

WORK PLAN

CALUMET AND HECLA
MINERAL BUILDING
TORCH LAKE TWP., MICHIGAN

Prepared for:



Honeywell Specialty Materials, LLC.

and

Silver Shore Enterprise, Inc.

Prepared by:



Wood Environment & Infrastructure Solutions
Novi, Michigan

September 2018

Project 3293181784

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LIST OF ACRONYMS

ACM:	Asbestos containing material
C&H:	Calumet and Hecla
f/cc:	fibers per cubic centimeter
HASP:	Health and Safety Plan
Honeywell:	Honeywell Specialty Materials, LLC.
mm:	millimeters
NIOSH:	National Institute for Occupational Safety and Health
Owner:	Silver Shore Enterprise, Inc.
PCM:	Phase Contrast Microscopy
PPE:	Personal Protection Equipment
SAP:	Sampling and Analysis Plan
SHSO:	Site Health and Safety Officer
Site:	Calumet & Hecla Mineral Building Site
SMP:	Site Management Plan
SVOC:	Semivolatile Organic Compound
TCLP:	Toxicity Characteristic Leaching Procedure
TEM:	Transmission Electron Microscopy
UOP:	Universal Oil Products
USEPA:	United States Environmental Protection Agency
VOC:	Volatile Organic Compound
Wood:	Wood Environment and Infrastructure Solutions, Inc.
WP:	Work Plan

1.0 INTRODUCTION

This Work Plan (WP) was prepared by Wood Environment & Infrastructure Solutions (Wood) on behalf of Honeywell, and Silver Shore Enterprise Inc. (“Silver Shore”). The WP details 2018 site activities planned for the Calumet and Hecla (C&H) Mineral Building site (site) located at 52986 Highway M-26 in Torch Lake Township, Houghton County, Michigan (Figure 1-1). Honeywell and Silver Shore have been identified by U.S. Environmental Protection Agency (USEPA) as potentially responsible parties for the site. Planned site activities addressed in this workplan were agreed upon between Honeywell, Silver Shore and USEPA following a site visit conducted on May 30, 2018. The specific division of responsibilities for the planned site activities are addressed in a Remediation Agreement between Silver Shore and Honeywell.

2.0 SITE DESCRIPTION AND HISTORY

A brief site description and history are presented below.

2.1 Site Description

The site, owned by Silver Shore, occupies approximately 9.3 acres located at 52986 Highway M-26 in Torch Lake Township, Houghton County, Michigan. The property lies on the shoreline of Torch Lake. The site was part of C&H smelter complex. Currently, two structures are located on the site: a four-story tall structure known as the Mineral Building and a 30 by 40 foot single story building. Numerous debris piles (Figure 2-1) have come to be located on the property, primarily between 1986 and 2010 as summarized in Table 1 of the Removal Assessment Report prepared by Tetra Tech in January of 2018.

The surrounding property use is a mix of commercial and residential property. To the northeast is a former coal dock. To the southeast, the site borders Torch Lake. To the southwest is a chemical manufacturing facility operated by Koppers Performance Chemical. To the northwest, across Highway M-26 there is a mix of residential and commercial properties. A chain link fence runs along the southwest and northwest site boundaries.

2.2 Site History

The four-story tall Mineral Building was built in 1929, as part the C&H smelter facility and served for storage of feed material for the furnaces. It had 10 main compartments capable of storing 15,000 tons of material. Originally, the feed material consisted of mined copper. From about 1943, the Mineral Building also received copper reclaimed from scrap materials. Processed scrap material included insulated cables, scrap ammunition, automobiles, refrigerators and vacuum cleaner motors, radiators, transformers, and generators. The scrap material was transported by ship and rail to the smelter and unloaded at the coal dock. By 1948, the shipments of scrap material became so great that C&H installed a new bailing machine to assist in compressing and transporting the material.

The Mineral Building was also used for storage of by-product, e.g. copper oxide from ammonia leaching, copper oxychloride sulphate, fly ash, etc. The Mineral Building was in operation until 1968 when the smelting operations ceased, shortly after C&H and Universal Oil Products (UOP) merged. The smelter was demolished in the late 1970s. In 1982 UOP donated 75 acres (including the Mineral Building site) to the Michigan

Technological University. The stacks were demolished between 1993 and 1997 by Keweenaw Development Corporation.

