RECORD OF DECISION

Former Paulsen - Holbrook
Operable Unit Number 02: Off-Site Drainage Swale
State Superfund Project
Guilderland, Albany County
Site No. 401046
March 2014

Prepared by
Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT - RECORD OF DECISION

Former Paulsen - Holbrook
Operable Unit Number: 02
State Superfund Project
Guilderland, Albany County
Site No. 401046
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Statement of Purpose and Basis

This document presents the remedy for Operable Unit Number: 02: Off-Site Drainage Swale of the Former Paulsen - Holbrook site, a Class 2 inactive hazardous waste disposal site. The remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for Operable Unit Number: 02 of the Former Paulsen - Holbrook site and the public's input to the proposed remedy presented by the Department. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Description of Selected Remedy

The elements of the selected remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and

• Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation and off-site disposal of the top 12 inches of soil where the contaminants are above the commercial soil cleanup objectives (SCOs) for arsenic, chromium, or copper, as defined by 6 NYCRR Part 375-6.8, from the off-site drainage swale. The area excavated would be the bottom of the swale from the storm drain discharge to a point approximately 540 feet to the southwest, where the swale narrows and slightly increases in elevation. Approximately 600 cubic yards of soil are estimated to be removed from the site.

3. A site cover will be required in the excavated areas of the swale. The cover will consist of a soil cover in areas where surface soil was excavated. Where the soil cover is required, it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for commercial use as set forth in 6 NYCRR Part 375-6.7(d).

4. The remedy requires an access agreement between the Department and the railroad to implement the remedy, ensure its continued integrity, and take any additional remedial actions, if needed.

5. The Site Management Plan for OU1 will be updated to provide specific requirements for site maintenance, development, and use for the OU2 area.

New York State Department of Health Acceptance

The New York State Department of Health (NYSDOH) concurs that the remedy for this site is protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

March 27, 2014
Date

Robert W. Schick, P.E., Director
Division of Environmental Remediation

RECORD OF DECISION

Former Paulsen - Holbrook
Guilderland, Albany County
Site No. 401046
March 2014

SECTION 1: SUMMARY AND PURPOSE

The New York State Department of Environmental Conservation (the Department), in consultation with the New York State Department of Health (NYSDOH), has selected a remedy for the above referenced site. The disposal of hazardous wastes at the site has resulted in threats to public health and the environment that would be addressed by the remedy. The disposal or release of hazardous wastes at this site, as more fully described in this document, has contaminated various environmental media. The remedy is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Record of Decision (ROD) identifies the selected remedy, summarizes the other alternatives considered, and discusses the reasons for selecting the remedy.

The New York State Inactive Hazardous Waste Disposal Site Remedial Program (also known as the State Superfund Program) is an enforcement program, the mission of which is to identify and characterize suspected inactive hazardous waste disposal sites and to investigate and remediate those sites found to pose a significant threat to public health and environment.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and 6 NYCRR Part 375. This document is a summary of the information that can be found in the site-related reports and documents.

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held, during which the public was encouraged to submit comment on the proposed remedy. All comments on the remedy received during the comment period were considered by the Department in selecting a remedy for the site. Site-related reports and documents were made available for review by the public at the following document repository:

William K. Sanford Town Library
629 Albany Shaker Road
Loudonville, NY 12211
Phone: (518) 458-9274

A public meeting was also conducted. At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) were presented along with a summary of the proposed remedy.

After the presentation, a question-and-answer period was held, during which verbal or written comments were accepted on the proposed remedy.

Comments on the remedy received during the comment period are summarized and addressed in the responsiveness summary section of the ROD.

Receive Site Citizen Participation Information By Email

Please note that the Department's Division of Environmental Remediation (DER) is "going paperless" relative to citizen participation information. The ultimate goal is to distribute citizen participation information about contaminated sites electronically by way of county email listservs. Information will be distributed for all sites that are being investigated and cleaned up in a particular county under the State Superfund Program, Environmental Restoration Program, Brownfield Cleanup Program, Voluntary Cleanup Program, and Resource Conservation and Recovery Act Program. We encourage the public to sign up for one or more county listservs at http://www.dec.ny.gov/chemical/61092.html

SECTION 3: SITE DESCRIPTION AND HISTORY

Location: The site consists of a half-acre portion of an 8.8-acre property located along the southern boundary of 54 Railroad Avenue in the Town of Guilderland. Operable Unit 2, the off-site drainage swale, is described in the Operable Units section, below.

Site Features: This property is located in an industrial and commercial area bounded by Fuller Road, Amtrak railroad tracks, and Railroad Avenue. Patroon Creek is located to the south of the site and flows to the east-southeast. The site is approximately 250 feet above sea level and is flat. The property has been largely unoccupied since at least 2002. Various buildings have been removed as they have fallen into disrepair, but the concrete slabs remain. The areas between buildings are paved with a thin layer of asphalt, although the asphalt is now broken up. A drainage swale located on railroad property slopes gently to the southeast just south of the fence separating the site from the raised railroad tracks. Stormwater at the site is collected in a drainage system that discharges to the swale.

Current Zoning/Use: The site is located in a neighborhood consisting of various commercial businesses and light industries. The site and immediate neighborhood is zoned for industrial use.

Past Use of Site: Various lumber companies which occupied the property operated a wood treatment operation at this location from the early 1950s until sometime before 1978. Wood was preserved by pressure treating it with chromated copper arsenate (CCA - a solution of chromic acid, cupric oxide, and arsenic pentoxide) in a large pressure vessel. After treatment, the batches of lumber were removed from the pressure vessel and allowed to air dry on site. A 2,000- to 3,000-gallon spill of CCA occurred at the site in 1965 when the pressure vessel was opened before it was pumped out. According to available aerial photographs, the building containing the pressure vessel was removed some time between 1982 and 1985.

The property was being investigated under the Voluntary Cleanup Program (under the name

Albany Miron) but the volunteer never completed the program. A settlement with the responsible parties and volunteer was executed in March 2007, after which the site was referred to the State Superfund to complete the remedial program.

Operable Units: Operable Unit 1 (OU1) is the main site area around the former pressure treatment building. A remedial investigation and feasibility study for OU1 began in October 2008 and was completed in 2009. A Proposed Remedial Action Plan for OU1 was issued for public comment in February 2010 and a final remedy was selected for the site as documented in a Record of Decision signed on March 31, 2010.

During pre-design sampling in the drainage swale abutting the railroad tracks in November 2010, additional contaminated soil was found to extend off-site to the southeast for an undetermined distance. The soil was contaminated with arsenic, chromium, and copper. Because the contamination in the swale appeared to come from the storm drain that discharged stormwater from the area around the pressure treatment building, this additional off-site contaminated soil was designated as a separate operable unit.

The remedial construction activities at OU1 began in the fall of 2012 and were completed in 2013.

OU2 is the narrow area of soil in the off-site drainage swale along the railroad tracks extending approximately 1,800 feet to the southeast from the storm sewer outlet. This operable unit is almost exclusively located on railroad property. The investigation of OU2 began in November 2012.

Site Geology/Hydrogeology: The soil at the site consists primarily of a fine, brown sand with a few lenses of clay interspersed. Groundwater is found at a depth of between 11 and 14 feet below the ground surface, and the flow is generally to the south.

Operable Unit (OU) Number 02 is the subject of this document.

A Record of Decision was issued previously for OU 01.

A site location map is attached as Figure 1.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. For this site, alternatives that restrict the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) were evaluated in addition to an alternative which would allow for unrestricted use of the site.

A comparison of the results of the RI to the appropriate standards, criteria and guidance values (SCGs) for the identified land use and the unrestricted use SCGs for the site contaminants is included in the Tables for the media being evaluated in Exhibit A.

SECTION 5: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

The PRPs for the site, documented to date, include:

Paulsen and Sons, Inc.

Holbrook Lumber Company

Albany Miron Lumber Corporation

Colonie Wood Treating and Stain Corp.

