This pathway is primarily associated with groundwater contamination within 30 feet of an occupied structure when groundwater elevation is less than 15 feet below surface grade, or when depth to groundwater is unknown. This pathway is applicable when receptors may inhale impacted media in the form of vapor.
- Dermal Absorption: Exposure via dermal absorption occurs when receptors are exposed to chemical concentrations present in soil, groundwater, or surface water through direct contact with the skin.
- Active Ingestion: The active ingestion pathway represents exposure which may occur through the active ingestion of contaminant concentrations via a drinking water supply well or through agricultural products.
- Incidental Uptake This pathway is applicable when receptors may incidentally ingest or inhale impacted media in the form of dust or airborne particulates.

Potential Receptors are categorized by duration of exposure and intensity of use at the Site. The receptor categories described in the CSM include the following:

- Resident: The residential receptor is defined by high durational exposure and high intensity usage which may occur through gardening, digging, and recreational sports. This group includes the occupants of a residential property or a residential neighborhood.
- Commercial: Commercial receptors are those which are present at the Site for long durations but with low intensity exposure such as indoor office workers.
- Site Worker: Site workers are present at the Site for short durations though intensity of use is high, such as during non-routine activities including construction or utility work. Examples include outdoor commercial workers and construction workers.
- Visitor: Visitors are characterized by low duration, i.e. less than two hours per day, and low intensity usage such as that which would occur during activities such as walking, shopping, and bird watching.
- Terrestrial and Aquatic Biota: These receptors include flora and fauna which may be exposed to contaminants in their respective land-based or aquatic environments.

5.4 CONCEPTUAL SITE MODEL SUMMARY

Based on cumulative investigation results for the Site, primary impacted media include surficial soil (PAHs only), subsurface soil (PAHs, lead, and arsenic), and groundwater (arsenic only) due to releases associated with previous Site usage and/or background conditions.

PAHs in surficial soils have the potential to migrate through aeolian dispersion and impact both on-site and off-site residential, commercial, site worker, visitor, terrestrial biota, and aquatic biota receptors via incidental uptake and dermal absorption. Lead, arsenic, PAHs, and potential hydraulic oil in subsurface soils have the potential to impact the site worker receptor group during proposed Site redevelopment via incidental uptake and dermal absorption. Terrestrial and aquatic biota also have the potential to be exposed through active ingestion of surficial soil and/or surface water if impacted.

Arsenic in groundwater has the potential to impact site workers via incidental uptake and dermal absorption during Site redevelopment. The active ingestion pathway is not considered open for Site workers because the Site groundwater is not used for drinking purposes.

6. SAMPLING DESIGN

This phase of cleanup work will include the removal and proper disposal of contaminated subsurface soil, covering of the contaminated surficial soil, and groundwater monitoring. This section describes the sampling required to complete this work. Details regarding the selection these cleanup alternatives can be found in Credere's February 26, 2013, Analysis of Brownfields Cleanup Alternatives (ABCA) prepared for the Site.

Proposed sample locations are depicted on **Figure 2**, and sampling methodologies are described in **Section 7**. **Table 1** includes the number and type of samples that are proposed to be collected, cross-referenced with the appropriate standard operating procedure (SOP) that will be used from Credere's Generic QAPP. Only soil samples (i.e. for cleanup confirmation and waste characterization) are proposed to be collected as part of this work. All collected samples will be submitted to Absolute Resource Associates (ARA) of Portsmouth, New Hampshire, for analysis.

The data collected from these activities will serve as the basis for evaluating the efficacy of the cleanup and for ensuring compliance with applicable regulations. Requirements relative to Chain of Custody, Data Management and Documentation, Data Validation, and Data Usability Assessments contained in the Generic QAPP will be followed during the performance of the cleanup work.

6.1 CONFIRMATORY SOIL SAMPLING

Credere anticipates excavating at least 50 cubic yards (approximately 75 tons) of known lead and arsenic contaminated soil around soil boring SB-5. The excavated soil will include all the soil from the surface to at least 6 feet bgs (see **Figure 2**). Soil samples will be collected from the initial excavation sidewalls and bottom and will be field screened for arsenic and lead with an XRF meter during excavation activities. Based on field screening results, excavation work will be continued and additional soil will be excavated until no SRS exceedances are noted in the field screening samples. Once acceptable excavation limits have been reached, Credere will collect four (4) discrete soil samples from the excavation sidewalls, and two (2) discrete soil samples from the excavation bottom for laboratory analyses of total arsenic and lead using a twenty-four (24) hour turnaround time. After sampling, the excavation will be barricaded and left open pending the results of the laboratory sample analyses. Based on the laboratory results, cleanup work will continue as follows:

- If laboratory analyses reveal no SRS exceedances in the confirmatory sample results, the excavation will then be backfilled with clean common borrow.

- If SRS exceedances are noted in the samples, then additional soil will be excavated and field screened. Once new field screening results indicate no exceedances of the SRS, or at the discretion of the field staff, up to four (4) additional discrete soil sidewall samples and two (2) discrete bottom samples will be collected for laboratory analysis of total lead

and arsenic using a twenty-four (24) hour turnaround time. This process will continue until no SRS exceedances are noted in the laboratory results. Once clean excavation limits are documented, the excavation will then be backfilled with clean common borrow.

The two (2) abandoned hydraulic lift cylinders that were identified beneath the demolished Site buildings will be excavated for proper disposal. Following removal, one (1) confirmatory soil sample will be collected from beneath each hydraulic lift cylinder for laboratory analysis of TPH, VOCs, and PAHs. In addition, due to the historical presence of PCBs in some hydraulic oils, each of these samples will also be analyzed for PCBs.

All confirmatory soil sampling will be completed in accordance with **Table 1**.

6.2 WASTE CHARACTERIZATION SAMPLING

Soil excavated during Site remediation will be managed in accordance with NHDES Env-Or 611 Contaminated Soil, NHDES Env-Hw 100-1100 – Hazardous Waste Rules, and 49 CFR 100-199 - Transportation of Hazardous Materials. Composite soil samples will be collected from stockpiled waste soil for analysis consistent with disposal facility requirements. Disposal characterization will include some or all of the following laboratory analyses: TPH, VOCs, semi-volatile organic compounds (SVOCs), PCBs, Resource Conservation and Recovery Act (RCRA) 8 metals, pesticides, herbicides (only 2,4-D and Silvex are required to be analyzed), ignitability, corrosivity, and reactivity. It should be noted that one individual laboratory container for VOC analysis will be collected from each sample aliquot location and will be composited by the laboratory.

Composite samples will be collected at a frequency one composite sample for every 200 tons of generated material scheduled for off-site disposal. Based on the expected soil removal quantity of 50 cubic yards (approximately 75 tons), only one (1) sample is anticipated to be collected for analysis.