3.0 PLAN PREPARATION

In addition to this Work Plan, the following plans are being prepared for the site:

- Site-Specific Health and Safety Plan (HASP)
- Contingency Plan
- Sampling and Analysis Plan (SAP)
- Site Management Plan (SMP)

3.1 Site-Specific Health and Safety Plan

The site-specific HASP was prepared in general accordance with the required guidance and is compliant with Occupational Safety and Health Administration regulations under 29 CFR Part 1910. The HASP outlines the health and safety procedures required during on-site activities to ensure protection of workers and the public. The HASP outlines items such as personal protective equipment (PPE) requirements, air monitoring requirements, action levels, decontamination procedures, and Activity Hazard Analyses. The HASP will remain on site at all times and will be reviewed with and signed by anyone entering the site. The HASP will be modified as necessary during the duration of the project if site conditions or activities change.

3.2 Contingency Plan

The Contingency Plan was developed to inform local responders of planned site activities, emergency procedures, and to provide contact information for site personnel.

3.3 Sampling and Analysis Plan

The SAP consists of a Field Sampling Plan and a Quality Assurance Project Plan that are consistent with this Work Plan and applicable regulatory guidance. The SAP documents the validity of field and laboratory data produced through field activities, which are part of the Work Plan. The SAP outlines sampling rationales, field methods and procedures, and laboratory analytical methods to be implemented during planned site activities.

3.4 Site Management Plan

The SMP details site access, security provisions, and management responsibilities during remedial action activities. The SMP outlines the project organization and identifies key personnel associated with the site, including representatives of USEPA, Honeywell, Wood, and Silver Shore.

4.0 PLANNED 2018 SITE ACTIVITIES

The Removal Assessment Report (Tetra Tech, 2018), 2018 on behalf of USEPA, indicated that approximately 2.9 acres of the site surface is covered with 35 waste piles and stack debris. Based on the Removal Assessment Report, six waste piles totaling an estimated 3,851 tons were characterized and 13 waste piles totaling an estimated 2,868 tons were identified as non-regulated material. The remaining 16 waste piles totaling an estimated 1,526 tons have not been sampled and characterized. In addition to the waste piles, an estimated 2,810 cubic yards of mining era stack debris is present on the site. Asbestos containing material and elevated concentrations of lead and PCBs were identified within various debris piles.

On May 30, 2018, Honeywell, Wood, USEPA, and the Michigan Department of Environmental Quality met at the site to discuss the scope of work necessary to address potential exposure risks. The following 2018 site activities were identified with the specific activities to be undertaken by Honeywell or Silver Shore according to a Remediation Agreement to be entered into between Honeywell and Silver Shore:

- Install a fence around the site to secure the site
- Pick-up surficial asbestos and properly disposed it off site
- Complete a Sampling and Analysis Plan to collect samples to characterize the waste piles

4.1 Fence Installation

Currently, the northwest and southwest sides of the site have a chain link fence. However, the site can be accessed by trespassers along the northeast and southeast boundaries. To prevent trespassers from entering the site, a chain link fence will be installed along the northeast and southeast site boundaries (Figure 4.1). As requested by USEPA, northeast fence will bypass the treeline, and run along the Michigan Department of Environmental Quality (MDEQ) installed cap the southern edge of the drainage ditch. Also, the southeast fence will be installed at the edge of the cap installed by USEPA (Figure 4.1).

The fence will be a six-foot high galvanized chain-link fence. The fence post will be installed using a direct push method to minimize site surface soil disturbance. “No Trespassing” signage will be posted and secured to the fence at regular intervals.

Monthly site inspections will occur to verify the fence is secure and documented on the Site Inspection Checklist in Appendix B. The checklist will be submitted to the USEPA by the last day of each month.

4.2 Surficial Asbestos Removal

Bulk ACM has been found on site. Silver Shore procured Certified State of Michigan Asbestos Abatement Workers, and the abatement workers collected suspect ACM from the site on a visual basis. Silver Shore will submit to USEPA a report summarizing asbestos removal activities.

4.3 Waste Pile Sample Collection

The Removal Assessment Report (TetraTech January 2018) identified 35 distinct waste piles. The report identified asbestos, arsenic, copper, lead and PCBs as compounds of concern.

Of the 35 waste piles, 16 waste piles were identified as requiring characterization. Samples will be collected from the 16 waste piles, WP-27, WP-28, and WP-48 for waste characterization. See Figure 4.1. A composite sample will be generated for each waste pile (except WP-48), by combining discrete samples from three to five (depending on the size of the waste pile) separate locations. As requested by USEPA, for waste pile WP-48, discrete soil samples will be collected in a 45-foot grid pattern as illustrated on Figure 4-1. Soil samples will be collected at each location from three depth intervals: 0-0.5 feet, 0.5 – 2.0 feet, 2.0 – 5.0 feet. Direct-push technology will be used to advance soil borings at each sample locations. All samples will be analyzed for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs) asbestos, metals, cyanide, and PCBs. If any sample exceeds the RCRA “20X rule” for an analyte with a hazardous characteristic limit, the sample will be further analyzed via a Toxicity Characteristic Leaching Procedure (TCLP) for the respective organic or inorganic analyte

4.4 Air Monitoring

Total dust monitoring will be performed during work activities with the potential to generate fugitive dust. Personal air monitoring for worker exposure to potential asbestos will be performed during waste pile sampling. Air monitoring procedures are described in detail in the following sections.