The Department settled with the potential responsible parties in March 2007 and the site was subsequently referred to the State Inactive Hazardous Waste Disposal Site Program.

SECTION 6: SITE CONTAMINATION

6.1: Summary of the Remedial Investigation

A Remedial Investigation (RI) has been conducted. The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site. The field activities and findings of the investigation are described in the RI Report.

The following general activities are conducted during an RI:

- Research of historical information,
- Geophysical survey to determine the lateral extent of wastes,
- Test pits, soil borings, and monitoring well installations,
- Sampling of waste, surface and subsurface soils, groundwater, and soil vapor,
- Sampling of surface water and sediment,
- Ecological and Human Health Exposure Assessments.

The analytical data collected on this site includes data for:

- soil

6.1.1: Standards, Criteria, and Guidance (SCGs)

The remedy must conform to promulgated standards and criteria that are directly applicable or that are relevant and appropriate. The selection of a remedy must also take into consideration guidance, as appropriate. Standards, Criteria and Guidance are hereafter called SCGs.

To determine whether the contaminants identified in various media are present at levels of concern, the data from the RI were compared to media-specific SCGs. The Department has developed SCGs for groundwater, surface water, sediments, and soil. The NYSDOH has developed SCGs for drinking water and soil vapor intrusion. The tables found in Exhibit A list the applicable SCGs in the footnotes. For a full listing of all SCGs see: http://www.dec.ny.gov/regulations/61794.html

6.1.2: RI Results

The data have identified contaminants of concern. A "contaminant of concern" is a hazardous waste that is sufficiently present in frequency and concentration in the environment to require evaluation for remedial action. Not all contaminants identified on the property are contaminants of concern. The nature and extent of contamination and environmental media requiring action are summarized in Exhibit A. Additionally, the RI Report contains a full discussion of the data. The contaminants of concern identified for this Operable Unit at this site are:

arsenic
chromium
copper

As illustrated in Exhibit A, the contaminants of concern exceed the applicable SCGs for:

- soil

6.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before issuance of the Record of Decision.

There were no IRMs performed at this site during the RI.

6.3: Summary of Environmental Assessment

This section summarizes the assessment of existing and potential future environmental impacts presented by the site. Environmental impacts may include existing and potential future exposure pathways to fish and wildlife receptors, wetlands, groundwater resources, and surface water.

Based upon the resources and pathways identified and the toxicity of the contaminants of ecological concern at this site, a Fish and Wildlife Resources Impact Analysis (FWRIA) was deemed not necessary for OU 02.

Nature and Extent of Contamination:

OU1: Soil at the site contained elevated levels of arsenic, chromium, and copper, the result of the pressure treatment activities, where a spill and excess CCA solution dripped off the wood and/or washed off by rainfall. Concentrations of these metals in soil nearest the former pressure treatment building were the highest and extended the deepest into the ground. Generally, as the distance from the former pressure treatment building increased, the metals concentrations decreased and contamination did not extend as deep.

Groundwater resources at the site consist of a shallow overburden aquifer in the fine sand. The depth to groundwater is approximately 11-14 feet below grade, depending on the season. Groundwater flow direction is to the south. Bedrock below the overburden aquifer is reported to be Normanskill shale, although bedrock was not encountered during the OU1 RI nor any other investigations of this site.

Site-related contamination, primarily arsenic and chromium, was impacting groundwater on-site and off-site, although the groundwater is not used as a source of potable water.

Remediation of contaminated soil at OU1 is complete. Prior to remediation, the primary contaminants of concern in the soil were arsenic, chromium, and copper. Remedial actions have successfully achieved soil cleanup objectives for commercial use. A groundwater remedy has been implemented and continued monitoring will assess its effectiveness. Residual contamination in the soil and groundwater will be managed under a Site Management Plan.

The Remedial Investigation of OU1 did not identify any current or potential impacts to ecological resources. Patroon Creek is located a minimum of 560 feet south of the site; however the raised railroad bed and Fuller Road exit ramp off I-90 lie between the site and the creek, precluding any direct impact from site runoff. No current or potential site-related surface water or sediment impacts have been identified.

OU2: The Remedial Investigation of OU2 delineated contaminated soil in the drainage swale to the southeast of the OU1 storm drain outfall for a distance of approximately 1,800 feet. Contaminants at concentrations in excess of the commercial use Soil Cleanup Objectives included arsenic (1,440 mg/kg vs. an SCO of 16 mg/kg), chromium (1,810 vs. 1,500), copper (2,350 vs. 270), and polycyclic aromatic hydrocarbons (PAHs). Based on the nature of the contamination in OU1, it was determined that the PAH contamination in OU2 came from coarse black soil along the railroad tracks which washed down into the swale (i.e., not from the site). Laboratory tests of the black soil from above the swale as well as from the other side of the tracks showed that it also contained elevated concentrations of arsenic, chromium, and copper. This black soil represents a secondary source of contamination in the drainage swale unrelated to the contamination transported from OU1 through the storm drain.

Based on the configuration of the drainage swale and relative concentrations of arsenic, chromium, and copper in the soil, it was determined that the contamination from the storm drain was only affecting the soil in the swale to a distance of 540 feet from the outfall pipe where the swale narrows and there is a slight increase in elevation.

6.4: Summary of Human Exposure Pathways

This human exposure assessment identifies ways in which people may be exposed to site-related contaminants. Chemicals can enter the body through three major pathways (breathing, touching or swallowing). This is referred to as *exposure.*

The main site (OU1) and off-site drainage swale (OU2) are located in a commercial/industrial area. At OU1, direct contact with contaminated soil is unlikely since the property is unoccupied and fenced to prevent access. However, persons who enter the site could contact contaminants in the soil by digging or otherwise disturbing the soil. OU2 is not fenced and persons could contact site-related contaminants in the soil by walking on the site, digging or otherwise disturbing the soil. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination.

6.5: Summary of the Remediation Objectives

The objectives for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375. The goal for the remedial program is to restore the site to pre-disposal conditions to the extent feasible. At a minimum, the remedy shall eliminate or mitigate all significant threats to public health and the environment presented by the contamination identified at the site through the proper application of scientific and engineering principles.

The remedial action objectives for this site are:

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater or surface water contamination.
- Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

To be selected the remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. The remedy must also attain the remedial action objectives identified for the site, which are presented in Section 6.5. Potential remedial alternatives for the Site were identified, screened and evaluated in the feasibility study (FS) report.

A summary of the remedial alternatives that were considered for this site is presented in Exhibit B. Cost information is presented in the form of present worth, which represents the amount of

money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved. A summary of the Remedial Alternatives Costs is included as Exhibit C.

The basis for the Department's remedy is set forth at Exhibit D.

The selected remedy is referred to as the Excavation of Soil above Commercial SCG to a Depth of One Foot remedy.

The estimated present worth cost to implement the remedy is $469,000. The cost to construct the remedy is estimated to be $457,000 and the estimated average annual cost is $1,500.

The elements of the selected remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, optimization, maintenance, and monitoring of the remedial program. Green remediation principles and techniques will be implemented to the extent feasible in the design, implementation, and site management of the remedy as per DER-31. The major green remediation components are as follows:

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals; and
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development.

2. Excavation and off-site disposal of the top 12 inches of soil where the contaminants are above the commercial soil cleanup objectives (SCOs) for arsenic, chromium, or copper, as defined by 6 NYCRR Part 375-6.8, from the off-site drainage swale. The area excavated would be the bottom of the swale from the storm drain discharge to a point approximately 540 feet to the southwest, where the swale narrows and slightly increases in elevation. Approximately 600 cubic yards of soil are estimated to be removed from the site.

3. A site cover will be required in the excavated areas of the swale. The cover will consist of a soil cover in areas where surface soil was excavated. Where the soil cover is required, it will be a minimum of one foot of soil, meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer, with

the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for commercial use as set forth in 6 NYCRR Part 375-6.7(d).