Based on initial analytical results and disposal facility requirements, the collected waste characterization sample may also be analyzed for TCLP VOCs, TCLP SVOCs, TCLP metals, TCLP pesticides, and/or TCLP herbicides.

All waste characterization soil sampling will be completed in accordance with **Table 1**.

6.3 GROUNDWATER MONITORING

Following the removal of the lead and arsenic contaminated soil and covering of the PAH contaminated surficial soil, groundwater will be sampled for arsenic in monitoring wells MW-2, MW-3, and MW-5 to assess the concentration of arsenic in groundwater. Two sampling events are currently planned and based on our understanding of the likely remediation schedule, we anticipate that the sampling events will occur in November 2013 and May 2014.

Following the completion of each sampling event, a Periodic Status Report will be prepared and submitted to the NHDES in accordance with Env-Or 606.18 (a–b).

A total of six (6) samples are anticipated to be collected as a part of this SSQAPP, but more samples may be collected if additional sampling events become necessary.

The number of sampling events recommended (two) is the minimum of events necessary to achieve closure of the site; however, if arsenic concentrations are detected above standards during either round, additional sampling rounds will be necessary.

7. FIELD ACTIVITY METHODOLOGY

Field activity methodologies are summarized in the following subsections. Field activities will be conducted in accordance with the SOPs included in Credere's Generic QAPP Rev. 3 (EPA RFA #08166 and #09036).

Where field observations and/or field screening results indicate the presence of additional source areas or potentially impacted media, additional exploration locations, or samples for approved methods may be added to determine the horizontal and/or vertical extent of contamination. The number and locations of these additional samples or exploration locations will be dependent on field data, Site constraints, and professional judgment. All decisions regarding delineation will be recorded in the field logbook, and all locations will be documented.

Any additional samples obtained for the purpose of contamination delineation will be collected and field-analyzed in accordance with Credere's SOPs outlined on **Table 1** and the methodologies described in this section. If Credere determines that these additional sample locations require testing for analytes not described in Table 1, then the Owner, Maine DEP Project Officer (PO), EPA PO, and EPA QA Chemist will be contacted and Credere will prepare an amendment to this SSQAPP that includes a description of the additional samples for analysis, analytical methods, and sampling SOPs. Any amendments to the SSQAPP will include a Title and Approval page, similar to the one provided with this SSQAPP, to document that additional approval was obtained.

7.1 CONFIRMATORY SOIL SAMPLING

Following excavation of the previously identified approximate 75 tons of contaminated soil, field screening samples will be collected from the excavation sidewalls and bottom for field screening with an XRF. If field screening results for lead and arsenic remain above the NHDES SRS, the excavation will be expanded until lead and arsenic concentrations are below the SRS. Once excavation is complete, confirmatory soil samples will be collected from the excavation sidewalls and bottom using disposal hand tools, or a stainless steel trowel that will be decontaminated between sample collections. Each excavation sidewall sample will be collected from the approximate mid-height of the sidewall (i.e. approximately 3 feet bgs based on an excavation depth of at least 6 feet), and excavation bottom samples will be collected directly from the base of the excavation. Each confirmatory soil sample will be placed directly in laboratory glassware.

Following removal of the two (2) hydraulic lift cylinders, the excavations will be visually inspected for evidence of a release of hydraulic oil to the environment. If visual evidence of a petroleum release is observed, the NHDES and the project team will be notified within 24 hours. One (1) sample will subsequently be collected from the base of the excavation, which is expected to be approximately 8 feet bgs, depending on the overall depth of the hydraulic cylinder and associated footings.

7.2 WASTE CHARACTERIZATION SAMPLING

Waste characterization samples will be collected as composites of eight (8) aliquots. Each aliquot will be collected from the base of each quadrant and the approximate top center of the stockpiled material. Prior to sample collection, hand tools will be used to remove approximately one foot of surficial stockpiled material such that each aliquot is collected from the interior of the stockpile. With the exception of the sample aliquots collected for VOC analyses, which will be collected in individual laboratory containers and composited by the laboratory, each aliquot will be placed in a pre-cleaned stainless steel bowl and homogenized in accordance with NHDES SOP HWRB-11 prior to placement in the appropriate laboratory glassware.

7.3 GROUNDWATER MONITORING

Prior to sampling, the depth to groundwater will be measured in all existing groundwater monitoring wells on the Site in accordance with NHDES SOP HWRB-1 to allow for the calculation of groundwater elevations and the determination of groundwater flow direction and gradients. Monitoring wells will then be sampled using low-flow sampling techniques and dedicated equipment in accordance with NHDES SOP HWRB-9. Each groundwater sample will be collected directly in laboratory glassware and will be submitted for off-site laboratory analysis of dissolved arsenic in accordance with **Table 1**. The dissolved arsenic samples will be filtered in the field using in-line 0.45 micron pore sized filters.

8. REGULATORY STANDARDS

Sample results will be compared to the applicable state and/or federal standards/guidelines described below.

8.1 CONFIRMATORY SOIL SAMPLES

Confirmatory soil sample results will be compared to the NHDES SRS per NHDES Env-Or 600.

8.2 WASTE CHARACTERIZATION SAMPLES

Waste characterization sample results for soil will be compared to disposal facility acceptance requirements. In addition, total concentrations of those compounds listed in Table 1 of 40 CFR 261.24 that are detected in the waste characterization samples at levels that are 20 times greater than the applicable Regulatory Limits listed in Table 1 of 40 CFR 261.24 (i.e. '20X Rule') will be re-analyzed by TCLP methods. TCLP results will then be compared to the Regulatory Limits listed in Table 1 of 40 CFR 261.24 to determine if waste generated at the Site exhibits the characteristic of toxicity.

It should be noted that due to laboratory equipment constraints, the laboratory reporting limits for the following VOCs: 1,4-dioxane, 1,2-dibromoethane (EDB), and 1,2-dibromo-3-chloropropane (DBCP); and SVOCs: N-nitrosodimethylamine, 2,4-dinitophenol, and, 3,3'-dichlorobenzidine, exceed applicable regulatory standards. If similar VOC and/or SVOC compounds are not detected above the laboratory PQLs in the soil samples collected from the Site, these compounds will be considered non-detect. If similar VOC and/or SVOC compounds are detected, the aforementioned compounds will be considered COCs, and/or, additional analysis will be conducted following an approved modification to the SSQAPP.