4.4.1 Total Dust Monitoring

Dust monitoring will be performed to evaluate the potential for the generation of nuisance dust within the breathing zone during site activities. Nuisance dust is considered to be any dust particulate that is inert or not otherwise hazardous, but, if in high enough concentrations, can pose a health risk.

Dust monitoring will be completed using a hand-held portable respirable dust/aerosol meter during site activities with the potential to generate dust. Dust meter readings

will be monitored and documented a minimum of four times per hour for the first day of new work activities and two times per hour thereafter. Dust monitoring will be conducted in the breathing zone, at the location most likely to generate dust (i.e., location of the work activity), and along the perimeter of the site. Dust monitoring readings will be allowed to equilibrate at perimeter air sampling locations.

Based on the available data for the site, the breathing zone action level will be 0.42 mg/m³. For perimeter sampling, background dust levels will be determined prior to start of work each day. Dust monitor responses will be recorded upwind and downwind of the site to determine the background dust levels. The action level for the perimeter monitoring will be 2 times the background level determined for that day but will not exceed the Site-specific action level of 0.42 mg/m³. Upwind dust levels will be monitored throughout the day during perimeter monitoring and the determined background level updated as necessary due to changed conditions. If dust monitoring readings exceed action levels, work will be stopped, and dust suppression methods will be reassessed and additional methods implemented as necessary. Dust suppression methods will include manually applying water through a hose and/or water truck equipped with sprayers. Dust monitoring readings will be recorded and saved with the project file.

4.4.2 Personal Air Monitoring

Personal air monitoring will be performed during sampling activities to characterize potential worker exposure to asbestos. Sampling will be representative of a full shift (at least 7 hours) and will include at least one sample for each job classification in each work area. Sampling and analysis will be done in accordance with NIOSH methodology, summarized below:

1. One worker per task per job classification will be selected. The worker selected will be the one thought to have the greatest potential exposure for the longest duration (if two workers have equal likelihood of exposure, personal monitoring can be rotated if sampling is to be conducted on more than one day). The potential exposures to all other workers will be assumed to be the same as the chosen individual, or lower.
2. The name, employee number, job classification, and company of the workers for whom the sample represents will be recorded, as well as the date(s), number, duration, and location of each of sample taken and a description of the sampling procedure used to determine representative employee exposure, where applicable.
3. The type of respiratory protection devices worn, if any, and any environmental variables (e.g., rain, mist, snow, wind, temperature) that could affect the measurement of employee exposure will be documented.

4. Full-shift breathing zone samples will be conducted using personal sampling pumps, calibrated before and after each use, and set at approximately 2 liters per minute. The minimum sample volume is 200 liters. Samples will be collected using 25-mm cassettes consisting of a 50-mm electrically conductive extension cowl, a 0.8 micron pore size cellulose ester filter, and a backup pad.
5. After samples are collected and properly labeled, they will be shipped together along with one open and one closed blank. Open blanks are filter cassettes that are handled in the same manner as the samples, except that no air is drawn through them (i.e., the end plugs are removed and stored until sampling is complete and then replaced.) Closed blanks are media blanks to ensure that the cassettes were not contaminated prior to sampling.
6. Samples will be analyzed using NIOSH method 7400 (PCM).
7. At least one sample per task per location will be collected in the initial monitoring phase.
 - a. If results show potential asbestos levels below 0.1 f/cc, no further testing will be required in that area for that task.
 - b. If potential asbestos levels are found to be above 0.1 f/cc, continued testing will be performed until the task is complete.
 - c. If potential asbestos is identified using PCM methods, the sample will be further analyzed using TEM methods to verify the nature of the fibers.
8. Wood will provide the results of the analyses for worker review within 5 working days of their receipt.

5.0 ACCESS

The site is currently owned by Silver Shore. Silver Shore will grant access to the site to the USEPA, and their employees, agents, contractors, consultants, and other authorized representatives for purposes of implementing and overseeing the work. Wood on behalf of Honeywell will obtain site access to complete those planned activities to be undertaken by Honeywell.

The work to be conducted on the site does not currently include any offsite activities. However, should access to additional private or public properties be required, access to public property will be obtained by requesting right-of-way permits through Torch Lake Township. Access to the Coal Dock property has not been obtained and if needed, will be coordinated with MDEQ.