4. The remedy requires an access agreement between the Department and the railroad to implement the remedy, ensure its continued integrity, and take any additional remedial actions, if needed.

5. The Site Management Plan for OU1 will be updated to provide specific requirements for site maintenance, development, and use for the OU2 area.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation (RI) for all environmental media that were evaluated. As described in Section 6.1, samples were collected from various environmental media to characterize the nature and extent of contamination.

For each medium for which contamination was identified, a table summarizes the findings of the investigation. The tables present the range of contamination found at the site in the media and compare the data with the applicable SCGs (New York State Standards, Criteria, and Guidance) for the site. The contaminants are arranged into two categories: semi-volatile organic compounds (SVOCs) and inorganics (metals). For comparison purposes, the SCGs that allow for unrestricted use are provided for each medium. For soil, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

The investigation of this operable unit was planned using information from the RI at Operable Unit 01 (OU1 - the area around the former pressure treatment building) to narrow the range of possible contaminants and affected media. During the OU1 RI, the Department determined that the contaminants of concern were metals. Metals contamination in the groundwater originated at the location of the former pressure treatment building, where pressure treatment chemicals were found in the soil at very high concentrations and were in contact with the water table (a depth of 11-14 feet below grade). These conditions did not occur at OU2, so groundwater was not sampled during the OU2 RI.

Soil

Soil samples were initially collected in November 2012 at roughly 40-foot intervals along the length of the swale for a distance of approximately 1,200 feet from the stormwater discharge point. Samples were collected from the ground surface to a depth of up to ten feet using a small direct push drill rig. At each location, samples were collected from three borings across the width of the swale: one from the north side, one from the south side, and one from the middle. This resulted in a total of 73 borings.

The soil samples from each boring were examined in the field at roughly one-foot intervals using a portable X-ray fluorescence analyzer (XRF). The XRF yielded analytical results for a wide range of metals, but only arsenic, chromium, and copper were recorded. To evaluate the accuracy of the XRF measurements, a total of 44 confirmation soil samples were collected and submitted to an analytical laboratory for metals analysis. Confirmation soil samples were selected so that there was a range of metals concentrations. The comparison of confirmation samples to field measurements yielded similar results.

Because there was a good correlation between field measurements and lab results, this meant that the depth of impacted soil could be readily determined in the field by using the XRF. Thus, the depth of each boring could be adjusted to avoid unnecessarily sampling clean soil deeper than the limits of contamination.

When the laboratory results were reviewed, the extent of the arsenic contamination at the far end of the swale had not been delimited. For that reason, in May 2013 an additional 600-foot section of the swale was sampled for metals at 50-foot intervals (13 samples). During the initial sampling round, contaminated soil was found up the southern wall of the swale, suggesting that there might be a secondary source of metals contamination unrelated to OU1. Therefore, seven targeted soil samples were collected from areas that would not have been affected by the pressure treatment activities at the site or by runoff in the swale (e.g., samples along the railroad

tracks to the northeast of the site and on the opposite side of the tracks, hereafter called upland samples.) The targeted samples were analyzed for metals and SVOCs. Three targeted surface soil samples from the swale were also analyzed for SVOCs. Since SVOCs were not found at OU1, finding them in the swale would support an off-site source of contamination.

Table 1, below, reports only the results obtained through laboratory analysis of the confirmation samples and the targeted samples.

Table 1 - Soil

Detected Constituents	Concentration Range Detected (ppm)[a]	Unrestricted SCG[b] (ppm)	Frequency Exceeding Unrestricted SCG	Restricted Use SCG[c] (ppm)	Frequency Exceeding Restricted SCG
SVOCs					
Benzo(a)anthracene	ND - 10	1	8 of 11	5.6	5 of 11
Benzo(a)pyrene	ND - 7.9	1	8 of 11	1	8 of 11
Benzo(b)fluoranthene	ND - 13	1	8 of 11	5.6	6 of 11
Benzo(k)fluoranthene	ND - 5	0.8	7 of 11	56	0 of 11
Chrysene	ND - 9.1	1	8 of 11	56	0 of 11
Dibenz(a,h)anthracene	ND - 3.3	0.33	5 of 11	0.56	5 of 11
Indeno(1,2,3-cd)pyrene	ND - 5.2	0.5	8 of 11	5.6	0 of 11
Inorganics					
Arsenic	1.4 - 1,440	13	50 of 73	16	50 of 73
Barium	8.8 - 595	350	2 of 73	400	2 of 73
Cadmium	0.062 -12.1	2.5	6 of 73	9.3	1 of 73
Chromium	4.1 - 1,810	30	24 of 73	1,500	3 of 73
Copper	5.7 - 2,740	50	48 of 73	270	12 of 73
Lead	2 - 441	63	37 of 73	1,000	0 of 73
Mercury	ND - 1.4	0.18	28 of 73	2.8	0 of 73
Selenium	ND - 88	3.9	3 of 73	1,500	0 of 73
Silver	ND - 5	2	1 of 73	6,800	0 of 73
Zinc	16 - 850	109	25 of 73	10,000	0 of 73

a - ppm: parts per million, which is equivalent to milligrams per kilogram, mg/kg, in soil;
b - SCG: Part 375-6.8(a), Unrestricted Soil Cleanup Objectives;
c - SCG: Part 375-6.8(b), Restricted Use Soil Cleanup Objectives for the Protection of Public Health for Commercial Use, unless otherwise noted.

Runoff of chemicals used to pressure treat lumber at the Former Paulsen-Holbrook site (OU1) resulted in contamination of soil in the off-site drainage swale. The primary soil contaminants are arsenic, chromium, and copper (see Figure 3 for concentration maps using XRF data for arsenic). The analytical results show that soil contamination in the swale decreases with sample depth. Contamination also decreases with distance away from the stormwater discharge point. The vast majority of contaminated soil is in the top four feet. Soil contaminated with chromium and copper does not extend below a depth of four feet, but arsenic contamination extends up to ten feet in a few isolated locations.

A secondary source of contamination is the soil associated with the adjacent railroad tracks. This upland soil is contaminated with arsenic, chromium, and copper, as well as SVOCs (see Figure 6). SVOCs were not associated with OU1. There are places where upland soil has washed down from the tracks into the drainage swale and SVOCs were found both in the upland samples and some of the swale samples. It was therefore determined that the swale was contaminated by both upland soil and the runoff from OU1.

Based on the relative concentrations of arsenic and chromium in the upper foot of soil (see Figure 5), the metals concentrations in the upland samples, and the physical characteristics of the swale, the area affected by the runoff from OU1 was identified as the bottom of the swale from the storm drain discharge to a point approximately 540 feet to the southwest (the "pinch point"), where the swale narrows and slightly increases in elevation (see Figure 6). The walls of the swale are above the areas that would be affected by runoff in the swale and contamination found on the walls is attributable to the upland soil.

Those areas of soil that are contaminated with chromium and copper are also contaminated with arsenic above the commercial and unrestricted soil cleanup objectives. Arsenic is the limiting contaminant - addressing the areas with arsenic-contaminated soil would also incorporate the areas contaminated with chromium and copper.

Metals other than arsenic, chromium, and copper detected in the soil above the soil cleanup objectives are not associated with the pressure treating operation at the site, but these metals would be addressed because of the wide extent of the arsenic contamination in the affected area.

Based on the findings of the Remedial Investigation, the past disposal of hazardous waste has resulted in the contamination of soil. The site contaminants identified in soil which are considered to be the primary contaminants of concern, to be addressed by the remedy selection process, are arsenic, chromium, and copper.

Exhibit B

Description of Remedial Alternatives

The following alternatives were considered based on the remedial action objectives (see Section 6.5) to address the contaminated media identified at the site as described in Exhibit A.

Alternative 1: No Action

The No Action Alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative leaves the site in its present condition and does not provide any additional protection to public health and the environment.