8.3 GROUNDWATER

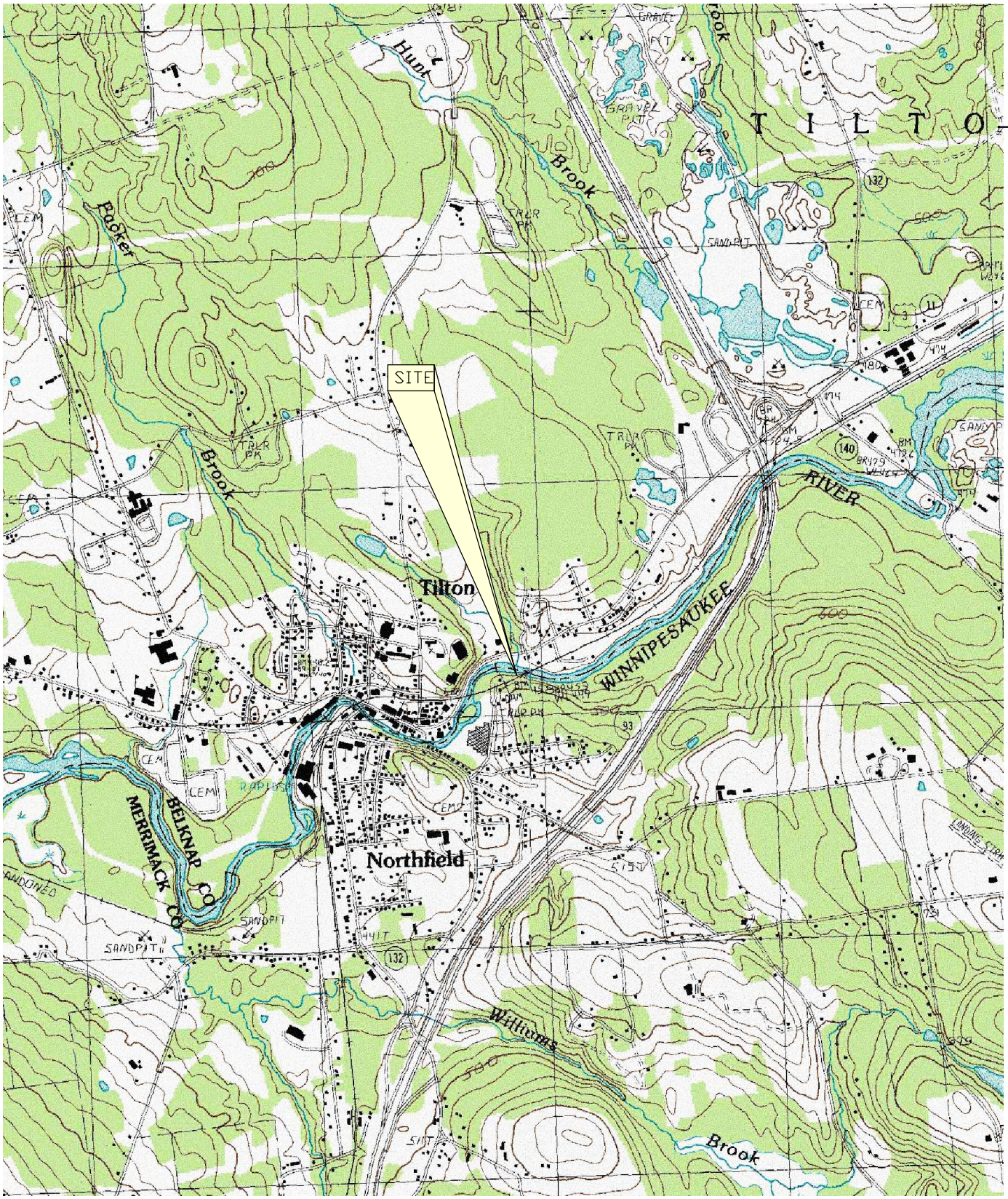
Groundwater sample results will be compared to the New Hampshire AGQS detailed in NHDES Env-Or 600 Contaminated Site Management and EPA Maximum Contaminant Levels (MCLs) for Drinking Water.

9. PROPOSED PROJECT SCHEDULE

The following schedule is proposed for this phase of the cleanup project. This is a dynamic schedule and tasks may be adjusted based on document regulatory review time and contractor availability.

TENTATIVE DATE	ACTION
May 10, 2013	Finalize SSQAPP
By May 13, 2013	Select Cleanup Contractor
May 14, 2013	Begin Cleanup
June 2013	Begin Groundwater Monitoring
September 2013	Submit Remedial Action Implementation Report to NHDES/EPA
November 2013	First Groundwater Monitoring Event
December 2013	Submittal Periodic Monitoring Report to NHDES/EPA
May 2014	Second Groundwater Monitoring Event
June 2014	Submit Second Periodic Monitoring Report to NHDES/EPA

FIGURES



USGS 7.5 MINUTE NORTHFIELD, NH QUADRANGLE (1987)

DRAWN BY: WTE	DATE: 2/8/2013
CHECKED BY: RSV/JRN	PROJECT: 12001162

FIGURE 1 - SITE LOCATION PLAN

CREDERE ASSOCIATES, LLC
776 MAIN STREET
WESTBROOK, MAINE 04092
TEL: 207.828.1272
FAX: 207.887.1051
WWW.CREDERELLC.COM

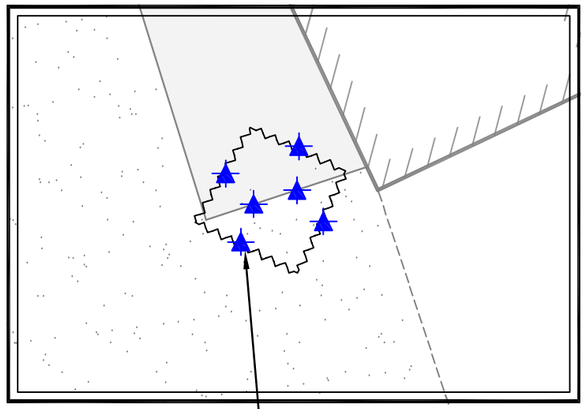
ERNIE'S AUTO SALES PROPERTY
180 EAST MAIN STREET
TILTON, NH
NHDES# 199311019

GRAPHIC SCALE
2,000 0 1,000 2,000
1 inch = 2,000ft.

SITE

J:\CREDERE\12001162\SSQAPP-SOIL WORK\Proposed Sampling Plan 2-8-2013.dwg plot date: 2/8/2013 8:54 AM

CONFIRMATORY SOIL SAMPLE AREA DETAIL
INSET SCALE: 1"=20'



CONFIRMATORY SOIL SAMPLES – CA-1 THROUGH CA-6 (2 FROM BOTTOM AND 4 FROM SIDEWALLS)

TILTON POLICE STATION

FORMER FUELING ISLAND LOCATION (PAVEMENT PATCH)

COPELAND ROAD

UNDEVELOPED PROPERTY

EAST MAIN STREET

RESIDENTIAL PROPERTY

HOUSE

ABANDONED HYDRAULIC LIFT CYLINDERS (LOCATION OF CA-7 AND CA-8)

MW-3

SB-1 MW-1

SS-6

SB-6

SS-4

SS-7 SB-7 MW-7

SB-14

SB-10

SB-9

SS-3

MW-5

SB-13

SB-8

SB-12

SEE INSET FOR CONFIRMATORY SOIL SAMPLE AREA DETAIL

GRAVEL LOT

LOCATION OF FORMER STREAM (PREVIOUSLY FILLED)