The USEPA will be informed of access-related issues, should they arise.

5.1 Routes of Entry

One point of entry has been currently established for the site. Entry point will be the driveway from M-26 along the northwest side of the site.

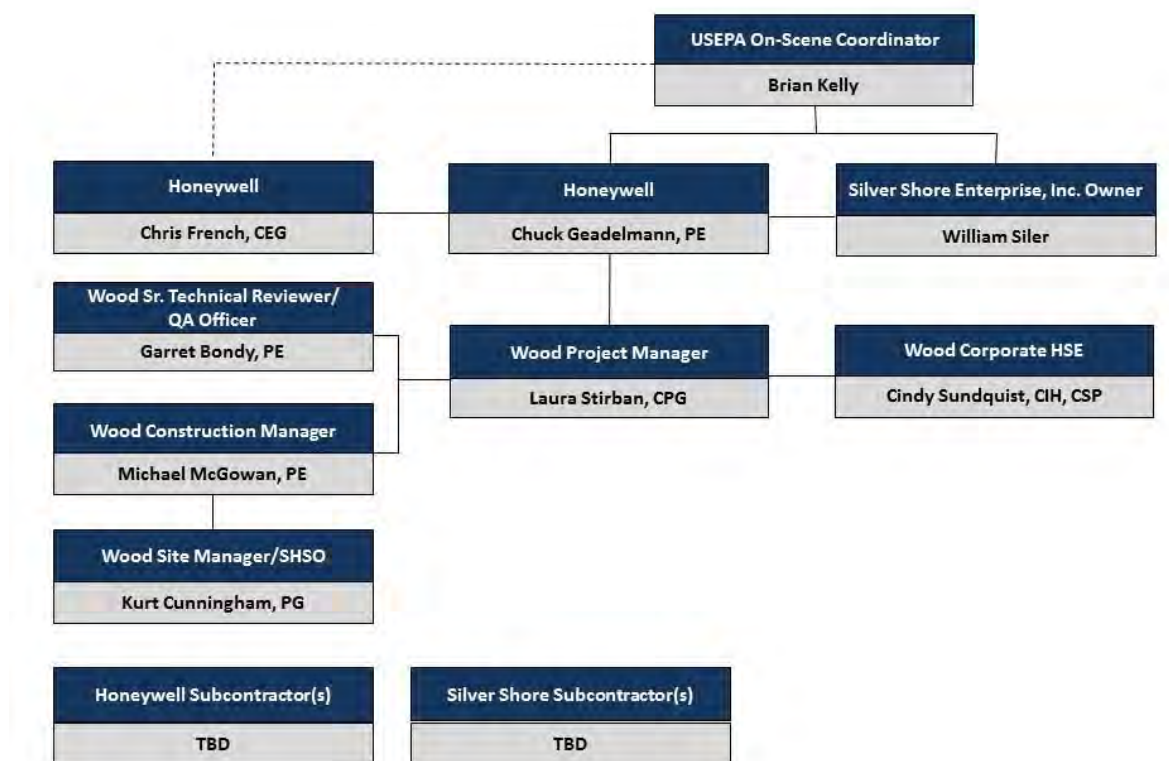
During site work conducted by Honeywell, regular security inspections will be conducted by the /Site Health and Safety Officer to verify that there are no unauthorized points of entry.

5.2 Site Access

The access entry point will be kept closed unless used by onsite workers, and will be secured with locks at the end of the day. Only authorized personnel will be allowed to enter. While site activities are in progress, entrance to the site will be documented with sign-in and sign-out sheets.

6.0 PROJECT ORGANIZATION

The project team will report directly to the USEPA and will have primary responsibility in preparing and executing project plans and reports. Honeywell and Silver Shore will retain subcontractors to complete the site activities, as needed. The overall project organization is presented below:



6.1 Project Team

The primary project team members and key personnel working on the project are presented below, along with a summary of their roles and responsibilities.