Alternative 2: Engineering and Institutional Controls

This alternative would include the implementation of administrative and physical restrictions to prevent contact with the contaminated soil. Land restrictions (institutional controls) would include an environmental easement to minimize exposure to potentially contaminated soil and control activities at OU2 in accordance with the Department's requirements. Physical restrictions (engineering controls) would consist of perimeter fencing to restrict public access to contaminated soil. This alternative would require an access agreement between the Department and the railroad to implement the remedy, ensure its continued integrity, and take any additional remedial actions, if needed.

Because contamination would remain on OU2, the Site Management Plan (SMP) for OU1 would be updated to provide specific requirements for site maintenance, development, and use for the OU2 area. This alternative would require less than six months to design and implement.

Present Worth: *$146,000*
Capital Cost: *$134,000*
Annual Costs: *$1,500*

Alternative 3: Excavation to Unrestricted SCGs

This alternative achieves all of the SCGs discussed in Section 6.1.1 and Exhibit A and soil meets the unrestricted soil clean objectives listed in Part 375-6.8 (a). This alternative would entail excavation of approximately 3,700 cubic yards of soil that contains arsenic, chromium, and/or copper at concentrations greater than unrestricted use soil cleanup objectives. Because of the remote nature of this location and proximity to the railroad tracks, from a practical standpoint this alternative assumes that soil would only be excavated to a maximum depth of 10 feet. Excavated soil would be disposed off-site at a permitted disposal facility, and the excavation would be backfilled with clean fill following confirmation sampling to document remaining metals concentrations at the maximum depth, if any. The soil cover would be placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetation layer.

This alternative would require an agreement between the Department and the railroad to implement the remedy. But since all contaminated soil would be removed, there would be no need to monitor the remedy or restrict the use of the property. This alternative would require about a year to design and implement.

Present Worth: *$2,120,000*

Capital Cost:.....*$2,120,000*
Annual Costs:.....*$0*

Alternative 4: Excavation of Soil above Commercial SCG to a Maximum Depth of Four Feet

This alternative would include: excavation of approximately 1,900 cubic yards of soil that contains arsenic at concentrations greater than the commercial use soil cleanup objective to a maximum depth of four feet, tapering to a depth of two feet where applicable (i.e., where contamination was not identified below a depth of two feet); off-site disposal of excavated soil; and backfilling of the excavation with clean fill following confirmation sampling that indicates that impacted soil has been removed, or to document remaining metals concentrations at the maximum depth reached. The soil cover would be placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetation layer. This alternative would require an agreement between the Department and the railroad to implement the remedy, ensure its continued integrity, and take any additional remedial actions, if needed.

Because contamination would remain on OU2, the OU1 Site Management Plan (SMP) would be updated to provide specific requirements for site maintenance, development, and use of OU2. This alternative would likely require less than a year to design and implement.

Present Worth:.....*$1,180,000*
Capital Cost:.....*$1,170,000*
Annual Costs:.....*$1,500*

Alternative 5: Excavation of Soil above Commercial SCG to a Depth of One Foot

This alternative would include: excavation of approximately 600 cubic yards of soil to one foot below ground surface, regardless of contaminant concentration; off-site disposal of excavated soil; and backfilling of the excavation with clean fill. The soil cover would be placed over a demarcation layer, with the upper six inches of soil of sufficient quality to maintain a vegetation layer. As with Alternative 4, this alternative would require an agreement between the Department and the railroad to implement the remedy, ensure its continued integrity, and take any additional remedial actions, if needed.

Because contamination would remain on OU2, the OU1 Site Management Plan (SMP) would be updated to provide specific requirements for site maintenance, development, and use of OU2. This alternative would likely require less than six months to design and implement.

Present Worth:.....*$469,000*
Capital Cost:.....*$457,000*
Annual Costs:.....*$1,500*

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost ($)	Annual Costs ($)	Total Present Worth ($)
1 - No Action	0	0	0
2 - Engineering/Institutional Controls	134,000	1,500	146,000
3 - Excavation to Unrestricted SCGs	2,120,000	0	2,120,000
4 - Excavation to Commercial SCGs (Maximum Depth of Four Feet)	1,170,000	1,500	1,180,000
5 - Excavation to Depth of One Foot	457,000	1,500	469,000

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department is selecting Alternative 5, as the remedy for this site. Alternative 5 will achieve the remediation goals for the site by removing the top foot of contaminated soil from the storm drain discharge to a point approximately 540 feet to the southwest, then covering the excavated area with a clean soil cover, thus minimizing the possibility of direct contact with, and migration of, contaminated soil. The elements of this remedy are described in Section 7. The selected remedy is depicted in Figure 7.

Basis for Selection

The selected remedy is based on the results of the RI and the evaluation of alternatives. The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

The first two evaluation criteria are termed "threshold criteria" and must be satisfied in order for an alternative to be considered for selection.

1. Protection of Human Health and the Environment. This criterion is an overall evaluation of each alternative's ability to protect public health and the environment.

Alternative 1 (No Action) provides no protection to public health and the environment. Alternative 2 (Engineering/Institutional Controls) would address the direct contact threat, although it does not reduce metals contamination in the soil. Soil impacted by metals would continue to be subject to transport via stormwater. Alternatives 3 (Excavation to Unrestricted SCGs), 4 (Excavation to Commercial SCGs to Depth of Four Feet), and 5 (Excavation to Depth of One Foot) would remove contaminated soil to various depths and cover remaining contamination (if any) with clean soil, addressing the direct contact threat. By removing all soil contaminated above the unrestricted soil cleanup objective, Alternative 3 most strongly meets the threshold criteria. Alternatives 4 and 5 also comply with this criterion but to a slightly lesser degree.

2. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether a remedy will meet environmental laws, regulations, and other standards and criteria. In addition, this criterion includes the consideration of guidance which the Department has determined to be applicable on a case-specific basis.

Alternatives 1 and 2 would not meet the SCGs and will not be retained for this analysis. Alternatives 3, 4, and 5 would meet the SCGs, although Alternatives 4 and 5 would only meet the commercial soil cleanup objectives at specific depths. Contamination above SCGs will remain at OU2 under Alternatives 4 and 5, although the commercial soil cleanup objective will be attained with a minimum cover of 12 inches of clean soil over areas with remaining soil contamination.

Because Alternatives 3, 4, and 5 all satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the operable unit.

The next six "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on-site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the engineering and/or institutional controls intended to limit the risk, and 3) the reliability of these controls.

Alternatives 3, 4, and 5, each involving varying degrees of excavation of the contaminated overburden soils, would be effective in the long-term. However, Alternative 3, which includes excavation of all soil exceeding SCGs for site-related metals, would be more permanent than Alternatives 4 and 5, which rely on excavation of only some contaminated soil. Alternative 3 removes the need for property use restrictions, although there is little chance of future development of OU2 or increased foot traffic. Soil covers are reliable and control the risk associated with direct contact with, and migration of, contaminated soil. The contamination remaining beneath the soil covers with Alternatives 4 and 5 would be controllable with implementation of a Site Management Plan.

4. Reduction of Toxicity, Mobility or Volume. Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

Alternatives 3, 4, and 5 involve varying amounts of excavation and off-site disposal, reducing the volume of OU2 waste by transferring the material to an approved off-site location. However, the alternatives only reduce the overall volume, toxicity, or mobility of contaminated soil as it relates to the site because even though soil would be removed from the operable unit, none of the soil would be treated in any way to reduce volume, toxicity, or mobility before disposing it elsewhere. Alternative 3 would remove the greatest volume of contaminated soil from OU2, with lesser amounts removed in Alternatives 4 and 5.

5. Short-term Impacts and Effectiveness. The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

Alternatives 3, 4, and 5 would meet the remedial objectives for OU2. Alternative 3 would take longer to implement because the volume of soil removed (3,700 cubic yards) would be greater than in Alternatives 4 (1,900 cu. yds.) and 5 (600 cu. yds.) These three alternatives would necessitate increased truck traffic on local roads, with Alternative 3 having the greatest impact. Alternative 5, with the smallest volume of soil excavated, would have the lowest impact of these alternatives.