DRAINAGE DITCH

OVERGROWN LAWN

SHED

MW-2

20' WIDE SEWER EASEMENT

MULTIPLE *DE MINIMUS* STAINS OBSERVED IN THIS AREA ON GRAVEL SURFACE ON AUGUST 26, 2010

FILL PILE AND WASTE ASPHALT OBSERVED

TP

SS-5

LOW WATER MARK (1/11/1999)

WINNIPESAUKEE RIVER

DIRECTION OF FLOW

RAILROAD CORRIDOR

RAILROAD BRIDGE

N

CREDERE

LEGEND

SYMBOL	DESCRIPTION
	PROPERTY LINE
	EASEMENT LINE
	EDGE OF RIVER
	CENTELINE OF FORMER STREAM
	TREE LINE
ohu	OVERHEAD UTILITY LINE
	EDGE OF PAVEMENT
	EDGE OF GRAVEL
	CONCRETE
	FORMER BUILDING
	BUILDING
	CULVERT
	RAILROAD TRACK
	PREVIOUS SOIL BORING LOCATION
	EXISTING MONITORING WELL LOCATION
	PREVIOUS SURFICIAL SOIL SAMPLE LOCATION
	PREVIOUS TEST PIT LOCATION
	PROPOSED CONFIRMATORY SOIL SAMPLE LOCATION
	HYDRAULIC LIFT CYLINDER
	PROPOSED GROUNDWATER MONITORING WELL SAMPLE LOCATION
	ESTIMATED APPROXIMATE EXTENT OF PROPOSED LEAD AND ARSENIC SOIL EXCAVATION AREA (APPROX 225 FT² AND 6'± DEPTH)
	EXTENT OF PROPOSED SOIL COVERING SYSTEM

NOTES

1. INFORMATION SHOWN ON THIS PLAN IS BASED ON A SURVEY PROVIDED BY THE WINNIPESAUKEE RIVER TRAIL ASSOCIATION AS WELL AS; FIELD OBSERVATIONS MADE ON AUGUST 26, 2010, THE JUNE 2, 2011 PHASE II ENVIRONMENTAL SITE ASSESSMENT (ESA) AND THE OCTOBER 3, 2012 SUPPLEMENTAL PHASE II ESA.

DRAWN BY: WTE	DATE: 5/6/13
CHECKED BY: RSV/JSS	PROJECT: 12001162

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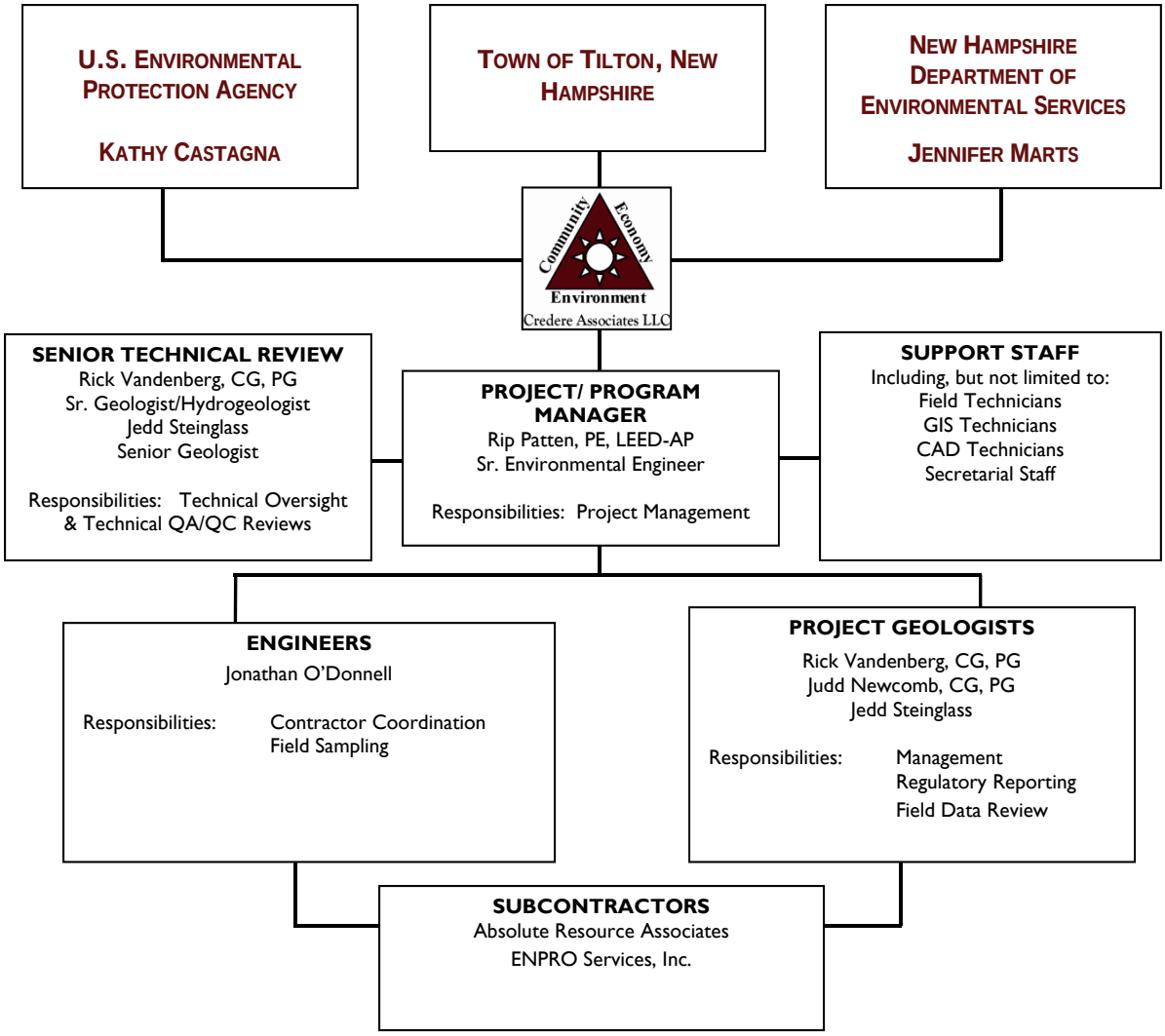
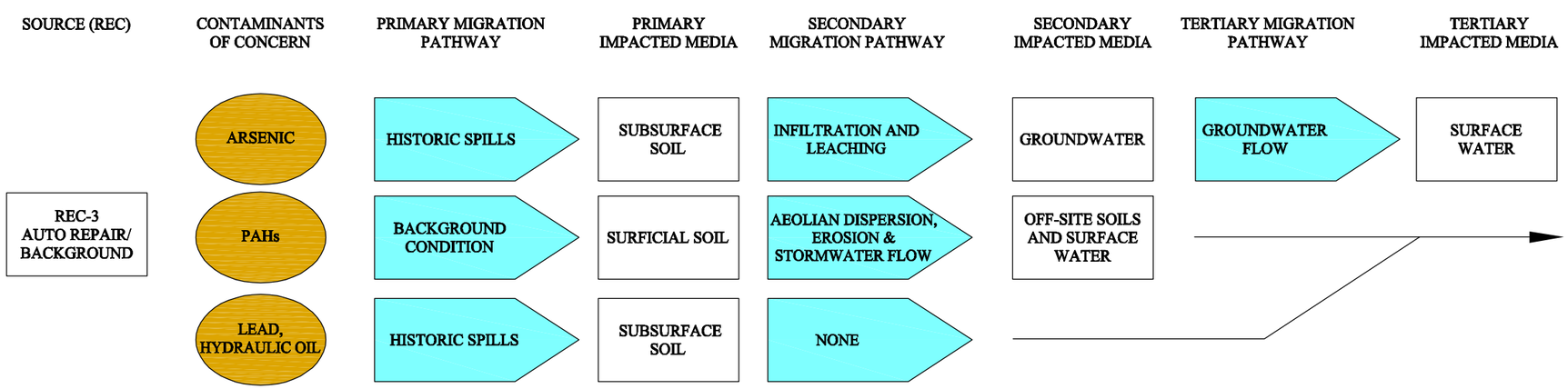
FIGURE 2
PROPOSED SAMPLE LOCATION PLAN

ERNIE'S AUTO SALES PROPERTY
180 EAST MAIN STREET
TILTON, NH
NHDES #199311019

GRAPHIC SCALE
40 0 20 40
1 inch = 40 ft.

Figure 3 - Credere Organization and Responsibility Chart





POTENTIAL EXPOSURE PATHWAYS						
	RESIDENTIAL	COMMERCIAL	SITE WORKER	VISITOR	TERRESTRIAL BIOTA	AQUATIC BIOTA
INHALATION						
DERMAL ABSORPTION	X	X	X	X	X	X
ACTIVE INGESTION					X	X
INCIDENTAL UPTAKE	X	X	X	X	X	X

POTENTIAL EXPOSURE PATHWAYS						
	RESIDENTIAL	COMMERCIAL	SITE WORKER	VISITOR	TERRESTRIAL BIOTA	AQUATIC BIOTA
INHALATION						
DERMAL ABSORPTION			X			X
ACTIVE INGESTION						X
INCIDENTAL UPTAKE						X

DRAWN BY: WTE	DATE: 2/19/13
CHECKED BY: RSV/JSS	PROJECT: 12001162

Credere Associates, LLC
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Westbrook, Maine 04092
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FIGURE 4
UPDATED CONCEPTUAL SITE MODEL

ERNIE'S AUTO SALES PROPERTY
180 EAST MAIN STREET
TILTON, NH
NHDES #199311019

TABLES

Table 1: Sample Reference Table
Ernie's Auto Sales
180 East Main Street
Tilton, New Hampshire
NHDES # 199311019

Media to be Collected	Proposed Sample IDs	Sample Type	Sample Design	Sample Depth (ft bgs)	Field SOPs to be Used	Field Analysis/ Observations	No. of Samples for Analysis	No. of Field Dups	Analytical Method	Sample Container Information & Preservative (per location)	Lab SOPs	Laboratory To be Used
Confirmatory Soil Sampling (Arsenic and Lead Soils)	CA-1 through CA-6	Soil	Confirmatory soil samples will be collected from the approximate mid-height of each excavation sidewall, and evenly spaced in the excavation bottom.	Sidewall samples will be collected from the mid-height of the excavation sidewall (approximately 3 feet bgs, based on an excavation depth of 6 feet), Bottom samples will be collected from the excvavation bottom of approximately 6 feet bgs.	Credere-004 DR#12 DR#24 DR#25 HWRB-15 HWRB-17	Visual & Olfactory XRF Screening	At least 6	Solid samples will be duplicated at a rate of 5% per the generic QAPP for a total of one (1) based on the proposed total number of samples indicated in this Table.	Arsenic and Lead - EPA 6010	Arsenic and Lead - One 8 oz. glass jar with Teflon-lined cap per location (Chilled to 4°C)	RL-5	Absolute Resource Associates, Portsmouth, NH
Confirmatory Soil Sampling (Hydraulic Lift Area Soils)	CA-7 and CA-8	Soil	Confirmatory soil samples will be collected from beneath each of the hydraulic lift cylinders.	Approximately 8 feet bgs, depending on depth of hydraulic lift cylinders and footings.	Credere-004 DR#12 DR#24 DR#25 HWRB-15 HWRB-17	Visual & Olfactory XRF Screening	2	Solid samples will be duplicated at a rate of 5% per the generic QAPP for a total of one (1) based on the proposed total number of samples indicated in this Table.	TPH - EPA 8015 VOCs - EPA 8260 PAHs - EPA 8270 PCBs - EPA 8082	TPH - One 8 oz. glass jar with Teflon-lined cap per location (Chilled to 4°C) VOCs - One 40 ml VOA with 5 ml methanol and one 40 ml VOA for percent solids (Chilled to 4°C) PAHs - One 4 oz. glass jar with PCBs - One 4 oz. glass jar with Teflon-lined cap per location (Chilled to 4°C)	RL-4 RL-7 RL-9 RL-13	Absolute Resource Associates, Portsmouth, NH

Table 1: Sample Reference Table
Ernie's Auto Sales
180 East Main Street
Tilton, New Hampshire
NHDES # 199311019

Media to be Collected	Proposed Sample IDs	Sample Type	Sample Design	Sample Depth (ft bgs)	Field SOPs to be Used	Field Analysis/ Observations	No. of Samples for Analysis	No. of Field Dups	Analytical Method	Sample Container Information & Preservative (per location)	Lab SOPs	Laboratory To be Used
Waste Characterization Sampling	WC-1	Soil (Composite)	Composite samples for waste characterization will include 8 discrete aliquots collected from the approximate center and each quadrant of stockpiled material.	N/A (Sample collected from stockpile)	Credere-004 DR#12 HWRB-15 NHDES Preservation of VOCs in Soil Samples	Visual	1 per 200 tons of material up to 2,000 tons. At least 1 sample is expected to be required for analysis.	Not Required	TPH - EPA 8151A RCRA 8Metals - EPA 6010 VOCs - EPA 8260 Semi VOCs - EPA 8270 PCBs - EPA 8082 Herbicides - EPA 8151A Pesticides - EPA 8081 Ignitability - EPA 1030 Corrossivity - SW-846 7.2 Sulfide/Cyanide Reactivity - EPA 9045C, 7.3.4.2, 7.3.3.2 TCLP - EPA 1311	TPH - One 8 oz. glass jar with Teflon-lined cap per location (Chilled to 4°C) RCRA 8 Metals - One 8 oz. glass jar with Teflon-lined cap per location (Chilled to 4°C) VOCs - Eight (8) 40 ml VOA with 5 ml methanol and one 40 ml VOA for percent solids (Chilled to 4°C) Semi-VOCs - One 4 oz. glass jar with Teflon-lined cap per location (Chilled to 4°C) Pesticides/Herbicides - One 4 oz. glass jar with Teflon-lined cap per location (Chilled to 4°C) PCBs - One 4 oz. glass jar with Teflon-lined cap per location (Chilled to 4°C) Ignitability - One 4 oz. glass jar with Teflon-lined cap per location (Chilled to 4°C) Corrosivity - One 4 oz. glass jar with Teflon-lined cap per location (Chilled to 4°C) Sulfide Reactivity - One 4 oz. glass jar with Teflon-lined cap per location (Chilled to 4°C) Cyanide Reactivity - One 4 oz. glass jar with Teflon-lined cap per location (Chilled to 4°C)	RL-1 RL-3 RL-4 RL-5 RL-6 RL-7 RL-8 RL-9 RL-11 RL-13 RL-18 RL-19 RL-20 RL-24 RL-25	Absolute Resource Associates, Portsmouth, NH
Groundwater Sampling	MW-2 MW-3 MW-5	Groundwater	Groundwater will be periodically sampled to monitor the fate and transport of arsenic following soil remediation work.	N/A	HWRB-1 HWRB-3 HWRB-9 HWRB-15 HWRB-17 DR#012 Credere-004	Visual & Olfactory Field Parameters: Temperature, pH, Dissolved Oxygen, Turbidity, Conductivity, Oxidation-Reduction Potential	A minimum of 6 samples will collected from the two planned sampling events	Groundwater samples will be duplicated at a rate of 5% per the generic QAPP for a total of one (1) based on the proposed total number of samples indicated in this Table.	Dissolved Arsenic - EPA Method 6010	Dissoved Arsenic - 250 mL plastic with nitric acid - filtered in the field	RL-5	Absolute Resource Associates, Portsmouth, NH

Table 2: Standard Operating Procedure (SOP) Reference Table
Ernie's Auto Sales
180 East Main Street
Tilton, New Hampshire
NHDES # 199311019

Field SOPs

SOP	SOP Description	Date
Credere-004	SOP for log book entries	October 2006
Not Applicable	NHDES Preservation of VOCs in Soil Samples	March 2000
DR#12	Chain of Custody Protocol	April 3, 2009
DR#24	Safety Protocal For the Use of the Innov-X Portable X-Ray Fluorescence	June 9, 2006
DR#25	Protocol For Collecting Data using an Innov-X Field Portble X-Ray Fluorescence Spectrometer For Certain metals in Solid Media.	Feburary 20, 2009
HWRB-1	Measuring Static Water Level	December 2010
HWRB-3	A Method for Determining Aquifer Stabilization	December 2008
HWRB-9	Groundwater Sampling using Low-Flow Purging and Sampling Protocol	June 2010
HWRB-11	Soil Sampling	September 2001
HWRB-15	Decontamination	July 2007
HWRB-17	Calibration of Field Instruments	July 2007

Laboratory SOPs

SOP	SOP Description	Date
RL-1	TCLP ZHE Extraction Method 1311, SOP 5140m rev 1	January 2007
RL-3	Analysis of Pesticides By Gas Chromatography/ Electron Capture Detector (GC/ECD): SW-846 Method 8081- SOP 5304	March 2008
RL-4	Analysis of Polychlorinated Biphenyls in Soil and Water Extracts by EPA 8082, SOP 5303	December 2010
RL-5	Trace Metals Analysis ICP-AES Using EPA Method 200.7/6010-SOP 5603	August 2007
RL-6	Mercury Analysis by Cold Vapor Extraction Methods 245.1, 7470A	September 2007
RL-7	Method for Determining TPH by SW846 Method 8015, SOP 5501	November 2008
RL-8	TCLP Extraction Method 1311, SOP 5604, rev1	June 2003
RL-9	VOCs by EPA Method 8260	June 2012
RL-11	Cyanide by EPA Method 9014 4500CN-E	August 2011
RL-13	PAHs, Base/Nuetrals, and Acids by EPA Method 8270D	May 2009
RL-18	pH by Method SM 4500 H+B	August 2011
RL-19	Sulfide by method SM 4500-S2D+F	August 2011
RL-20	Ignitability/Flashpoint	August 2011
RL-24	Preparation & Analysis of Organo-Chlorine Pesticides in Soil and Water by Method 8081B	August 2011
RL-25	EPA 8151A Chlorinated Herbicides by GC Using Methylation Derivatization	August 2010

APPENDIX A

Analytical Sensitivity and Project Criteria Tables

As of the date of this Site Specific Quality Assurance Project Plan Addendum, the current state and/or federal standards have been reviewed for accuracy.

PCBs in Solids by EPA Method 8082		
Analyte	**Laboratory Practical Quantitation Limit**	**Regulatory Standard[1]**
PCB-1016	0.2	1 (Total)
PCB-1221	0.2	
PCB-1232	0.2	
PCB-1242	0.2	
PCB-1248	0.2	
PCB-1260	0.2	

Notes:

1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Soil Remediation Standards.

All concentrations in mg/kg

NE = Regulatory guideline not established

Metals in Solids by EPA Methods 6010 and 7471		
Analyte	**Laboratory Practical Quantitation Limit**	**Regulatory Standard[1]**
Arsenic	0.5	11
Barium	2	1,000
Cadmium	0.2	33
Chromium	2	130
Lead	0.5	400
Mercury	0.06	6
Selenium	2	180
Silver	0.4	89

Notes:

All values are in mg/kg.

1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Soil Remediation Standards unless marked with an *.

* - United States Environmental Protection Agency Regions 3, 6, and 9. (accessed 4/12/12). Regional Screening Levels for Chemical Contaminants at Superfund Sites (Residential Soil). http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

** - The chromium VI standard was used because it is the lowest and most conservative standard.

TPH in Solids by EPA Method 8100		
Analyte	**Laboratory Practical Quantitation Limit**	**Regulatory Standard[1]**
Total Petroleum Hydrocarbons	200	10,000

Notes:
All values are in mg/kg.
1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Soil Remediation Standards.

VOCs in Solids by EPA Method 8260		
Analyte	**Laboratory Practical Quantitation Limit**	**Regulatory Standard[1]**
dichlorodifluoromethane	0.1	1,000
chloromethane	0.1	3
vinyl chloride	0.1	1
bromomethane	0.1	0.3
chloroethane	0.1	NE
trichlorofluoromethane	0.1	1,000
diethyl ether	0.1	3,900
acetone	2	75
1,1-dichloroethene	0.1	2
methylene chloride	0.1	0.1
carbon disulfide	0.1	460
methyl t-butyl ether (MTBE)	0.1	0.2
trans-1,2-dichloroethene	0.1	9
diisopropyl ether (DIPE)	0.1	10
ethyl t-butyl ether (ETBE)	0.1	0.7
1,1-dichloroethane	0.1	3
t-butanol (TBA)	2	2
2-butanone (MEK)	0.3	51
2,2-dichloropropane	0.1	NE
cis-1,2-dichloroethene	0.1	NE
chloroform	0.1	3
bromochloromethane	0.1	160*
tetrahydrofuran (THF)	0.5	200
1,1,1-trichloroethane	0.1	78
1,1-dichloropropene	0.1	NE
t-amyl-methyl ether (TAME)	0.1	3
carbon tetrachloride	0.1	12
1,2-dichloroethane	0.1	0.1
benzene	0.1	0.3
trichloroethene	0.1	5
1,2-dichloropropane	0.1	0.1
bromodichloromethane	0.1	0.1
1,4-dioxane	2	0.3
dibromomethane	0.1	25*
4-methyl-2-pentanone (MIBK)	0.4	29
cis-1,3-dichloropropene	0.1	NE
toluene	0.1	100
trans-1,3-dichloropropene	0.1	NE
2-hexanone	0.5	210*
1,1,2-trichloroethane	0.1	0.1
1,3-dichloropropane	0.1	1,600*
tetrachloroethene	0.1	2
dibromochloromethane	0.1	1
1,2-dibromoethane (EDB)	0.1	0.1
chlorobenzene	0.1	6
1,1,1,2-tetrachloroethane	0.1	0.8
ethylbenzene	0.1	140
m&p-xylenes	0.1	500**
o-xylene	0.1	500**
styrene	0.1	17

VOCs in Solids by EPA Method 8260

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard[1]
bromoform	0.1	0.1
isopropylbenzene	0.1	330
1,1,2,2-tetrachloroethane	0.1	4
1,2,3-trichloropropane	0.1	0.2
n-propylbenzene	0.1	85
bromobenzene	0.1	300*
1,3,5-trimethylbenzene	0.1	96
2-chlorotoluene	0.1	15
4-chlorotoluene	0.1	2,400
tert-butylbenzene	0.1	100
1,2,4-trimethylbenzene	0.1	130
sec-butylbenzene	0.1	130
1,3-dichlorobenzene	0.1	150
4-isopropyltoluene	0.1	3,400
1,4-dichlorobenzene	0.1	7
1,2-dichlorobenzene	0.1	88
n-butylbenzene	0.1	110
1,2-dibromo-3-chloropropane (DBCP)	0.1	0.1
1,2,4-trichlorobenzene	0.1	19
1,3,5-trichlorobenzene	0.1	340
hexachlorobutadiene	0.1	7
naphthalene	0.1	5
1,2,3-trichlorobenzene	0.1	49*

Notes:

All values are in mg/kg.

1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Soil Remediation Standards unless marked with an *.

* - United States Environmental Protection Agency Regions 3, 6, and 9. (accessed 4/12/12). Regional Screening Levels for Chemical Contaminants at Superfund Sites (Residential Soil). http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

** NDHES mixed isomer standard.

NE = Regulatory guideline not established

SVOC in Solids by EPA Method 8270		
Analyte	**Laboratory Practical Quantitation Limit**	**Regulatory Standard[1]**
N-nitrosodimethylamine	0.2	0.0023*
aniline	0.2	85*
phenol	0.2	56
2-chlorophenol	0.5	2
bis(2-chloroethyl)ether	0.2	0.7
1,3-dichlorobenzene	0.2	150
1,4-dichlorobenzene	0.2	7
1,2-dichlorobenzene	0.2	88
benzyl alcohol	0.2	6,100*
2-methylphenol	0.2	0.9
bis(2-chloroisopropyl) ether	0.2	5
hexachloroethane	0.2	0.7
N-nitroso-di-N-propylamine	0.2	0.069*
4-methylphenol	0.2	0.7
nitrobenzene	0.2	4.8*
isophorone	0.5	1
2-nitrophenol	0.2	NE
2,4-dimethylphenol	0.2	4
bis(2-chloroethoxy)methane	0.2	180*
2,4-dichlorophenol	0.5	0.7
1,2,4-trichlorobenzene	0.5	19
naphthalene	0.05	5
benzoic acid	5	350
4-chloroaniline	0.2	1.3
hexachlorobutadiene	0.2	7
4-chloro-3-methylphenol	0.2	6,100*
2-methylnaphthalene	0.05	96
hexachlorocyclopentadiene	1	200
2,4,6-trichlorophenol	0.2	0.7
2,4,5-trichlorophenol	0.2	24
2-chloronaphthalene	0.5	NE
2-nitroaniline	0.2	610*
acenaphthylene	0.05	490
dimethylphthalate	0.5	700
2,6-dinitrotoluene	0.2	61*
2,4-dinitrotoluene	0.2	0.7
acenaphthene	0.05	340
3-nitroaniline	0.2	NE
2,4-dinitrophenol	5	0.7
dibenzofuran	0.05	78*
4-nitrophenol	2	NE
fluorene	0.05	77
diethyl phthalate	0.5	1000
4-chlorophenyl phenyl ether	0.5	NE
4-nitroaniline	0.5	24*
4,6-dinitro-2-methylphenol	2	4.9*
azobenzene	0.2	5.1*
N-nitrosodiphenylamine	0.2	99*
4-bromophenyl phenyl ether	0.2	NE
hexachlorobenzene	0.2	0.8

SVOC in Solids by EPA Method 8270		
Analyte	**Laboratory Practical Quantitation Limit**	**Regulatory Standard[1]**
pentachlorophenol	1	3
phenanthrene	0.05	960
anthracene	0.05	1000
carbazole	0.2	NE
di-n-butylphthalate	0.5	2,600
fluoranthene	0.05	960
benzidine	3	0.004
pyrene	0.05	720
butyl benzyl phthalate	0.5	260*
benzo(a)anthracene	0.05	1
chrysene	0.05	120
3,3'-dichlorobenzidine	3	0.7
bis(2-ethylhexyl)phthalate	0.5	72
di-n-octyl phthalate	0.5	NE
benzo(b)fluoranthene	0.05	1
benzo(k)fluoranthene	0.05	12
benzo(a)pyrene	0.05	0.7
indeno(1,2,3-cd)pyrene	0.05	1
dibenzo(a,h)anthracene	0.05	0.7
benzo(g,h,i)perylene	0.05	960

Notes:

All values are in mg/kg.

1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Soil Remediation Standards, unless marked with an *.

NE = Regulatory guideline not established

* - United States Environmental Protection Agency Regions 3, 6, and 9. (accessed 4/12/12). Regional Screening Levels for Chemical Contaminants at Superfund Sites. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

Herbicides in Solids by EPA Method 8151A

Analyte[1]	Laboratory Practical Quantitation Limit	Regulatory Standard[2]
2,4-D	0.04167	300
2,4,5-TP (silvex)	0.04167	60

Notes:
All values are in mg/kg.
1- Analytes are those anticipated to be required by a disposal facility
2- New Hampshire Department of Environmental Services (NHDES) Chapter 600 Soil Remediation Standards.

NE = Regulatory guideline not established

Pesticides in Soil by 8081		
Analyte[1]	**Laboratory Practical Quantitation Limit**	**Regulatory Standard[2]**
gamma-BHC (Lindane)	0.03	0.09
Heptachlor	0.03	0.2
Endrin	0.03	8
Methoxychlor	0.03	130
alpha-Chlordane	0.03	NE
gamma-Chlordane	0.03	NE
Toxaphene	0.2	1

Notes:

All values are in mg/kg.

1- Analytes are those anticipated to be required by a disposal facility

2 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Soil Remediation Standards.

NE = Regulatory guideline not established

TCLP Analysis and Total Constituent Analysis in Solids per EPA Publication SW-846						
EPA HW No. 1	**Contaminant**	**Laboratory Practical Quantitation Limit for TCLP Analysis (mg/L)**	**TCLP Regulatory Limit (mg/L)**	**Laboratory Practical Quantitation Limit for Total Constituent Analysis (mg/kg)**	**Regulatory Limit for Total Constituent Analysis (Equal to 20 times TCLP Limit) (mg/kg)**	**Method for Total Constituent Analysis**
D004	Arsenic	< 0.08	5.0	< 0.5	100	EPA 6010
D005	Barium	< 0.5	100	< 2.5	2000	EPA 6010
D006	Cadmium	< 0.04	1.0	<0.2	20	EPA 6010
D007	Chromium	< 0.5	5.0	< 2.5	100	EPA 6010
D008	Lead	< 0.08	5.0	< 0.5	100	EPA 6010
D009	Mercury	< 0.2	0.2	< 4	4	EPA 7470A/7471B
D010	Selenium	< 0.5	1.0	< 2.5	20	EPA 6010
D011	Silver	< 0.07	5.0	< 0.35	100	EPA 6010
D012	Endrin	< 0.008	0.02	< 0.16	0.4	EPA 8081
D013	Lindane	< 0.008	0.4	< 0.16	8	EPA 8081
D014	Methoxychlor	< 0.008	10	< 0.16	200	EPA 8081
D015	Toxaphene	< 0.008	0.5	< 0.16	10	EPA 8081
D016	2,4-D	< 10	10	< 200	200	EPA 8151
D017	2,4,5-TP (Silvex)	< 1.0	1.0	< 20	20	EPA 8151
D018	Benzene	< 0.2	0.5	< 4	10	EPA 8260
D019	Carbon tetrachloride	< 0.2	0.5	< 4	10	EPA 8260
D020	Chlordane	< 0.03	0.03	< 0.6	0.6	EPA 8081
D021	Chlorobenzene	< 0.2	100	< 4	2000	EPA 8260
D022	Chloroform	< 0.2	6.0	< 4	120	EPA 8260
D023	o-Cresol	< 0.5	200	< 10	4000	EPA 8270
D024	m-Cresol	< 0.5	200	< 10	4000	EPA 8270
D025	p-Cresol	< 0.5	200	< 10	4000	EPA 8270
D026	Cresol	< 0.5	200	< 10	4000	EPA 8270
D027	1,4-Dichlorobenzene	< 0.2	7.5	< 4	150	EPA 8260
D028	1,2-Dichloroethane	< 0.2	0.5	< 4	10	EPA 8260
D029	1,1-Dichloroethylene	< 0.2	0.7	< 4	14	EPA 8260
D030	2,4-Dinitrotoluene	< 0.1	0.13	< 2	2.6	EPA 8270
D031	Heptachlor (and its epoxide)	< 0.008	0.008	< 0.16	0.16	EPA 8081
D032	Hexachlorobenzene	< 0.1	0.13	< 2	2.6	EPA 8270
D033	Hexachlorobutadiene	< 0.5	0.5	< 10	10	EPA 8270
D034	Hexachloroethane	< 0.5	3.0	< 10	60	EPA 8270
D035	Methyl ethyl ketone	< 2	200	< 40	4000	EPA 8260
D036	Nitrobenzene	< 0.5	2.0	< 10	40	EPA 8270
D037	Pentrachlorophenol	< 0.5	100	< 10	2000	EPA 8270
D038	Pyridine	< 0.5	5.0	< 10	100	EPA 8270
D039	Tetrachloroethylene	< 0.2	0.7	< 4	14	EPA 8260
D040	Trichloroethylene	< 0.2	0.5	< 4	10	EPA 8260
D041	2,4,5-Trichlorophenol	< 0.5	400	< 10	8000	EPA 8270
D042	2,4,6-Trichlorophenol	< 0.5	2.0	< 10	40	EPA 8270
D043	Vinyl chloride	< 0.2	0.2	< 4	4	EPA 8260

Reactivity in Solids for Cyanide (Method E9014) and Sulfide (Method SM4500-S)		
Analyte	**Laboratory Practical Quantitation Limit**	**Regulatory Standard[1]**
Cyanide (total)	0.5	100
Sulfide (soluble)	0.4	-

Notes:
Values are in milligrams per kilogram (mg/kg)
1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Soil Remediation Standards.

PAHs in Solid by 8270

Analyte	Laboratory Practical Quantitation Limit	Regulatory Standard[1]
naphthalene	0.5	5
2-methylnaphthalene	0.5	96
acenaphthylene	0.5	490
acenaphthene	0.5	340
dibenzofuran	0.5	78*
fluorene	0.5	77
phenanthrene	0.5	960
anthracene	0.5	1000
fluoranthene	0.5	960
pyrene	0.5	720
benzo(a)anthracene	0.5	1
chrysene	0.5	120
benzo(b)fluoranthene	0.5	12
benzo(k)fluoranthene	0.5	12
benzo(a)pyrene	0.5	0.7
indeno(1,2,3-cd)pyrene	0.5	1
dibenzo(a,h)anthracene	0.5	0.7
benzo(g,h,i)perylene	0.5	960

Notes:

All values are in mg/kg.

1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Soil Remediation Standards.

* - United States Environmental Protection Agency Regions 3, 6, and 9. (accessed 4/12/12). Regional Screening Levels for Chemical Contaminants at Superfund Sites. http://www.epa.gov/reg3hwmd/risk/human/rb-concentration_table/index.htm

NE = Regulatory guideline not established

Metals in Water by EPA Methods 6010 and 7471		
Analyte	**Laboratory Practical Quantitation Limit**	**Regulatory Standard[1]**
Arsenic	8	10

Notes:

All values are in ug/L.

1 - New Hampshire Department of Environmental Services (NHDES) Chapter 600 Ambient Groundwater Quality Standards for groundwater, unless marked with an *.