USEPA OSC

The USEPA is the lead regulatory agency for the site. The USEPA will be responsible for concurrence of the project plans and environmental actions conducted at the site. Mr. Brian Kelly will serve as the USEPA OSC. All reports, notices, or other

submissions to the USEPA (following Honeywell review and approval) for this project are to be submitted to Mr. Kelly. Mr. Kelly's contact information is:

Mr. Brian Kelly
USEPA Region 5 Emergency Response Branch
Detroit Field Office
kelly.brian@epa.gov
734-692-7584 (office)
734-740-9019 (cell)

Honeywell Remediation Manager

Honeywell is responsible, either directly or through their contractor(s), for communications with regulatory agencies, project strategy, and direction consistent with regulatory requirements and Honeywell policies. Mr. Chuck Gadelmann is Honeywell's Remediation Manager for this project. Mr. Gadelmann's contact information is:

Mr. Chuck Gadelmann
Honeywell Remediation Manager
1985 Douglas Drive North
Golden Valley, Minnesota 55422
chuck.gadelmann@honeywell.com
763-954-5418 (office)
612-419-1513 (cell)

Honeywell Design and Construction Manager

Mr. Chris French is Honeywell's Design and Construction Manager for this project. Mr. French's contact information is:

Mr. Chris French
Honeywell Construction Manager
115 Tabor Road
Morris Plains, NJ 07950
Chris.French@honeywell.com
973-455-4131 (office)
973-216-7506 (cell)

Silver Shore

Silver Shore is the property owner and is responsible, either directly or through their contractor(s), for communications with regulatory agencies, project strategy, and direction consistent with regulatory requirements. Silver Shore will be responsible for all site activities to be conducted by Silver Shore including preparation of deliverables,

procurement of subcontractors, and general project coordination. The primary contact for Silver Shore will be Mr. William Siler. Mr. Siler's contact information is:

Mr. William Siler
Silver Shore Enterprise, Inc
PO Box 460
South Range, MI 49963
906-482-8518

Wood Project Manager

Honeywell has retained Wood to implement site assessment and site activities to be conducted by Honeywell, including preparation of deliverables, procurement of subcontractors, and general project coordination. Ms. Laura Stirban will serve as Project Manager for the Wood project team. Ms. Stirban's contact information is:

Ms. Laura Stirban
Wood Project Manager
46850 Magellan Drive, Suite 190
Novi, Michigan 48377
Laura.Stirban@amecfw.com
248-313-3704 (office)
810-623-4323 (cell)

Wood Construction Manager

Mr. Michael McGowan will serve as Construction Manager for the Wood project team. Mr. McGowan's contact information is:

Mr. Michael McGowan
Wood Construction Manager
46850 Magellan Drive, Suite 190
Novi, Michigan 48377
michael.j.mcgowan@amecfw.com
248-313-3665 (office)
248-877-3852 (cell)

Wood Site Manager/Site Health and Safety Officer

The Site Manager will report to the Wood Project Manager, and will be responsible for coordination and implementation of all onsite activities to be conducted by Honeywell. Working closely with Wood's Project and Construction Manager, the Site Manager will

coordinate and supervise all field personnel, data collection, and field quality assurance/quality control measures.

The Site Manager will also be the Site Health and Safety Officer (SHSO). The SHSO will be responsible for matters related to health and safety, including implementation of the Health and Safety Plan (HASP), conducting Site safety meetings, providing site-specific training to personnel, investigation of health and safety-related incidents at the site, should incidents arise, and updating and modifying the HASP as necessary. Mr. Kurt Cunningham will serve as the Site Manager/SHSO. Mr. Cunningham's contact information is:

Mr. Kurt Cunningham
Wood Site Manager/SHSO
46850 Magellan Drive, Suite 190
Novi, Michigan 48377
kurt.cunningham@amecfw.com
248-313-3685 (office)
517-404-3582 (cell)

7.0 REFERENCES

- Michigan Tech Research Institute, 2014, “Building Narratives, Maps, and Documentation, Torch Lake Industrial Front”
- Tetra Tech, Inc., 2018, “Removal Assessment Report for C&H Mineral Building – RS Site 52986 Highway M-26, Hubbell, Houghton County, Michigan”, January 29, 2018
- William P. Tidwell, “Copper Procurement and Stockpiling, 1941-1945: A Synthesis of Activities of Metals Reserve Company (A Subsidiary of Reconstruction Finance Corporation),” unpublished draft history, in Record Group 234 Records of the Reconstruction Finance Corporation, Entry 26, Administrative Histories of the Reconstruction Finance Corporation’s Wartime Programs, Box 4, held at the National Archives, College Park, Maryland. [Official Histories/ 1948 Tidwell MRC Copper Program History Excerpts]”