6. Implementability. The technical and administrative feasibility of implementing each alternative are evaluated. Technical feasibility includes the difficulties associated with the construction of the remedy and the ability to monitor its effectiveness. For administrative feasibility, the availability of the necessary personnel and materials is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, institutional controls, and so forth.

The engineering controls for all the alternatives could be easily implemented using readily available technologies and regionally available resources. Alternative 3, and to a lesser extent Alternative 4, would require significant engineering controls (e.g., sheet piling) to support the walls of the swale during excavation

and backfilling activities. Especially important would be to shore up the south wall, which supports the raised railroad bed. Alternative 5 would not require any support of the swale walls.

The access agreements required in Alternatives 3, 4, and 5 may be challenging, but these would deal with access issues, which are not as problematic as property use restrictions.

7. Cost-Effectiveness. Capital costs and annual operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision.

The costs of the alternatives vary significantly, with the cost of Alternative 4 being roughly twice that of Alternative 5 and the cost of Alternative 3 being about twice that of Alternative 4. Despite the differences in cost, Alternatives 3, 4, and 5 can achieve equal protection from direct contact with contaminated soil. The long-term site management cost for Alternatives 4 and 5 would be a minor part of the present worth amounts. Site management would be limited to periodic inspections. Alternative 3 would not require periodic inspections.

8. Land Use. When cleanup to pre-disposal conditions is determined to be infeasible, the Department may consider the current, intended, and reasonable anticipated future land use of the site and its surroundings in the selection of the soil remedy.

Given the nature of OU2 (i.e., a narrow area located on railroad property behind commercial businesses) there is very little likelihood that there will be any change in use to something other than the current use. The area is effectively inaccessible and is not likely to be used as a shortcut between locations. There are no residential neighborhoods in the area, which minimizes the potential for trespassers. Also, with the identification of a secondary source of soil contamination unrelated to the Paulsen-Holbrook site (OU1), it is understood that the swale will continue to be affected after remediation by contamination unrelated to the site.

The final criterion, Community Acceptance, is considered a "modifying criterion" and is taken into account after evaluating those above. It is evaluated after public comments on the Proposed Remedial Action Plan have been received.

9. Community Acceptance. Concerns of the community regarding the investigation, the evaluation of alternatives, and the PRAP are evaluated. A responsiveness summary will be prepared that describes public comments received and the manner in which the Department will address the concerns raised. If the selected remedy differs significantly from the proposed remedy, notices to the public will be issued describing the differences and reasons for the changes.

Alternative 5 is being selected because, as described above, it satisfies the threshold criteria and provides the best balance of the balancing criteria.

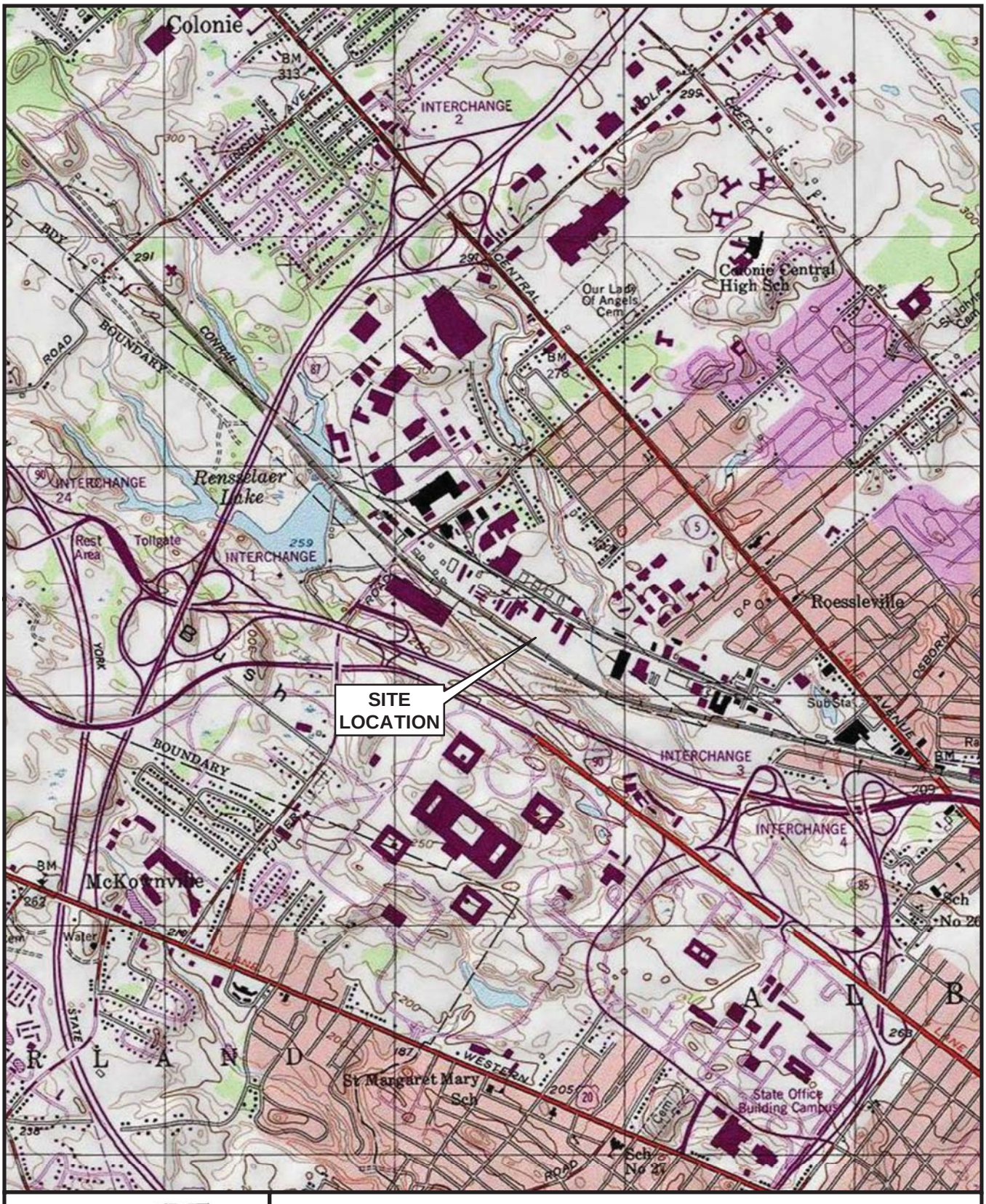

Figure 1

Site Location Map

Former Paulsen-Holbrook Site - OU2
Town of Guilderland/Albany County
Site No. 401046

DEPARTMENT OF ENVIRONMENTAL CONSERVATION • NEW YORK STATE •

Figure 2
Site Map

Former Paulsen-Holbrook Site OU2
Town of Guilderland, Albany County
Site No. 401046

DEPARTMENT OF ENVIRONMENTAL CONSERVATION • NEW YORK STATE •

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Approximate Scale

0 65 130 260 390 520 Feet

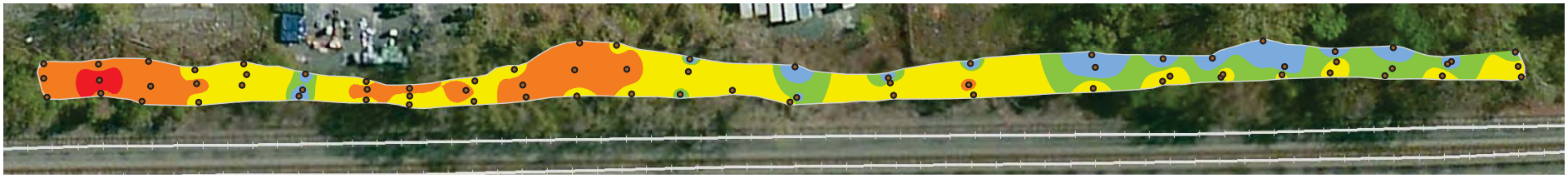
Arsenic Concentration in ppm
Inverse Distance Weighted Interpolation

