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PREPARE A SUCESSFUL

SITE-SPECIFIC QUALITY ASSESSMENT

PROJECT PLAN

Presenters

Mr. Dale Mitchell, Passamaquoddy Brownfields Director; 207-853-2600; dalem@wabanaki.com

Ms. AmyJean McKeown, USEPA Brownfields Project Officer; 617-918-1248; McKeown.AmyJean@epamail.epa.gov

Mr. Glenn Daukas, Campbell Environmental Group, Senior Geologist; 207-253-1990; gdaukas@cegenvironmental.com

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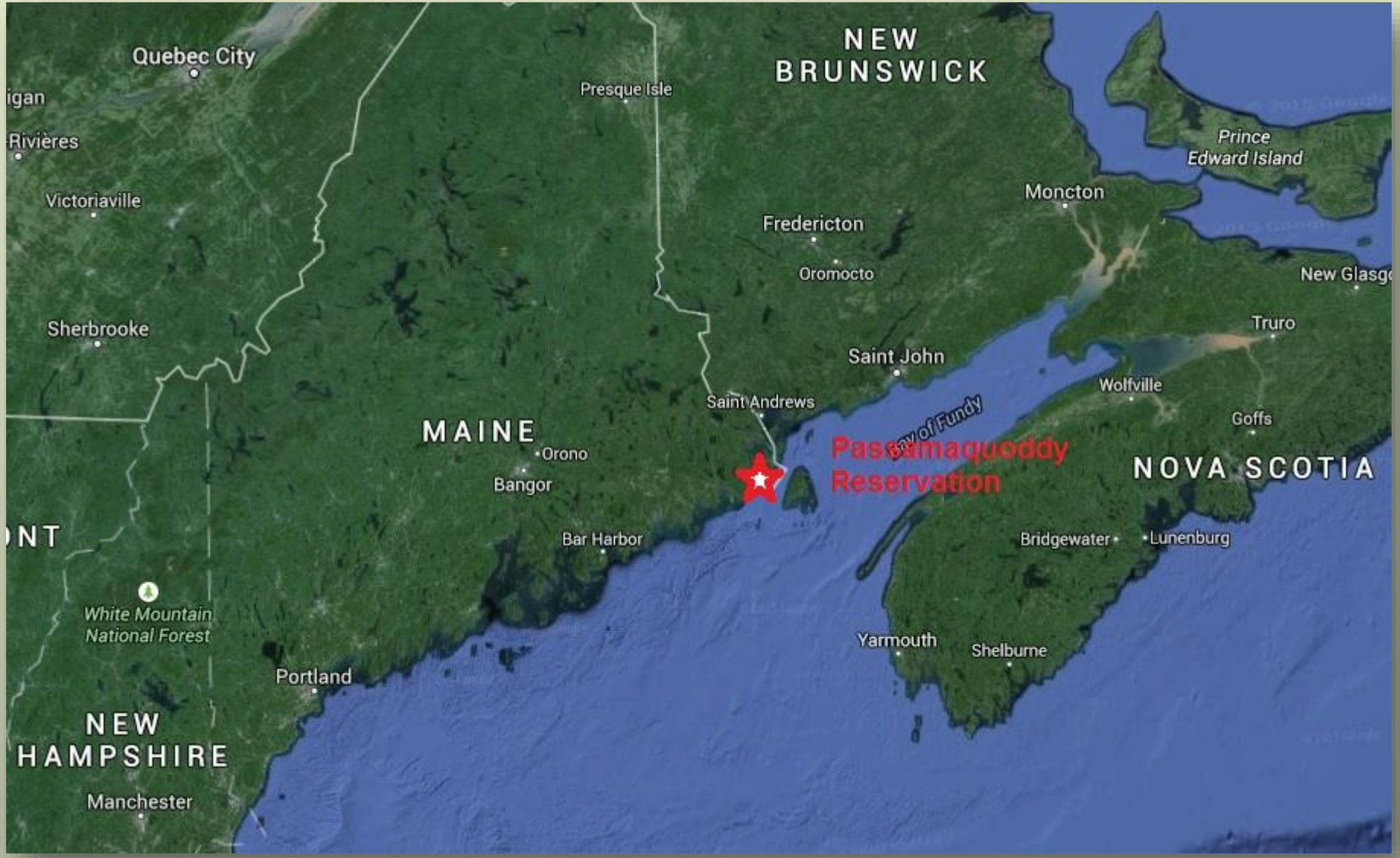

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What We Hope to Convey

- How to Develop a Successful Site-specific QAPP;
- The Logical Step by Step Process to Identify the Problem (What questions do we have); and
- Developing a Written Plan to Solve the Problem (What information do we need to answer the questions and how do we get it).

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Documents You Will Need To Conduct a Phase II ESA

- Phase I Environmental Assessment or Similar Assessment;
- Health and Safety Plan;
- Generic Quality Assurance Project Plan; and
- Site-specific Quality Assurance Project Plan.

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Generic QAPP

The EPA Requires that a Generic QAPP be prepared to support all federally funded environmental projects involving the collection, evaluation, use, and reporting of environmental data.

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Major Generic QAPP Components

- Project Management

  Identifies key team members, roles and responsibilities, and communications.

- Data Acquisition and Management;

  Describes how samples will be collected, documented, transported, and analyzed. Documents standard operating procedures (SOPs), analytical methods and analytical laboratories.

- Data Validation and Usability; and

  Describes how data will be evaluated before it is used in the decision-making process.

- Reporting.

  Describes how the project information will be presented and what information will be included.

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Streamlining QAPP Preparation

Generic QAPP

- Quality control and oversight activities
- Data management, evaluation and interpretation
- Field and laboratory (SOPs)

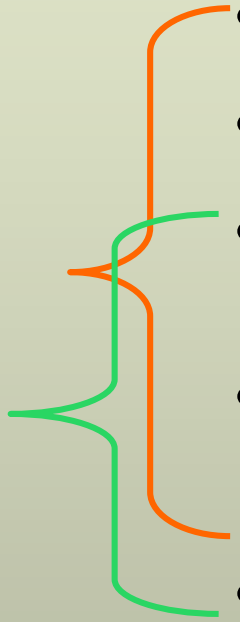
Site-Specific QAPP Addendum

- Background and current site conditions
- Project objectives and sampling design
- Project-specific criteria that needs to be met

Where a Site-specific QAPP Fits in the Brownfields Process

Assessment

Cleanup & RLF



- Determine site eligibility
- Phase I investigation
- Phase II investigation (Site Specific QAPP)
- Analysis of cleanup alternatives
- Cleanup plan (Site Specific QAPP)
- Site cleanup
- Cleanup verification
- Redevelopment continues

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A Site-specific QAPP

- Site background and problem definition;
- The detailed instructions on how to conduct a field investigation;
- Identifies what media to sample;
- Determines where samples will be collected;
- Determines what analytical analyses to use;
- Establishes what regulatory standards will be used to compare data against; and
- Identifies data quality objectives.