FIGURES



Legend

 Property Boundary

Base Map Source: ESRI USA Topo Maps map service

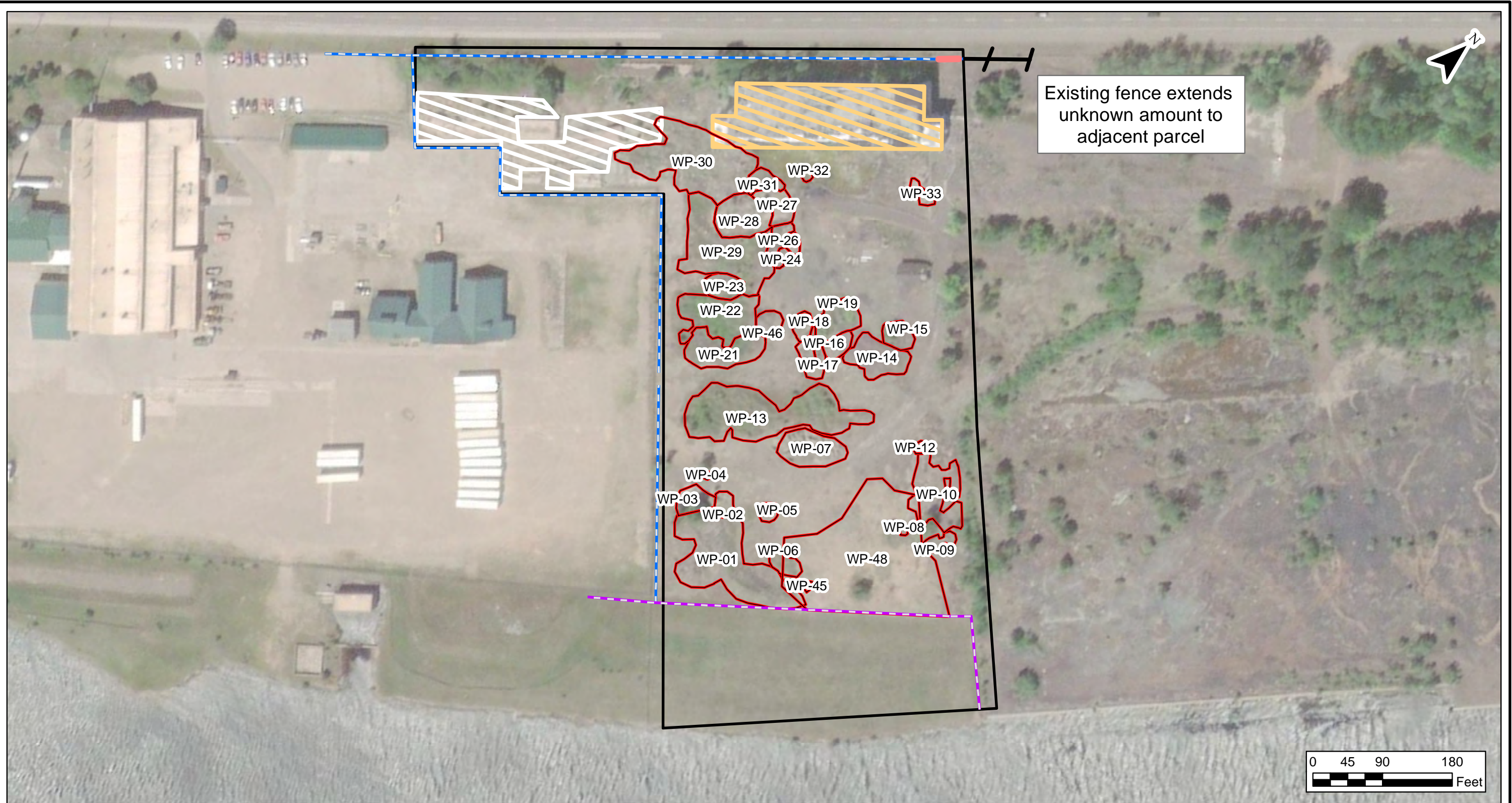
Honeywell Specialty Materials, LLC.
C & H Mineral Building Site

SITE LOCATION MAP

Prepared by:
DCM 7/1/2018
Checked by:
MJM 7/1/2018
Project Number:
3293181784

wood.

FIGURE
1-1



- Legend**
- Property Boundary
 - Cap Boundary
 - Existing Fence
 - Access Gate
 - Mineral Building
 - Stack Debris
 - Waste Pile Boundary