0-16 16-25 25-100 100-500 500+

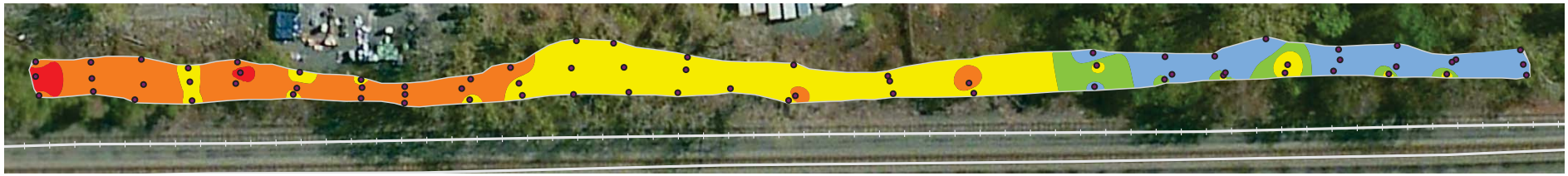
Figure 3
XRF Arsenic Concentrations
Paulsen Holbrook
Albany, New York

N

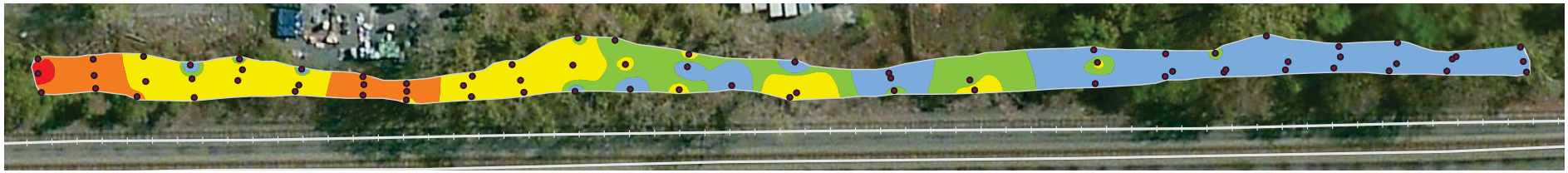
0-1 feet bgs



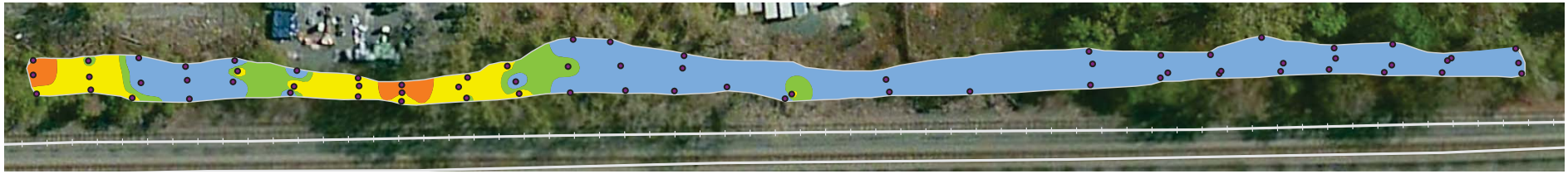
1-2 feet bgs



2-3 feet bgs

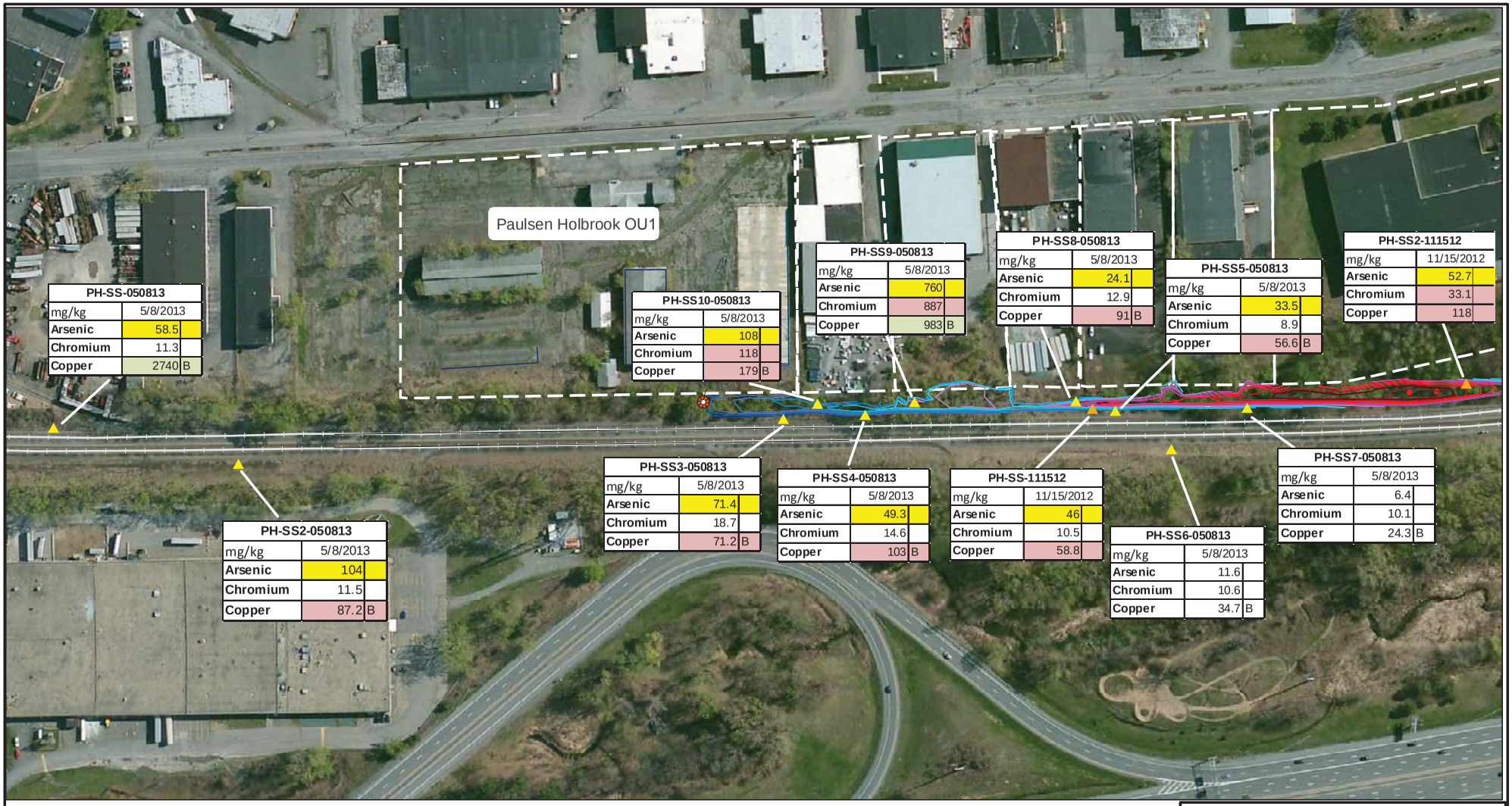


3-4 feet bgs



Source: ESRI ArcGIS online, Microsoft Bing System http://maps.bing.com.

G:\PROJECT\00266400.0000\Swale Sampling\Arsenic slices 0-10 ft.ppt



Source: Bing Maps Aerial, www.esri.com

0 125 250 500 750 1,000 Feet

N

Legend

- Storm Drain Discharge
- Surface Soil Sample 2012
- Surface Soil Sample 2013
- Exceeds Unrestricted SCO
- Exceeds Commercial SCO
- Exceeds Industrial SCO
- Topographic Contours (Feet AMSL)

Blue contours represent higher elevations; red contours represent lower elevations.