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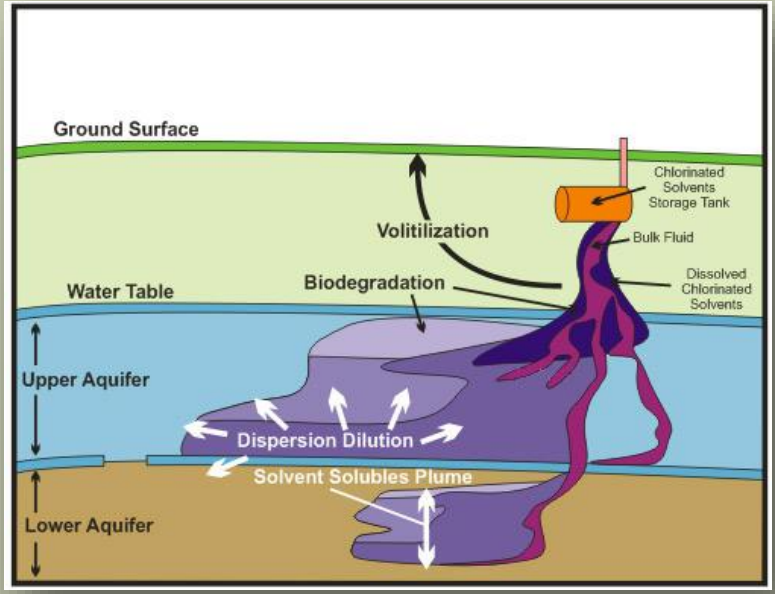
Sampling Plan

- What are the questions that need to be answered?
- What information do you need to answer the questions.
- How do you get that information.



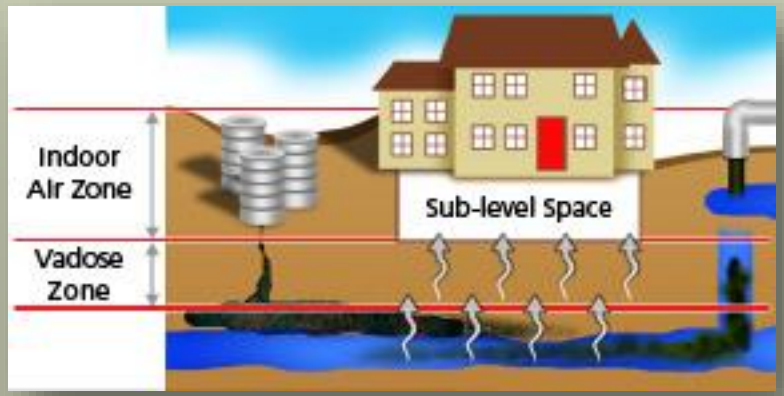


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TABLE OF CONTENTS

1.0 Title Page and Introduction

1.0 TITLE PAGE AND INTRODUCTION.

This document represents the Site Specific Quality Assurance Project Plan Addendum (SSQAPP) and proposed Phase II Environmental Site Assessment (ESA) work plan for the Penobscot Indian Nation Bradley Parcel 1 Property (Site), located in Bradley, Maine (Figure 1). The proposed work will be conducted as part of the Tribes 128(a) Tribal Response Program and U.S. EPA Tribal Response Grant, awarded to the Penobscot Indian Nation. This SSQAPP is to be used with the Campbell Environmental Group Inc. (CEG), Company Generic Quality Assurance Project Plan (Company QAPP) RFA #14085. The Company QAPP was submitted and approved by the United States Environmental Protection Agency in May 2014.

Project Title: Site Specific Quality Assurance Project Plan Addendum
Phase II Environmental Site Assessment
137 Main Road, Holden, Maine

Addendum Sequence Number: Addendum I1

ACRES ID# 177666

EPA Brownfields Grant Number: RP96181201

RFA#: 14085

Prepared For: Penobscot Indian Nation, John Banks, 12 Wabanaki Way, Indian Island, ME 04468
Prepared By: Campbell Environmental Group 173 Gray Road, Falmouth, ME 04105

John Banks Date Penobscot Indian Nation	Nick Hodgkins Date MEDEP
AmyJean McKeown Date EPA Project Officer	Bryan Hogan Date EPA Quality Assurance Reviewer
8/31/15 Richard Campbell, C.G. Date Program Manager	8/31/15 Glenn Daukas, PG Date Project Manager

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2.0 PROJECT ORGANIZATION AND RESPONSIBIOLITY FLOW CHART

Table 1 consists of a Project Organization Chart depicting the agencies and companies involved with this project. Table 2 describes each participant's responsibilities for this project. In addition to the project responsibilities outlined in Table 1 and Table 2, Campbell Environmental Group (CEG) anticipates hiring subcontractors as described in Section 5.0 of this SSQAPP Addendum and Cost Estimate.

Table 1
Project Organization Chart

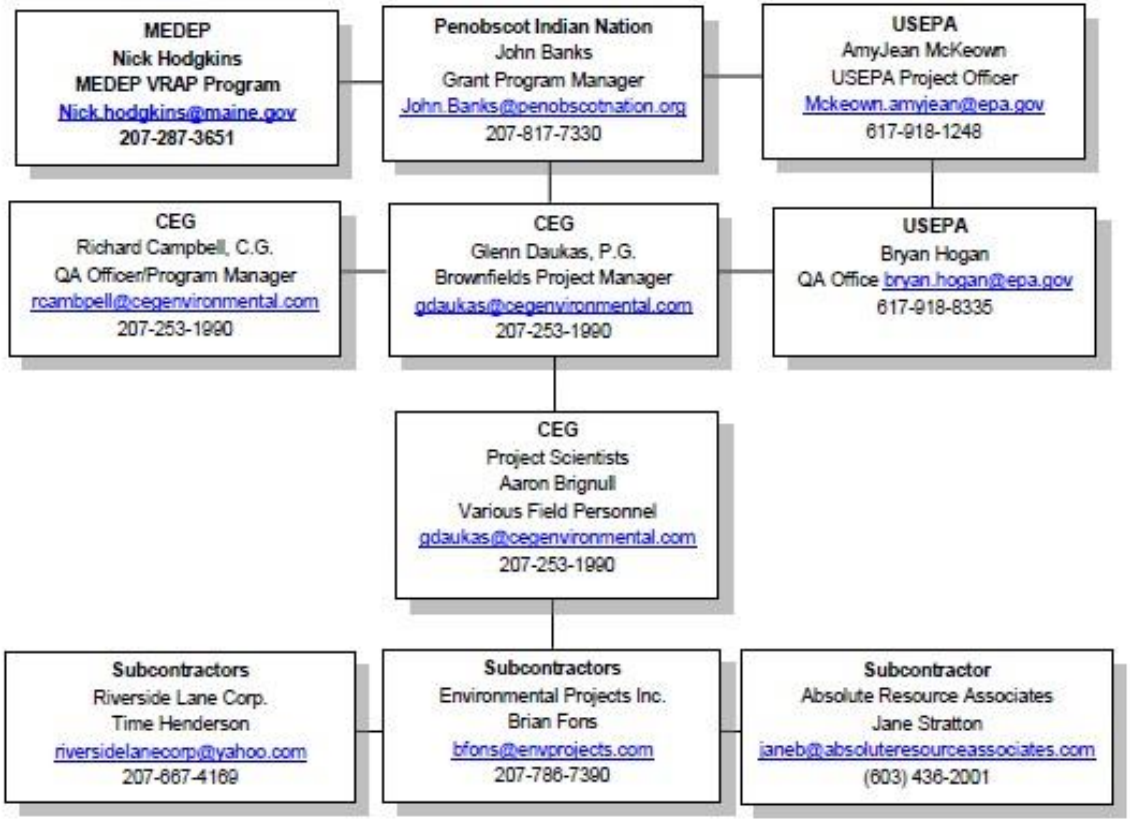

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Table 2
Project Personnel Responsibilities

Name	Title	Organizational Affiliation	Responsibilities
John Banks	Grant Program Manager	Penobscot Indian Nation	Administers Brownfields grant. Provides technical oversight.
AmyJean McKeown	EPA Project Officer	USEPA	Project oversight and approval.
Nick Hodgkins	MEDEP Project Manager	MEDEP	Provides technical oversight and reviews technical reports.
Bryan Hogan	EPA Project Plan Coordinator	USEPA	Provides QA/QC project plan review and oversight.
Glenn Daukas	Brownfields Project Manager	CEG	Provides overall technical and project direction for the consultant.
Aaron Brignull	Task Manager/ Field Leader	CEG	Day-to-day technical lead; oversees and coordinates data collection; participates in data interpretation and preparation of deliverables; communicates and coordinates with subcontractors.
Richard Campbell, C.G.	Quality Assurance Officer	CEG	Develops project QA/QC objectives and implements checks for QAPP adherence.
Field Staff	Scientists/ Engineers	CEG	Conduct field activities with oversight from Project Manager; oversees subcontractor field activities; communicates and coordinates with Project Manager.

3.0 PROBLEM DEFINITION AND INITIAL CONCEPTUAL SITE MODEL

This section presents the initial conceptual model for the Site. This conceptual model is based on

Section 3.0 Problem Definition and Conceptual Site Model

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What is a Conceptual Site Model?

- “A written and/or pictorial representation of an environmental system and the biological, physical, and chemical process that determines the transport of contaminants from sources through environmental medial to environmental receptors”

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Conceptual Site Model Tool

The conceptual site model is tool used to integrate available site information to determine whether information including data are missing (data gaps) and whether additional information needs to be collected at the site.

The model is also used to facilitate the selection of remedial alternatives and to evaluate the effectiveness of remedial actions in reducing the exposure of environmental receptors to contaminants.

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Conceptual Site Model Tool

- Identifies what media to sample
  - Soil; Water; Air;
- Determines where samples will be collected
  - Surface/subsurface/bedrock;
- Determines what analytical analyses to use;
- Establishes what regulatory standards will be used to compare data against; and

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Conceptual Site Model

- It is the foundation of your Site-specific QAPP
- ASTM Designation: E1689 − 95 (Reapproved 2008)

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Site Description & Historical Information

Phase I Environmental Site Assessment or Similar will provide:

- 3.1 Site Description
- 3.2 Historical Property Use Information
- 3.3 Geology and Hydrogeological Summary
- 3.4 Contaminants of Concern

The Conceptual Site Model will Provide the Rest……

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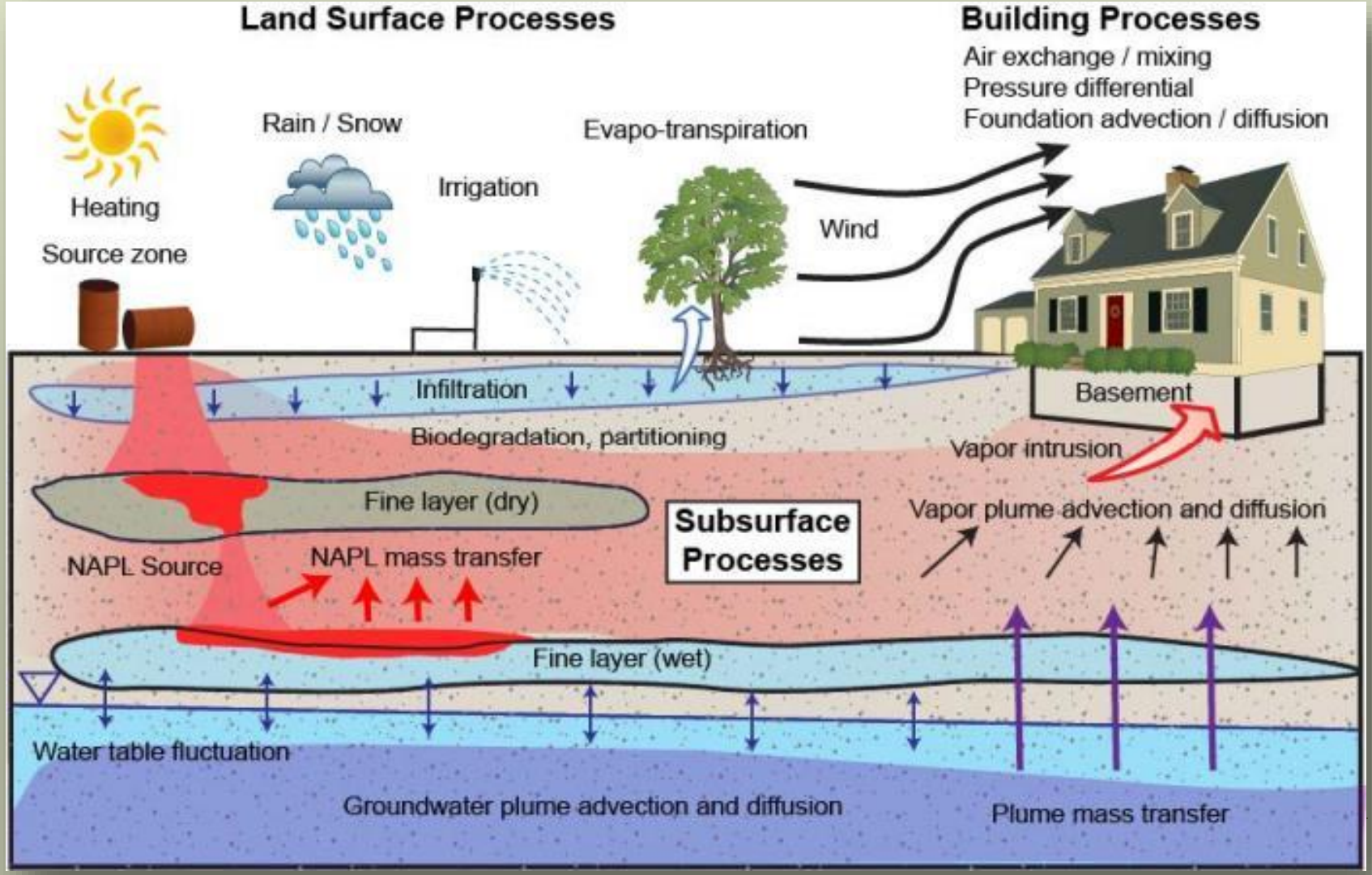
Before You Investigate

CONCEPTUAL MODEL



Conceptual Site Model Components

1. Identification of potential contaminants;
2. Identification and characterization of the source(s) of contaminants;
3. Delineation of potential migration pathways through environmental media, such as ground water, surface water, soils, sediment, biota, and air;
4. Establishment of background areas of contaminants for each contaminated medium;
5. Identification and characterization of potential environmental receptors (human and ecological); and
6. Determination of the limits of the study area or system boundaries.

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Based on your Phase I ESA results and Historical land use…..

- Contaminants of Concern;
- Potential Areas of Contaminant Release;
- Matrices Potentially Impacted;
- Fate and Transport of COCs
  - ➢ Fate = How long does it last in the environment
  - ➢Transport = How does it move
- Exposure Pathways; and
- Sensitive Receptors.

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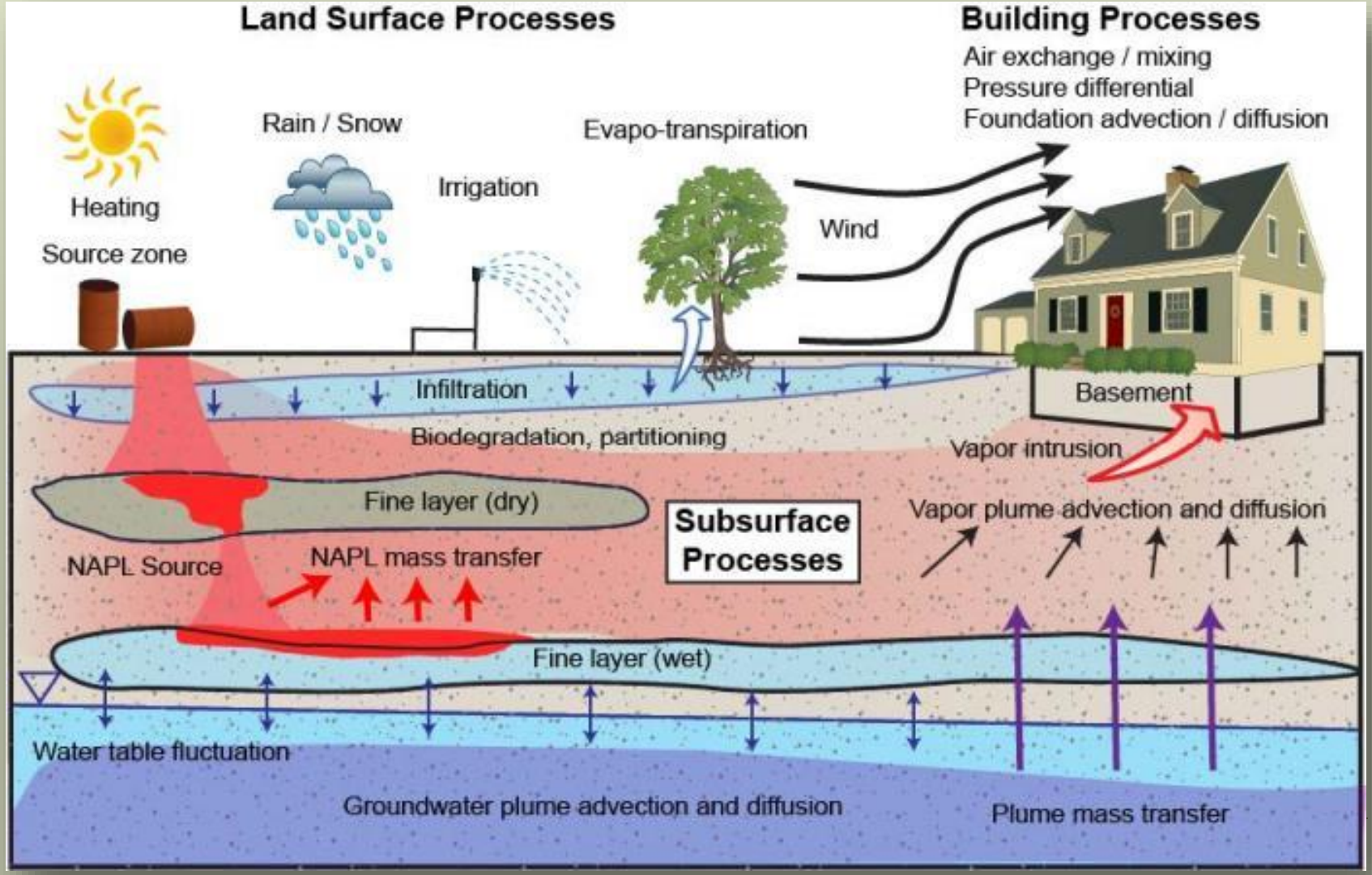
Before You Investigate

CONCEPTUAL MODEL



Now we know the site environmental history. What activities have taken place. What chemicals are associated with those activities, and hopefully, where on the site specific activates using specific chemicals were located.

We use this information to develop our initial conceptual model.

What are the individual chemicals physical characteristics? Sink/float; adhere or not; soluble or not; volatile or not; biodegradable? These characteristics determine how far and fast a contaminant will travel (migrate), Will it flow with the groundwater. Wil product float on the water surface or sink to an impermeable layer and pool. Will it adhere to soil particles and remain mostly in place or will it dissolve into precipitation and percolate down into the subsurface and groundwater?

- Delineate the source area(s);
- Determine the distribution or extent of contamination in each media;
- Determine if there are complete exposure pathways;
- Select which media to sample;
- Selecting where we take our samples.
- Select the appropriate analytical analyses; and
- Select applicable field screening tools.

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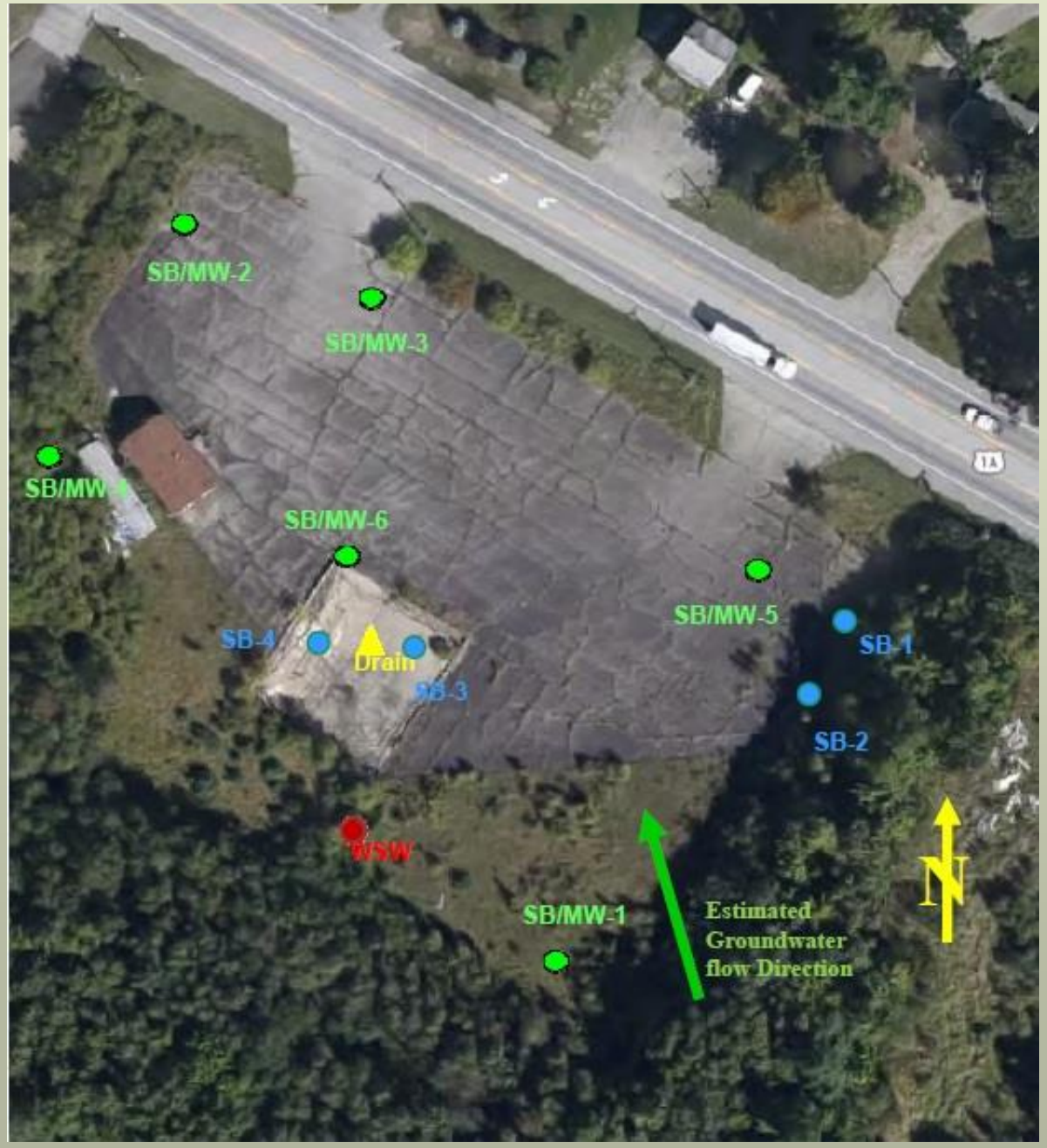

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SKETCH UP MODEL

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4.0 Project Description

4.1 Site-Specific Health and Safety Plan;

4.2 DigSafe Notification and Utility Clearance;

4.3 Surveying;

4.4 Soil Sample Field Screening and Selection for Laboratory Analysis; and

4.5 Data Quality Objectives

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Scope of Work Summary

4.0 PROJECT DESCRIPTION

CEG proposes the following scope of work to investigate the Site:

- Prepare and submit this SSQAPP Addendum for approval;
- Prepare a Site Specific Health and Safety Plan;
- Mark the Site for Dig Safe;
- Sub-contract Environmental Projects Inc. of Auburn, Maine to inventory, transport, and dispose of waste material at the Site and provide Geoprobe services;
- Subcontract with Riverside Lane Corporation to conduct Asbestos Materials Surveys of both the building and the trailer.
- Install six (6) overburden groundwater micro wells (including one background well) using direct push drilling techniques;
- Collect four (4) soil samples from four of the six monitoring well borings;
- Collect six (6) groundwater samples from the micro wells;
- Install four (4) soil borings;
- Collect a total of four (4) soil samples, one from each soil boring, for analytical analysis;
- Survey the location of monitoring wells, solid waste, potential areas of environmental impacts, and analytical sampling locations, using a GPS;
- Collect one (1) sample from material in and around the foundation floor drain structure;
- Collect one (1) groundwater sample from the on-site water supply well; and
- Prepare a report summarizing the methods and results of the investigation.

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4.4 Soil Sample Field Screening and Selection for Laboratory Analysis

Soil samples will be screened in the field prior to selection for analytical analysis. Each sample will be screened by:

- Visual observation;
- Proximity to suspected source areas;
- Location directly above potential low permeability zones;
- Proximity to the water table;
- 10.6 Photoionization Detector (PID) Results for VOCs; and
- X-ray Fluorescence (XRF) Results for Metals.

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4.5 Data Quality Objectives

- Data Quality Objectives (DQOs) are qualitative and quantitative statements that specify the quality and quantity of data needed to support decisions during site assessments.

- DQOs are developed by considering the purpose of collecting the data and the intended use of the data.

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Analytical Data Objectives

- Work with your Analytical Laboratory;
- What are the proper analytical methods;
- Will the detection limits meet the regulatory criteria;
- Bottle requirements; and
- Sample “Hold Times”.

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Summary of Data Quality Objectives

TABLE 4
Summary of Data Quality Objectives

Matrix	Parameters	Methods	Analytical Level [1]	Data Evaluation Tier [2]	Intended Data Use[3]
Field Parameters					
Ground-water	pH, Temperature, Conductivity, Turbidity, DO, ORP	On-site field measurements	Level I	NA	As appropriate to meet project goals
Soil	VOCs	Handheld PID Meter and/or portable field gas chromatograph with PID	Level I	NA	As appropriate to meet project goals
Soil	Fuel Oil	MEDEP SOP: TS004, Screening soils contaminated with kerosene and fuel oil using an oleophilic dye Test	Level I	NA	As appropriate to meet project goals
Soil	Metals	SOP #014: MEDEP X-ray Fluorescence Field Screening	Level I	NA	As appropriate to meet project goals
Off-Site Laboratory Analysis					
Soil, Ground-water	VOCs	USEPA Method 8260B	Level II	Tier I Plus	As appropriate to meet project goals
	SVOCs	USEPA Method 8270	Level II	Tier I Plus	As appropriate to meet project goals
	Metals	USEPA Method 6010B	Level II	Tier I Plus	As appropriate to meet project goals
ACM	Asbestos	EPA 600/R-93/116 PLM	Level II	Tier I Plus	As appropriate to meet project goals

Notes:
1) Analytical levels (USEPA, October 1988): **Level I**, on-site field screening and measurements, use one point calibration. **Level II** analyses using standard laboratory QA/QC, including duplicate analyses, suitable calibration standards, sample preparation equipment and operator training.
2) Tier Levels (USEPA, April, 2013).
3) The Intended End Use for laboratory data is project-specific and may include: determine need for emergency action; identify waste material/contaminants; determine quantity and levels of contamination; identify impacted targets/receptors; develop site score; document need for further action or no further action.

CEG reviewed Absolute Resources Associate's (ARA) Method Reporting Limits for the analytes in each of the selected analytical methods to determine if the detection limits for each analyte are sufficient to meet the regulatory criteria presented in **Table 5.** A summary of this data is presented in **Appendix B.**

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Cleanup Standards

- What do these numbers mean?
  - ➢ What do I compare them against.

- Regulatory Standards
  - ❖ Tribal Standards;
  - ❖ State Standards (Fee Lands); and
  - ❖ USEPA Standards.

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Evaluation Criteria

TABLE 5
State Criteria for Evaluating Data

Medium	Criteria for Evaluation
Soil	MEDEP Hazardous Substance RAGs 5/08/13 Leaching to Groundwater and Residential Exposure Scenarios
Groundwater	MEDEP Hazardous Substance RAGs 5/08/13 and Maine Department of Human Services Maximum Exposure Guidelines for Drinking Water 2012
ACM	• USEPA - Asbestos Hazard Emergency Response Act (AHERA)–40 CFR 763. • USEPA - National Emission Standard for Hazardous Air Pollutants (NESHAP)–40 CFR 61. • OSHA - Asbestos Standard for General Industry–29 CFR 1910.1001. • OSHA - Asbestos Standard for Construction Industry–29 CFR 1926.1101. • MEDEP - Statutory Sections - Title 38, Chapter 12-A: Asbestos §1271 - §1284 • MEDEP - Chapter 425 - Asbestos Management Regulations, Revised February 2011

Notes: ft bgs = feet below ground surface, RAGs = Remedial Action Guidelines For Soil, MEGs = Maine Department of Human Services Maximum Exposure Guidelines for Drinking Water, ACM = Asbestos Containing Material.

5.0 PHASE II FIELD INVESTIGATION AND SAMPLING DESIGN

The following section presents a detailed description of the proposed field investigation tasks that will be used to investigate soil and groundwater at the Site. Proposed sample collection areas are presented in Figure 2. To complete the proposed investigation, CEG will subcontract with;

5.0 Phase II Field Investigation and Sampling Design

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Summary of Sampling Plan

sampling locations and corresponding analytical requirements is presented in **Table 6** of this report. Proposed monitoring well locations are presented in **Figure 2** of this report.

Table 6
Subsurface Soil and Groundwater Sample Collection and Laboratory Analysis

Monitoring Well ID Number	Location	VOCs	SVOCs	RCRA Metals	Rationale
SB-1 MW-1	Southeast corner of Site	Groundwater and Soil	Groundwater and Soil	Groundwater and Soil	Provide background groundwater and subsurface soil data and determine potential off-site sources
SB-2 MW-2	Northwest corner of Site	Groundwater	Groundwater	Groundwater	Identify potential groundwater quality impacts that may be migrating off-site
SB-3 MW-3	Northwest side of Site	Groundwater	Groundwater	Groundwater	Identify potential groundwater quality impacts that may be migrating off-site
SB-4 MW-4	South end of building	Groundwater and Soil	Groundwater and Soil	Groundwater and Soil	Identify potential soil and groundwater impacts associated with the septic system
SB-5 MW-5	Northwest side of foundation	Groundwater and Soil	Groundwater and Soil	Groundwater and Soil	Identify potential soil and groundwater impacts as a result of on-site activities within the telephone pole area
SB-6 MW-6	Southwest side of foundation	Groundwater and Soil	Groundwater and Soil	Groundwater and Soil	Identify potential soil and groundwater impacts as a result of on-site activities within the foundation area
SB-7	Northeast side Site	Soil	Soil	Soil	Investigate subsurface soil conditions in telephone pole area
SB-8	Northeast side Site	Soil	Soil	Soil	Investigate subsurface soil conditions in telephone pole area
SB-9		Soil	Soil	Soil	Investigate subsurface soil conditions beneath the concrete foundation
SB-10		Soil	Soil	Soil	Investigate subsurface soil conditions beneath the concrete foundation

6.0 Analytical Program

6.0 ANALYTICAL PROGRAM

Analytical samples collected at the site will be submitted to Absolute Resource Associates for laboratory analysis. A description of analytical methods and the laboratory quality assurance plan is included as an appendix to CEG's Generic QAPP. The analytical program for this Phase II ESA includes analytical methods presented in **Table 7.**

Table 7
Absolute Resource Associates
Summary of SOPs, Methods, Glassware and Preservative per Laboratory Analysis

Test	Method	SOP No.	Matrix	Preferred Volume (mL or oz)	Container/ Preservative
Water Matrix					
Volatile Organics	8260	QA-5120	Water	2x40mL	G-clear/4°C, HCl
Semi-volatiles	8270	QA-5515	Water	1000mL	G-Amber/4°C
RCRA 8 Metals	200.7/6010	QA5603	Water	125mL	P/4°C, HNO_3
Soil Matrix					
Volatile Organics	8260B	QA-5120	Soil	1-40mL Vial (10mL MeOH to 10g Soil) & 3-40mL Vial (10ml distilled H_2O to 10 g Soil)	G-Clear/4°C, MeOH G-Clean <0°C H_2O
Semi-volatiles	8270D	QA-5304	Soil	4 oz	G-Amber/4°C
RCRA 8 Metals	6010B	QA5603	Soil	4 oz	G-Clear/4°C
Mercury	245.1 / 7470	QA5600	Soil	4 oz	G-Clear/4°C

Field QA/QC Summary

Table 8 Field Quality Control Requirements			
QC Sample	**Frequency**	**Acceptance Criteria**	**Corrective Action**
Field Duplicate	5% per parameter per matrix	30% relative percent difference for duplicate aqueous samples. 50% relative percent difference for duplicate soil samples.	Compare to appropriate action level and re-sampling or reanalysis
Trip Blank	1 per cooler containing VOC water samples	No compounds detected	Qualify results or resample if required
Equipment Blank	One per non-dedicated piece of equipment that comes in contact with sample medium per event	No compounds detected	Qualify results or resample if cross contamination is suspected
Note:			

The total numbers of samples including the Quality Control and Quality assurance samples are outlined in **Table 9**.

Table 9 Projected Quality Control Samples			
Project Samples by Media	**VOCs 8260**	**SVOCs**	**RCRA Metals**
Soil Samples	8	8	8
Duplicates	1	1	1
Trip Blank	1	0	0
Drain Sample (solid)	1	1	1
Water Supply Well	1	1	1
Equipment blank	1	1	1
Groundwater (Monitoring Wells)	6	6	6
Duplicates	1	1	1
Trip Blank	1	0	0

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7.0 Data Management and Documentation

Table 10
CEG Standard Operating Procedures

SOP Reference Number	Title, Revision Date and/or Number	Originating Organization
SOP #001	Compendium of Field Testing of Soil Samples for Gasoline and Fuel Oil, October 15, 2012	MEDEP (TS004)
SOP #002	Soil Sampling, Rev #0, August 2008	CEG
SOP #003	Manual Water Level Measurements, Rev #0, August 2008	CEG
SOP #004	Monitoring Well Groundwater Sampling, Rev #1, May 2010	MEDEP (DR#002 & DR#003)
SOP #007	Chain of Custody and Sample Handling, Rev #0, August 2008	CEG
SOP #008	Field Monitoring Equipment Calibration, Rev #0, August 2008	CEG
SOP #010	Standard Guide for Site Assessments: Phase II ESA Process; ASTM Designation E1903-11	ASTM
SOP #011	Field Documentation Protocol, Rev #1, May 2010	MEDEP (DR#013)
SOP #012	Preservation of Soil Samples for Volatile Organic Analysis, Rev #0, August 2008	CEG
SOP #014	MEDEP X-ray Fluorescence Field Screening, Rev #1, May 2010	MEDEP (DR#025)
SOP #023	Trimble Global Positioning System, January 2012	CEG
Notes:		

8.0 Project Schedule and Reporting

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Phase II Report Process

- **Documentation of Activities Completed;**
- **Presentation of Data Collected;**
- **Compare Data Results Against Regulated Standards;**
- **Evaluate Contaminants as Related to Potential Exposure Pathways;**
- **Revise Conceptual Site Model; and**
- **Recommend Remediation or Institutional Controls to Support the Projected End Use of the Property (VRAP).**

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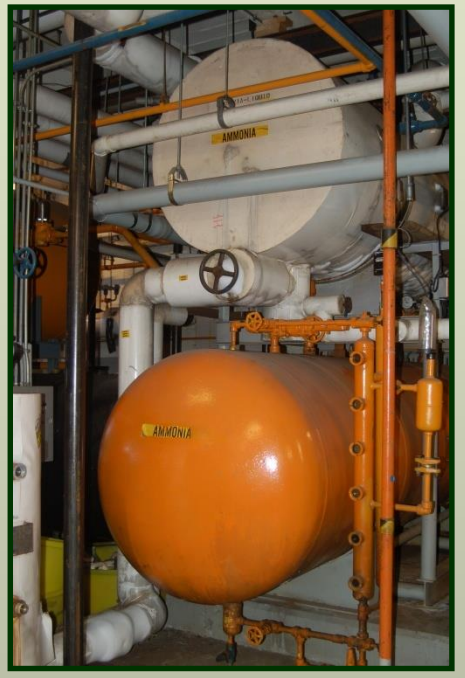
What is a Phase I Environmental Site Assessment

A compilation of current and historical land use data to assess recognized environmental conditions and determine how they could effect sensitive receptors, human health, or the environment



Recognized Environmental Condition:

The presence or likely presence of hazardous substances or petroleum products indicating a present, past, or future release to the environment

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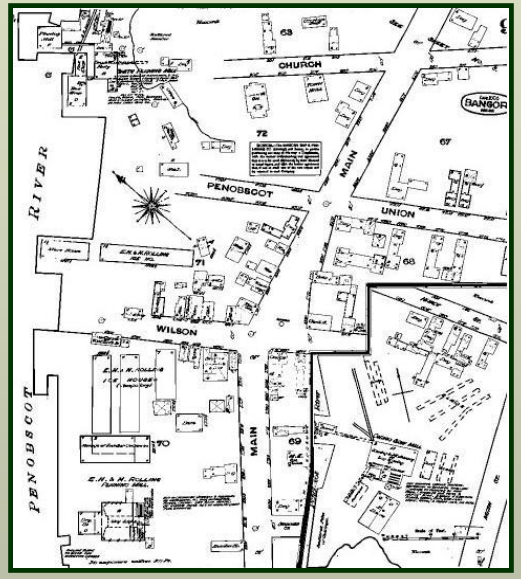
Phase I Environmental Site Assessment

Consists of Four Parts



Research

Interviews

Site Inspection

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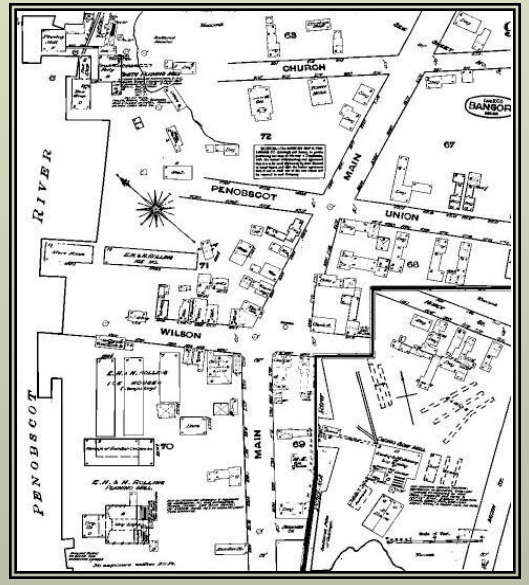
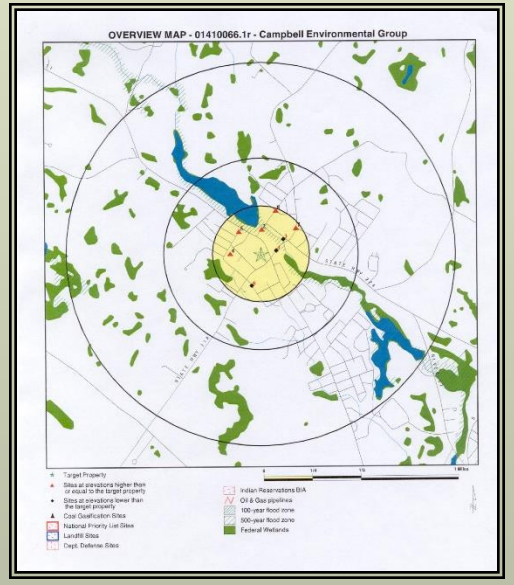
Components of a Phase I Environmental Assessment

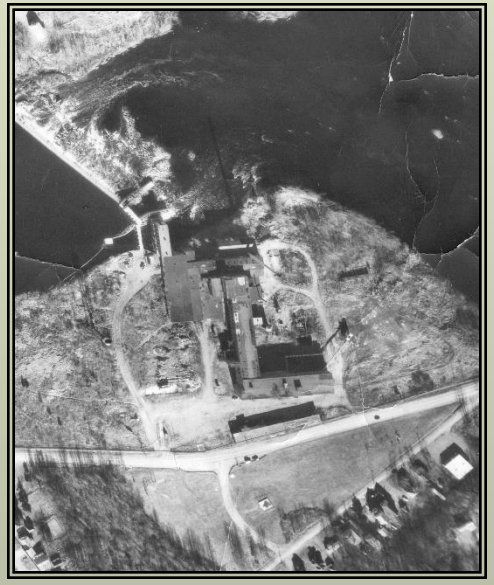
Research Available Tribal/Public Records



Sanborn Fire Insurance Maps



EDR Radius Map and State & Federal Database Search



Historical Photography

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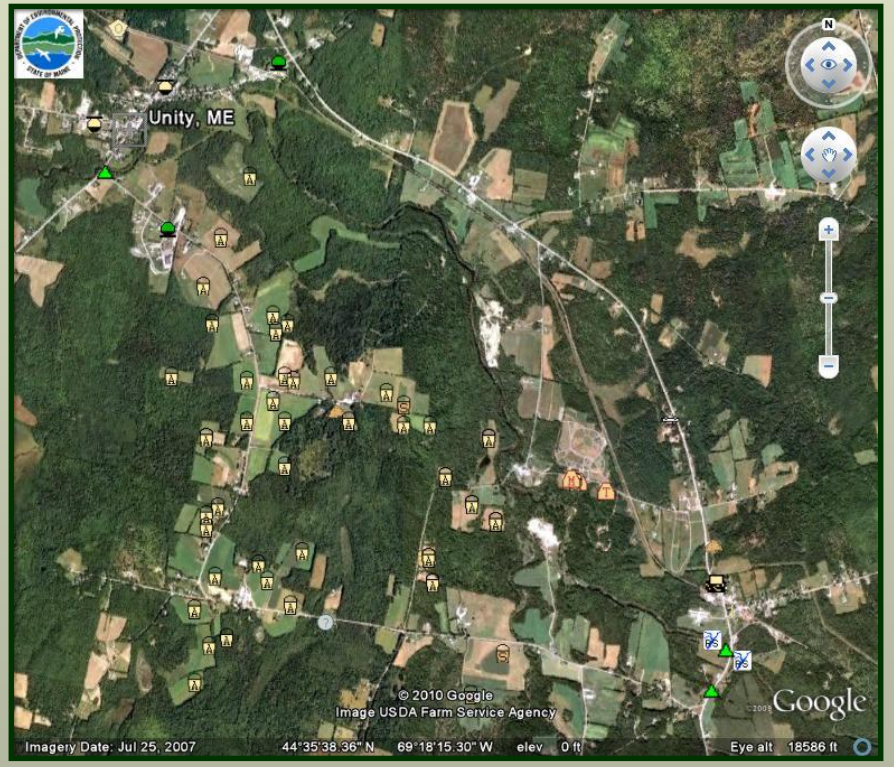
Review Tribal / Public Records

Tribal or State Environmental File Review

- **Tribal or State Environmental office and on-line database via Google Earth**
  - **Project Files**
  - **Spill Reports**
  - **Tank Registrations**
  - **Uncontrolled Sites**
  - **Brownfields**
  - **Air Emissions**
  - **Wastewater**
  - **Dept of Agriculture**
  - **Dept. Inland Fisheries and Wildlife**



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Site Reconnaissance

Observations

- Soil or ground staining
- Stressed vegetation
- Floor drain discharges
- Tank conditions
- Storage of hazardous chemicals
- General site conditions
- Adjacent property uses and conditions
- Equipment containing oils, PCBs, solvents, metals, or other potentially hazardous materials

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Design a Focused Phase II Investigation Based on the Initial Site Conceptual Model

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Sketchup

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