Source: Tetra Tech Removal
Assessment Report, January 2018

Base Map Source: ESRI Imagery
Basemap

Honeywell Specialty Materials, LLC.
C & H Mineral Building Site

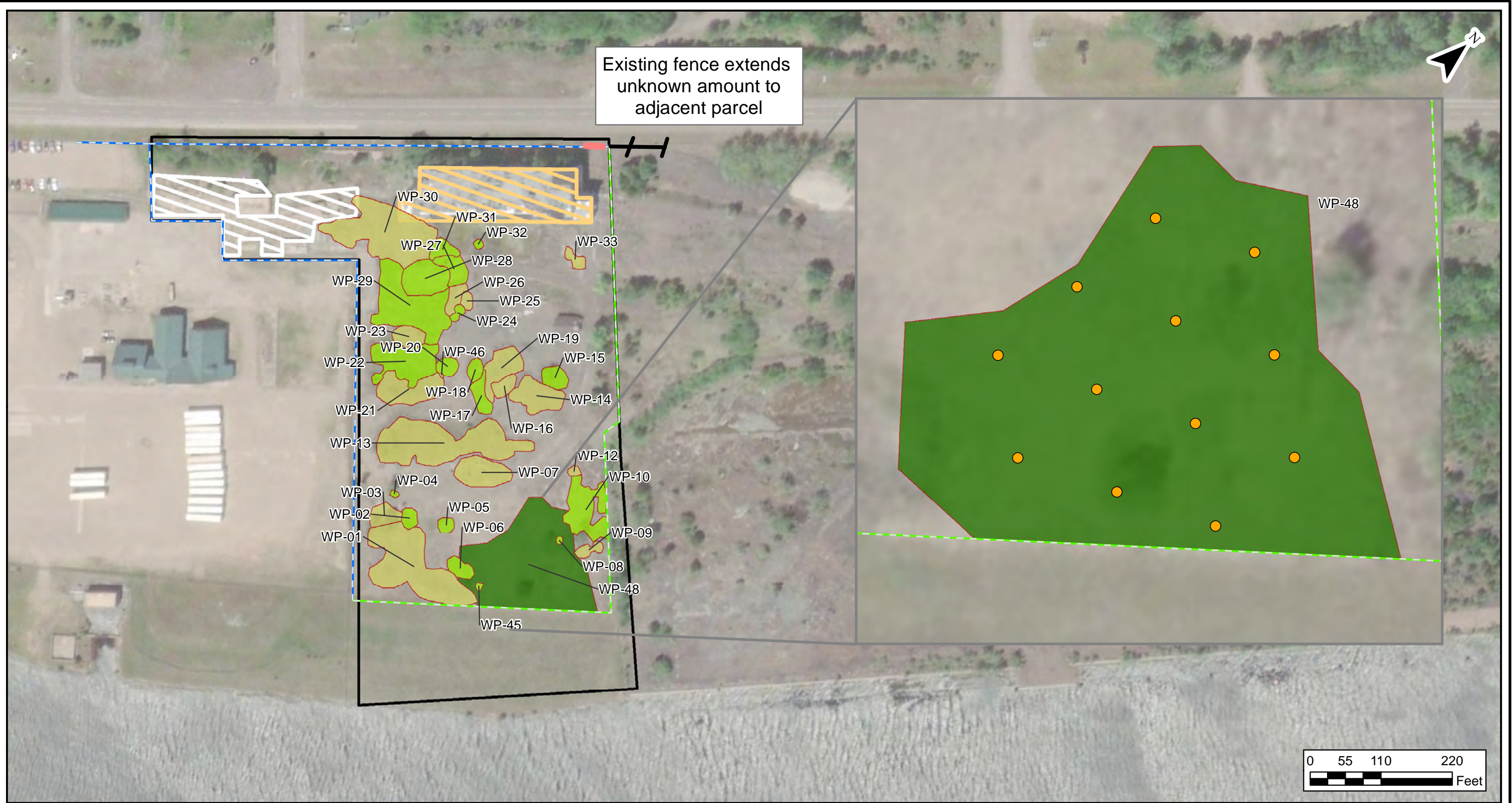
SITE FEATURES

Prepared by:
DCM 8/22/2018
Checked by:
MJM 8/22/2018
Project Number:
3293181784



FIGURE
2-1

C:\Users\Nolan.Jones\Documents\ArcGIS\Packages\4-1 sampling locations DB80C2A3-69C2-4B6C-8923-02D22F75BD39\1034-1 sampling locations.mxd 8/22/2018 11:18:10 AM



Legend

- Property Boundary
- Existing Fence
- Proposed Fence
- Access Gate
- Mineral Building
- Stack Debris

Waste Piles

- Already Characterized
- Composite Sampling Area
- Geoprobe Sampling Area
- Proposed Sample Location

Notes:
1. WP-48 contains 12 proposed sample locations in a triangular grid with 45-ft spacing.