New York State Department of Environmental Conservation
Former Paulsen-Holbrook Site (#401046)
Town of Guilderland, Albany County, New York
REMEDIAL INVESTIGATION REPORT

SURFACE SOIL RESULTS FOR CCA

ARCADIS

FIGURE 4

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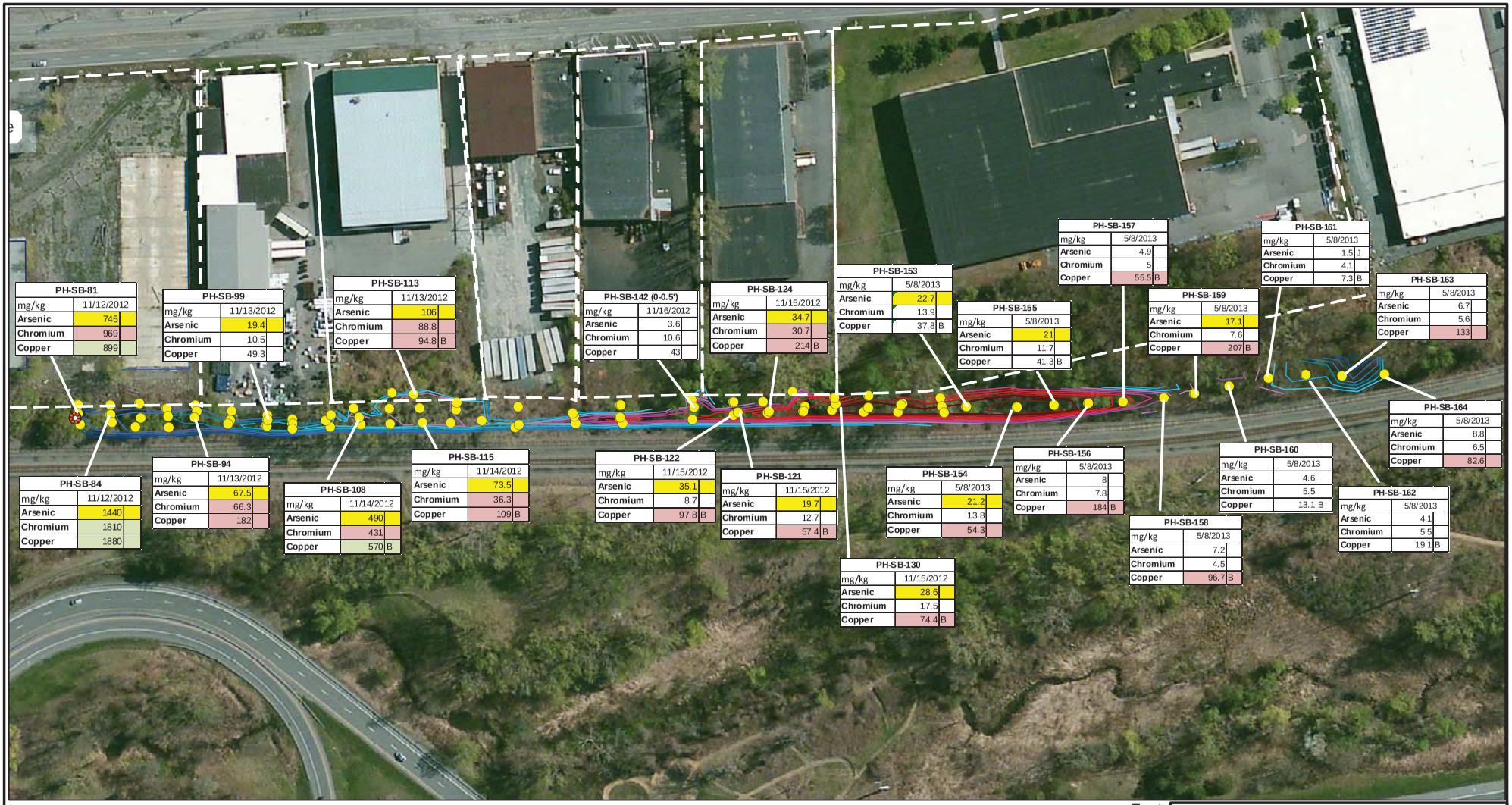

Source: Bing Maps Aerial, www.esri.com

0 115 230 460 690 920 Feet

Legend

- Storm Drain Discharge
- Exceeds Unrestricted SCO
- Exceeds Commercial SCO
- Exceeds Industrial SCO
- Topographic Contours (Feet AMSL)

Blue contours represent higher elevations; red contours represent lower elevations.

N

New York State Department of Environmental Conservation
Former Paulsen-Holbrook Site (#401046)
Town of Guilderland, Albany County, New York
REMEDIAL INVESTIGATION REPORT

SOIL BORING RESULTS FOR COPPER, CHROMIUM, ARSENIC (CCA) IN 0-1 FOOT SAMPLES

ARCADIS

FIGURE 5

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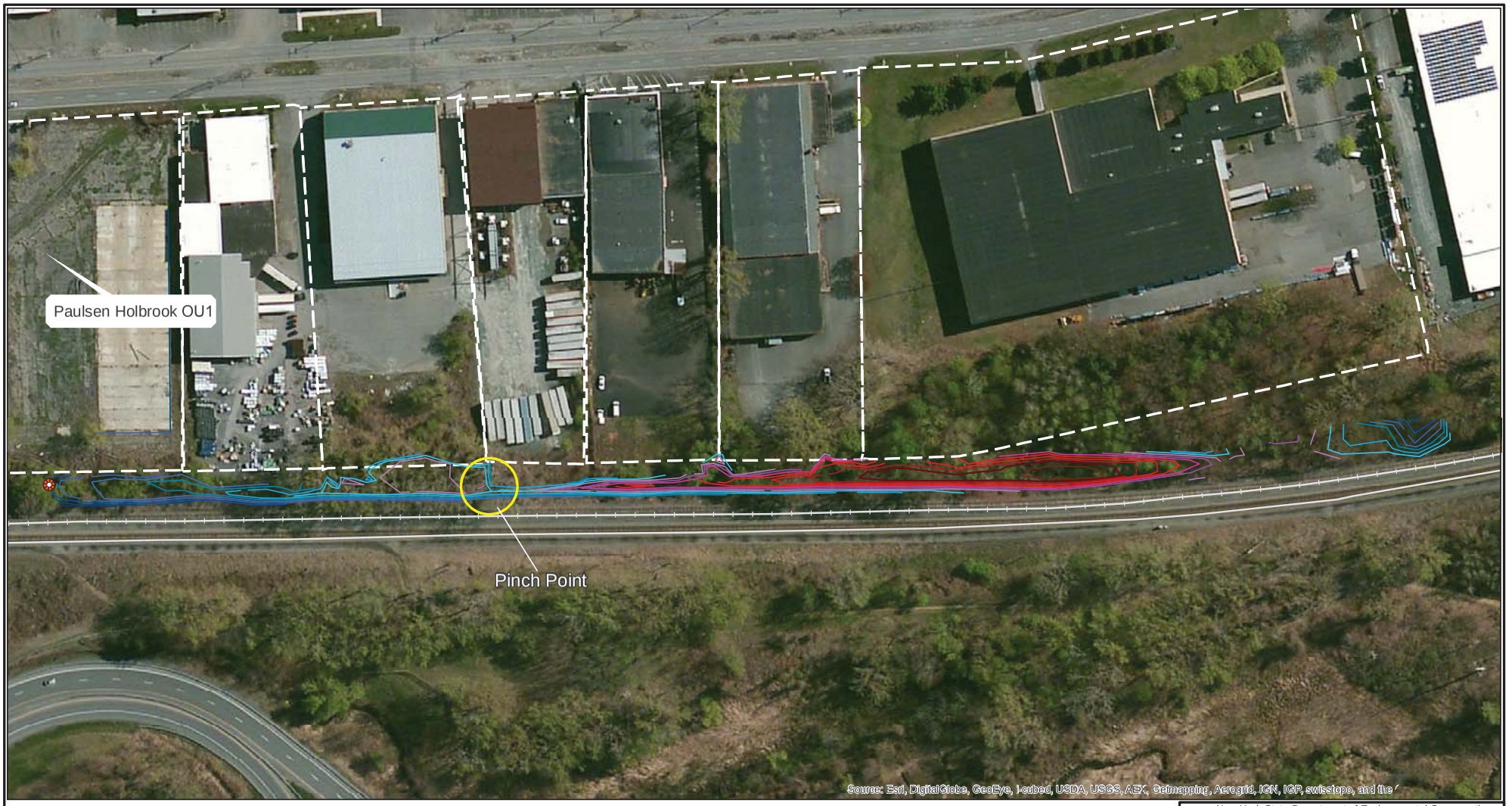


0 85 170 340 510 680 Feet

N

Legend

- Storm Drain Discharge
- Topographic Contours (Feet AMSL)

Blue contours represent higher elevations; red contours represent lower elevations.

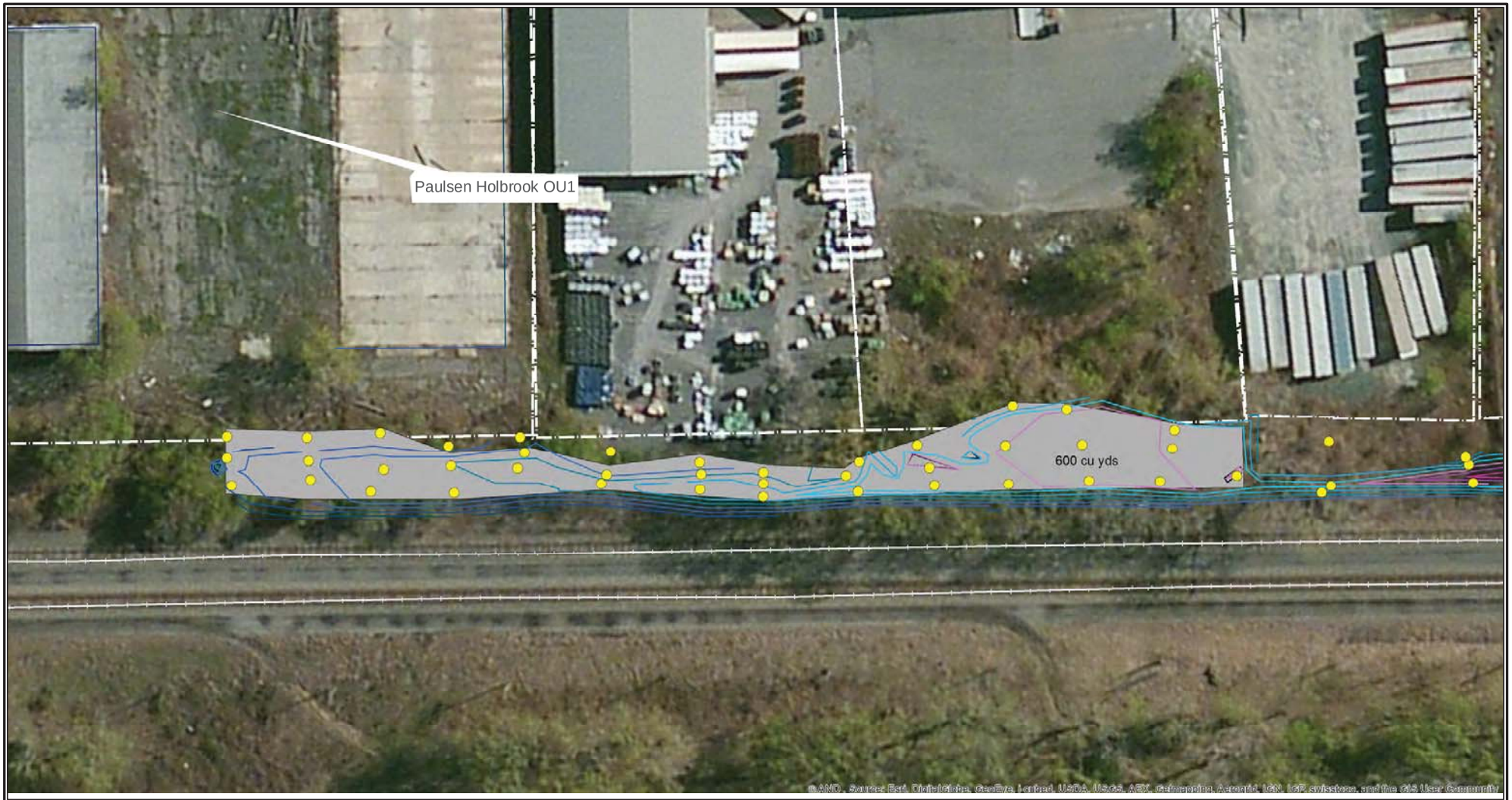
New York State Department of Environmental Conservation
Former Paulsen-Holbrook Site (#401046)
Town of Guilderland, Albany County, New York
FOCUSED FEASIBILITY STUDY

TOPOGRAPHIC SURVEY OF OPERABLE UNIT 2

ARCADIS

FIGURE 6

G:\GIS\MOD\0266376\RIFS_2012\Boring Locations.mxd



0 35 70 140 210 280 Feet

N

Legend

- Soil Boring
- Excavation to 1 Foot
- Topographic Contours (Feet AMSL)

Blue contours represent higher elevations; red contours represent lower elevations.

New York State Department of Environmental Conservation
Former Paulsen-Holbrook Site (#401046)
Town of Guilderland, Albany County, New York
FOCUSED FEASIBILITY STUDY

ALTERNATIVE 5 EXCAVATION LIMITS

ARCADIS

FIGURE
7

G:\GIS\MOD\0266376\RIFS_2012\FFS_Alt5.mxd

APPENDIX A

Responsiveness Summary

Responsiveness Summary

Former Paulsen-Holbrook Site
Operable Unit No. 02: Off-Site Drainage Swale
State Superfund Project
Town of Guilderland, Albany County, New York
Site No. 401046

The Proposed Remedial Action Plan (PRAP) for the Former Paulsen-Holbrook site was prepared by the New York State Department of Environmental Conservation (the Department) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on February 25, 2014. The PRAP outlined the remedial measure proposed for the contaminated soil at the Former Paulsen-Holbrook site.

The release of the PRAP was announced by sending a notice to the public contact list, informing the public of the opportunity to comment on the proposed remedy.

A public meeting was held on March 13, 2014, which included a presentation of the remedial investigation and feasibility study (RI/FS) for the Former Paulsen-Holbrook site as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 26, 2014.

No comments on the proposed remedy were received during the comment period.

APPENDIX B

Administrative Record

Administrative Record

Former Paulsen-Holbrook Site
Operable Unit No. 02: Off-Site Drainage Swale
State Superfund Project
Town of Guilderland, Albany County, New York
Site No. 401046

Proposed Remedial Action Plan for the Former Paulsen-Holbrook Site, Operable Unit No.02, dated February 2014, prepared by the Department.

1. Order on Consent dated March 13, 2007 between the Department of Environmental Conservation and past owners and operators of the site in the matter of the settlement for the reimbursement of administrative costs.

2. "Remedial Investigation Report - Former Paulsen-Holbrook Site", dated July 2009, prepared by Malcolm Pirnie, Inc.

3. "Feasibility Study - Former Paulsen-Holbrook Site", dated December 2009, prepared by Malcolm Pirnie, Inc.

4. "Remedial Investigation Report – Operable Unit 2 - Former Paulsen-Holbrook Site", dated October 2013, prepared by ARCADIS-US, Inc.

5. "Focused Feasibility Study – Operable Unit 2 - Former Paulsen-Holbrook Site", dated February 2014, prepared by ARCADIS-US, Inc.