Source: Tetra Tech Removal Assessment Report, January 2018

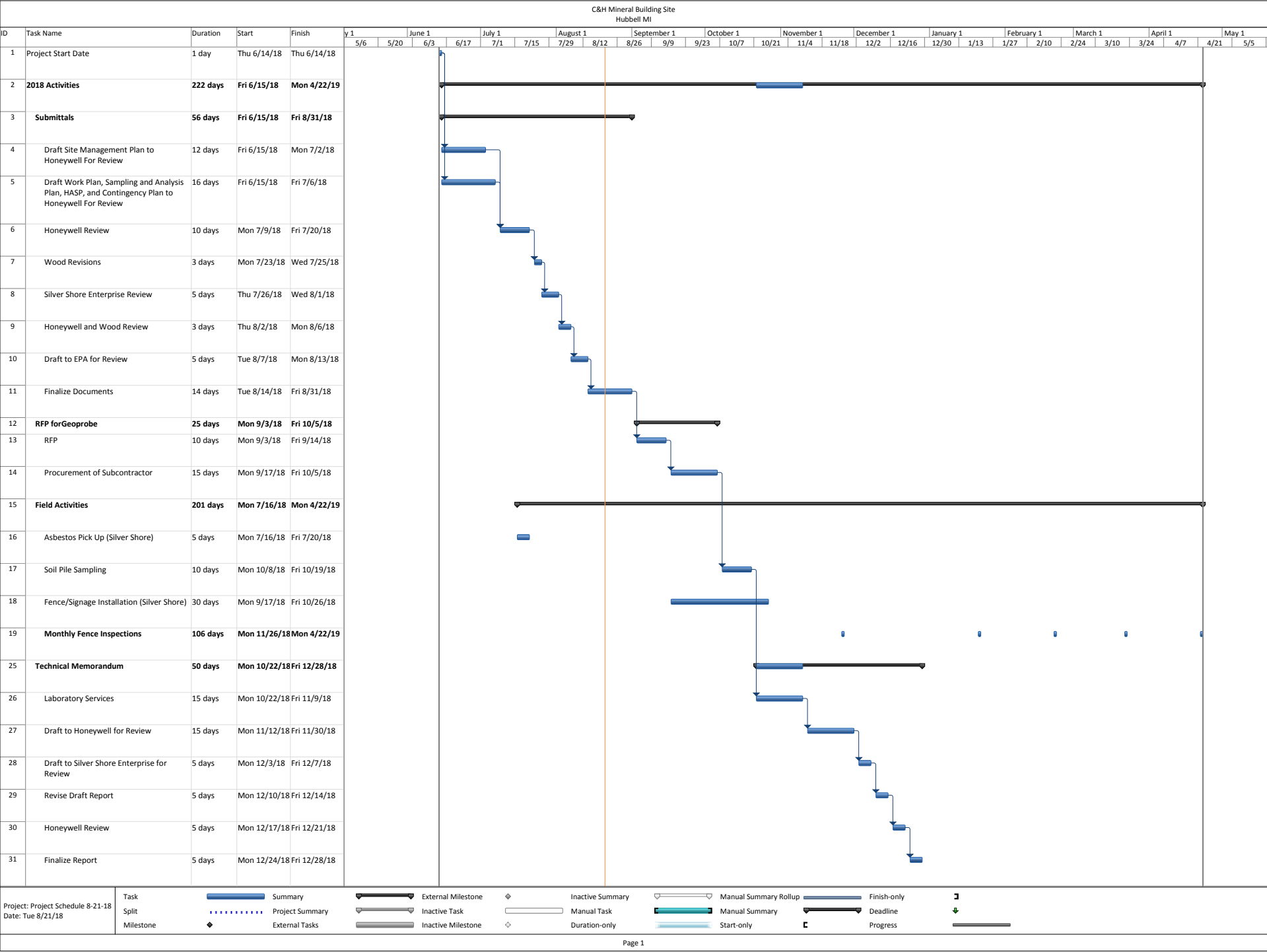
Base Map Source: ESRI Imagery Basemap

Honeywell Specialty Materials, LLC.
C & H Mineral Building Site

PROPOSED SAMPLE LOCATIONS

Prepared by: DCM 8/22/2018		FIGURE 4-1
Checked by: MJM 8/22/2018		
Project Number: 3293181784		

APPENDIX A



APPENDIX B

**Site Inspection Checklist
Calumet and Hecla Mineral Building Site
Torch Lake TWP., Michigan**

Date: _____
Time: _____
Site Conditions: _____
Inspector: _____

☐ **Front Gate Secure?**

Current Conditions:

☐ **Northwest Fence Secure?**

Current Conditions:

☐ **Northeast Fence Secure?**

Current Conditions:

☐ **Southwest Fence Secure?**

Current Conditions:

☐ **Southeast Fence Secure?**

Current Conditions:

☐ **Southeast Fence Secure?**

Current Conditions:

DESCRIBE ANY PROBLEMS/POTENTIAL SITE SECURITY PROBLEMS & ACTION TAKEN:

