

RECORD OF DECISION

Former Rome Cable Site, Bld. Complex #1
Operable Unit Number 01: Building Complex 1
Environmental Restoration Project
Rome, Oneida County
Site No. E633053
March 2015



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

DECLARATION STATEMENT - RECORD OF DECISION

Former Rome Cable Site, Bld. Complex #1
Operable Unit Number: 01
Environmental Restoration Project
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Statement of Purpose and Basis

This document presents the remedy for Operable Unit Number: 01: Building Complex 1 of the Former Rome Cable Site, Bld. Complex #1 site, an environmental restoration 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.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (the Department) for Operable Unit Number: 01 of the Former Rome Cable Site, Bld. Complex #1 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. Remedial Design

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. Groundwater Treatment

Groundwater treatment will consist of an in-situ treatment technology to restore groundwater to pre-release conditions (to the extent practicable), remove the source of groundwater contamination, and reduce contact with, ingestion, or inhalation of volatiles from contaminated groundwater. Both chemical oxidation/reduction and enhanced bioremediation are being considered as potential treatment technologies. A pilot test will be conducted to determine which technology is most efficient and will be selected for full implementation.

In-Situ Chemical Oxidation/Reduction (ISCO/ISCR):

ISCO/ISCR are a technologies in which a chemical solution is injected into the subsurface to destroy the contaminants in groundwater. Injections will be targeted at areas down gradient from the Former Rome Cable Complex #1 Building. The method and depth of injection will be determined during the remedial design. The byproducts of the ISCO/ISCR process are less toxic than the existing contamination, provided that all chlorinated species are fully oxidized/reduced.

Enhanced Bioremediation:

Enhanced bioremediation is a technology that uses biological processes to breakdown and destroy contaminants. A substrate solution will be injected downgradient Former Rome Cable Complex #1 Building to enhance the anaerobic reductive dechlorination and promote microbial growth. The method and depth of injection will be determined during the remedial design. Buffering amendments will be injected as needed to maintain appropriate pH levels.

3. Soil Excavation

The top 1 foot of surface soils from the area surrounding SS-06/SS-07 and SS-09, exceeding commercial SCOs, as defined by 6 NYCRR Part 375-6.8, will be excavated and transported off-site for disposal. Approximately 400 cubic yards of soil will be removed. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site and restored to pre-remedial conditions

4. Site Cover

A site cover will be required to allow for commercial use of the site. The cover will consist either of the existing or future, structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). 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 the identified site use as set forth in 6 NYCRR Part 375-6.7(d). The site cover will prevent ingestion or direct contact with contaminated soil.

5. Petroleum Source Area Management

Petroleum contaminated soils will be left in place at this time due to their inaccessibility beneath the Building Complex and Ridge Street. This area will be placed under the institutional controls and site management plan as discussed in Paragraph 7 and 8, respectively. These controls will require the remediation of the petroleum source area if and when Ridge Street is excavated or Building Complex 1 is demolished. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) for unrestricted use off-site and commercial use on-site will be brought in to replace the excavated soil and establish the designed grades at the site. Any excavations in this area will have to comply with the site management plan, and will require notification to and oversight by the Department. The removal of the contaminated soils will prevent direct contact with contaminated soil and the migration of contaminants into groundwater.

6. Vapor Mitigation

A sub-slab depressurization system, or a similar engineered system built to prevent the migration of vapors into the building from groundwater, will be required for the off-site residential property. Construction of the system will require the property owner's consent.

7. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property and an environmental notice for off-site areas that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3);
- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and

- requires compliance with the Department approved Site Management Plan.

8. Site Management Plan

A Site Management Plan is required, which includes the following:

- a. an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 7, above.

Engineering Controls: The site cover (Paragraph 4) and the sub-slab depressurization systems located off-site properties and future on-site buildings (Paragraph 6).

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement and environmental notice, including any land use, and groundwater restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for existing buildings, any buildings developed on the site, or affected off-site areas, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- a provision for the continued operation and maintenance of any soil vapor mitigation systems installed either on-site or off-site;
- a provision for removal or treatment of the petroleum source area located under Building Complex 1 if and when the building is demolished;
- a provision for removal or treatment of the petroleum source area located under Ridge Street if and when the road is removed or replaced;
- a provision for further investigation and remediation should redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible. The nature and extent of contamination in areas where access was previously limited or unavailable will be thoroughly investigated.
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and

- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater and soil vapor to assess the performance and effectiveness of the remedy;

- a schedule of monitoring and frequency of submittals to the Department; and

- monitoring for soil vapor intrusion for any existing buildings, buildings developed on the site, or affected off-site areas, as may be required by the Institutional and Engineering Controls discussed above.

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 30, 2015

Date



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

RECORD OF DECISION

Former Rome Cable Site, Bld. Complex #1
Rome, Oneida County
Site No. E633053
March 2015

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 contaminants 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 contaminants at this site, as more fully described in this document, has contaminated various environmental media. Contaminants include hazardous waste and/or petroleum. 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 1996 Clean Water/ Clean Air Bond Act provides funding to municipalities for the investigation and cleanup of brownfields. Brownfields are abandoned, idled, or under-used properties where redevelopment is complicated by real or perceived environmental contamination. They typically are former industrial or commercial properties where operations may have resulted in environmental contamination. Brownfields often pose not only environmental, but legal and financial burdens on communities. Under the Environmental Restoration Program, the state provides grants to municipalities to reimburse up to 90 percent of eligible costs for site investigation and remediation activities. Once remediated, the property can then be reused.

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:

Jervis Public Library
613 North Washington Street
Rome, NY 13441

Phone: (315) 336-4570

A public meeting was also conducted. At the meeting, the findings of the remedial investigation (RI) and the alternatives analyses (AA) 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 the Former Rome Cable Corporation, Building Complex No. 1 (Operable Unit No. 1) and Complex 3 (Operable Unit No. 2), which is approximately 10.2 acres in size and is located in the City of Rome, Oneida County. The site is bounded on the north by New York Central Railroad property, on the east by South Madison Street, on the south by Ridge Street and on the west by Rome Strip Steel.

Site Features: The predominant site feature includes several large industrial buildings. The entire site was covered with buildings except for a thin strip of vegetated or paved land around the perimeter of the site. In 2010, Building Complex 3 was razed with the exception of the western tower and the area was covered with clean crushed concrete and sand. The City of Rome Police Department currently uses the tower for the local police radio system antennas. The buildings comprising Building Complex 1 remain on-site and are currently occupied by Owl Wire and Cable LLC.

Current Zoning and Land Use: The entire site is currently zoned industrial and is in an Empire Development Zone. Building Complex 1 is currently occupied by the Owl Wire and Cable LLC, which manufactures and spins copper wire for various industrial uses.

Past Use of the Site: The Rome Cable facility has been used for the manufacturing and spinning of wire in the City of Rome since the 1920's. Prior uses that have led to site contamination include the use of chlorinated solvents used to clean machines and wire, petroleum used to heat the on-site furnaces and as lubricants, and asbestos containing material used as pipe insulation. Several small petroleum spills have been documented. No previous environmental investigations were

conducted prior to the Environmental Restoration Program remedial investigation.

Operable Units: The site is divided into two operable units. Operable Unit 1 (OU1) is comprised of Building Complex 1 and consists of nine buildings where the various cable making operations took place. Operable Unit 2 (OU2) is comprised of Building Complex 3 and consisted of six buildings. These buildings were demolished in 2010 following the completion of interim remedial measures to remove wastes and contaminated building materials. The area is now open space with the exception of the tower located on the western end of the site. A no further action Record of Decision was issued for OU2 in March 2011.

Site Geology and Hydrogeology: The geology at the site consists of fill, which consists of clay and silt with cinders to depths of three to seven feet below ground surface. The fill is underlain by medium sand and gravel with silt to depths of 14-16 feet below ground surface. This layer is underlain by fine sand to depths ranging from 28-35 feet below ground surface. Soft clay with inner bedded fine sand underlies the fine sand unit to depths ranging from 52-59 feet. This layer is underlain by hard sand, gravel, clay and silt to depths of 67-78 feet below grade at which point the Utica Shale bedrock is reached. The silt and clay material exhibit low hydraulic conductivity. Groundwater flow is from northeast to southwest. The depth of groundwater ranges from six to nine feet below the surface.

Operable Unit (OU) Number 01 is the subject of this document.

A Record of Decision was issued previously for OU 02.

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 (or an alternative) that restrict(s) the use of the site to commercial use (which allows for industrial use) as described in Part 375-1.8(g) were/was 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.

No PRPs have been documented to date.

Since no viable PRPs have been identified, there are currently no ongoing enforcement actions.

However, legal action may be initiated at a future date by the state to recover state response costs should PRPs be identified. Oneida County Industrial Development Agency will assist the state in its efforts by providing all information to the state which identifies PRPs. Oneida County Industrial Development Agency will also not enter into any agreement regarding response costs without the approval of the Department.

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:

- groundwater
- soil
- soil vapor
- indoor air
- sub-slab vapor

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 contaminant 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 contaminant(s) of concern identified for this Operable Unit at this site is/are:

1,1-DICHLOROETHENE	LEAD
TETRACHLOROETHYLENE (PCE)	MERCURY
TRICHLOROETHENE (TCE)	BENZENE
VINYL CHLORIDE	CHROMIUM
BENZO(A)PYRENE	COBALT
BENZO(B)FLUORANTHENE	NICKEL
DIBENZ[A,H]ANTHRACENE	CIS-1,2-DICHLOROETHENE
INDENO(1,2,3-CD)PYRENE	CHLOROETHANE
CHRYSENE	CHLOROFORM
BENZO[K]FLUORANTHENE	TRANS-1,2-DICHLOROETHENE
ARSENIC	BERYLLIUM
BARIUM	BENZO(A)ANTHRACENE
COPPER	

As illustrated in Exhibit A, the contaminant(s) of concern exceed the applicable SCGs for:

- groundwater
- soil
- soil vapor intrusion

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.

The following IRM(s) has/have been completed at this site based on conditions observed during the RI.

Waste Removal, Floor Cleaning, and Tank Cleanouts IRM

IRMs were conducted to remove wastes left behind by Rome Cable, clean flooring stained with oils, and remove liquids from process tanks and sumps. Wastes removed include drums, pails, asbestos containing materials, and general debris. Concrete and wooden block flooring in Buildings 1, 2, and 16 that were stained with oils were removed and disposed of. Stained areas were analyzed for PCBs to ensure of proper disposal. Approximately 250 gallons of oily

wastewater and sludge were removed from the former cleaning pit and oil/water separator located in Building 1. Approximately 450 gallons of oil and sludge were removed from the two lubricant dip tanks located in the basement of Building 16. Both the oil/water separator and the dip tanks were left in place for use by Owl Wire. All removed material has been disposed at permitted off-site facilities. These IRMs were completed between March 2006 and December 2008.

Sub Slab Depressurization System IRM

During the remedial investigation (RI), a groundwater plume contaminated with chlorinated organics was identified as having migrated south from Building Complex 1 toward the former Rome Cable Administrative Office building located off-site at 421 Ridge Street. A soil vapor intrusion evaluation was completed in the 421 Ridge Street building. Results indicated that indoor air samples did not exceed indoor air guideline concentrations for chlorinated organics. However, sub-slab soil vapor concentrations were elevated compared to guideline concentrations. A sub-slab depressurization system was installed in the winter of 2013 to mitigate any potential soil vapor intrusion. A sub-slab pressure test conducted after system start up confirmed that the system was operating effectively.

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 01.

Soil:

Surface soil is located around the perimeter of the site, and were analyzed for semi-volatile organic compounds (SVOCs), polychlorinated biphenyls (PCBs), and metals. The results show that surface soil has been impacted by SVOCs and metals. Contamination may extend off-site as the impacted soil is located on the perimeter of the site. The SVOCs that exceeded commercial soil cleanup objectives (SCOs) are benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, chrysene, Dibenzo(a,h)anthracene, and indeno(1,2,3-c,d)pyrene. The metals arsenic, barium, lead, and mercury also exceeded protection of groundwater SCOs in surface soil. The metal copper exceeds commercial SCOs.

Subsurface soil was analyzed for volatile organic compounds (VOCs), SVOCs, PCBs, and metals. The results of the investigation show that subsurface soil is impacted primarily by copper at levels that exceed commercial SCOs. VOC contamination is present in the vicinity of MW-07/B-07, associated with a chlorinated organic groundwater plume that extends off-site. The VOCs acetone, cis-1,2-dichloroethene, trichloroethene, and tetrachloroethene exceed the protection of groundwater SCOs. The VOC impacts are present both on-site and off-site.

During delineation of the chlorinated organic groundwater plume, soil impacted by petroleum contamination was discovered in the vicinity of MW-08 and MW-15 that was attributed to a historic on-site fuel tank. Additional soil borings, a test pit, and geophysical survey were completed to assess the extent of the petroleum contamination. Neither a tank nor source material were identified by the investigation. Soil in this area was analyzed for VOCs and SVOCs. Petroleum impacted soil was observed beneath the on-site Building Complex 1 and off-site under Ridge Street, starting at six feet below ground surface. Contamination at select locations exceeds the protection of groundwater SCO, and visual and olfactory observations confirm the presence of petroleum impacts. However, petroleum related organics were not detected in groundwater monitoring wells.

Groundwater:

On-site monitoring wells were analyzed for VOCs, SVOCs, PCBs, and metals. Off-site monitoring wells were only analyzed for VOCs to delineate the extent of the chlorinated organic plume. Off-site groundwater was not analyzed for metal contamination. On-site groundwater has been impacted by metals and VOC contamination above water quality standards. Off-site groundwater is impacted by site-related (chlorinated) VOCs that exceed groundwater standards. Acetone, benzene, and toluene concentrations were above detection limits in off-site groundwater, but were not widely observed. The VOCs of concern are tetrachloroethene (PCE), trichloroethene (TCE), 1,2-cis-dichloroethene (cis-DCE), and vinyl chloride (VC).

Water samples were also collected from indoor sumps from Building Complex 1 as a supplement to on-site groundwater data. In general, sump water was very turbid and may not be indicative of groundwater conditions. Samples collected from the sumps were analyzed for VOCs, SVOCs, PCBs, and metals. These results indicate contamination by VOCs, SVOCs, and inorganics (metals) exceeding groundwater quality standards. Polychlorinated biphenyls (PCBs) in one sump also exceeded groundwater quality standards. The sump pumps capture local groundwater to prevent groundwater intrusion into the building basement.

Soil Vapor Intrusion:

The presence of chlorinated organic groundwater contamination presents a risk for soil vapor intrusion (SVI). The off-site office building located at 421 Ridge Street had a sub-slab depressurization system (SSDS) installed to address SVI concerns as an IRM. SVI was also assessed at five off-site residential properties located adjacent to the plume. The results of this sampling, along with the environmental sampling above, indicated monitoring was warranted at one property and no further action at four properties. All SVI samples were analyzed for VOCs according to USEPA Method TO-15. On-site SVI has not been conducted in Building Complex 1 to date.

Based on the remedial investigation (RI) conducted, the primary contaminants of concern in the soils and groundwater are VOCs, SVOCs, and metals. The RI for OU1 indicates that surface soils have been impacted by SVOCs and metals, and subsurface soils have been impacted by copper. A chlorinated organics groundwater plume exists at OU1 and extends off-site into a commercial and residential area. The potential for vapor intrusion from the plume was documented in an off-site commercial building and residential property. On-site groundwater is also impacted by metals

contamination. Due to the extensive development across the site no other ecological resources have been impacted other than groundwater.

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*.

Access to the site is unrestricted. However, contact with contaminated soil or groundwater is unlikely unless people dig below the ground surface. People are not drinking the contaminated groundwater because the area is served by a public water supply that is not affected by this contamination. Volatile organic compounds in the groundwater may move into the soil vapor (air spaces within the soil), which in turn may move into overlying buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. The potential exists for people to inhale site contaminants in indoor air due to soil vapor intrusion in any on-site buildings that are occupied. A sub-slab depressurization system was installed in an adjacent off-site office building to prevent vapors beneath the slab from entering the building. Monitoring is recommended in one additional off-site building that is a residence.

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:

Groundwater

RAOs for Public Health Protection

- Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards.
- Prevent contact with, or inhalation of volatiles, from contaminated groundwater.

RAOs for Environmental Protection

- Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of ground or surface water contamination.

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.

Soil Vapor

RAOs for Public Health Protection

- Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site.

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 alternatives analysis (AA) 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 In-Situ Groundwater Treatment, Excavation/Disposal, and a SSDS with ICs/SMP remedy.

The estimated present worth cost to implement the remedy is \$4,300,000. The cost to construct the remedy is estimated to be \$2,440,000 and the estimated average annual cost is \$55,000.

The elements of the selected remedy are as follows:

1. Remedial Design

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;

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Enhanced Bioremediation:

Enhanced bioremediation is a technology that uses biological processes to breakdown and destroy contaminants. A substrate solution will be injected downgradient Former Rome Cable Complex #1 Building to enhance the anaerobic reductive dechlorination and promote microbial growth. The method and depth of injection will be determined during the remedial design. Buffering amendments will be injected as needed to maintain appropriate pH levels.

3. Soil Excavation

The top 1 foot of surface soils from the area surrounding SS-06/SS-07 and SS-09, exceeding commercial SCOs, as defined by 6 NYCRR Part 375-6.8, will be excavated and transported off-site for disposal. Approximately 400 cubic yards of soil will be removed. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site and restored to pre-remedial conditions

4. Site Cover

A site cover will be required to allow for commercial use of the site. The cover will consist either of the existing or future, structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). 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 the identified site use as set forth in 6 NYCRR Part 375-6.7(d). The site cover will prevent ingestion or direct contact with contaminated soil.

5. Petroleum Source Area Management

Petroleum contaminated soils will be left in place at this time due to their inaccessibility beneath the Building Complex and Ridge Street. This area will be placed under the institutional controls and site management plan as discussed in Paragraph 7 and 8, respectively. These controls will require the remediation of the petroleum source area if and when Ridge Street is excavated or Building Complex 1 is demolished. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) for unrestricted use off-site and commercial use on-site will be brought in to replace the excavated soil and establish the designed grades at the site. Any excavations in this area will have to comply with the site management plan, and will require notification to and oversight by the Department. The removal of the contaminated soils will prevent direct contact with contaminated soil and the migration of contaminants into groundwater.

6. Vapor Mitigation

A sub-slab depressurization system, or a similar engineered system built to prevent the migration of vapors into the building from groundwater, will be required for the off-site residential property. Construction of the system will require the property owner's consent.

7. Institutional Control

Imposition of an institutional control in the form of an environmental easement for the controlled property and an environmental notice for off-site areas that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);

- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- requires compliance with the Department approved Site Management Plan.

8. Site Management Plan

A Site Management Plan is required, which includes the following:

- an Institutional and Engineering Control Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:

Institutional Controls: The Environmental Easement discussed in Paragraph 7, above.

Engineering Controls: The site cover (Paragraph 4) and the sub-slab depressurization systems located off-site properties and future on-site buildings (Paragraph 6).

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the environmental easement and environmental notice, including any land use, and groundwater restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for existing buildings, any buildings developed on the site, or affected off-site areas, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- a provision for the continued operation and maintenance of any soil vapor mitigation systems installed either on-site or off-site;
- a provision for removal or treatment of the petroleum source area located under Building Complex 1 if and when the building is demolished;
- a provision for removal or treatment of the petroleum source area located under Ridge Street if and when the road is removed or replaced;
- a provision for further investigation and remediation should redevelopment occur, if any of the existing structures are demolished, or if the subsurface is otherwise made accessible. The

nature and extent of contamination in areas where access was previously limited or unavailable will be thoroughly investigated.

- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:

- monitoring of groundwater and soil vapor to assess the performance and effectiveness of the remedy;
- a schedule of monitoring and frequency of submittals to the Department; and
- monitoring for soil vapor intrusion for any existing buildings, buildings developed on the site, or affected off-site areas, as may be required by the Institutional and Engineering Controls discussed above.

Exhibit A

Nature and Extent of Contamination

This section describes the findings of the Remedial Investigation 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 compares the data with the applicable SCGs for the site. The contaminants are arranged into three categories: volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), and inorganics (metals and cyanide). For comparison purposes, the SCGs are provided for each medium that allows for unrestricted use. For soil, if applicable, the Restricted Use SCGs identified in Section 4 and Section 6.1.1 are also presented.

On-site Groundwater

Groundwater samples were collected from shallow and deep locations in the overburden aquifer. The samples were collected to assess groundwater conditions on-site. The results indicate that contamination in groundwater at the site exceeds the SCGs for VOCs and metals. The on-site sampling also indicated off-site migration of a chlorinated organics plume to the southwest of the site (see 'Off-Site Groundwater'). On-site groundwater results (including the frequency exceeding SCGs) are summarized in Table 1. Monitoring well locations are shown on Figure 2.

Table 1 – On-site Groundwater			
Detected Constituents	Concentration Range Detected (ppb) ^a	SCG ^b (ppb)	Frequency Exceeding SCG
VOCs			
1,1-Dichloroethylene	ND to 5.7	5	1 out of 8
Benzene	ND to 4.1	1	2 out of 8
Chloroethane	ND to 100	5	2 out of 8
Chloroform	ND to 31	7	1 out of 8
Cis-1,2-Dichloroethylene	ND to 2200 E	5	1 out of 8
1,2-Dichloroethene	ND to 280 E	5	1 out of 8
Tetrachloroethene	ND to 120	5	1 out of 8
Trichloroethene	ND to 410	5	1 out of 8
Vinyl Chloride	ND to 280	5	1 out of 8

Table 1 – On-site Groundwater			
Detected Constituents	Concentration Range Detected (ppb) ^a	SCG ^b (ppb)	Frequency Exceeding SCG
Metals			
Aluminum	314 to 75,800	100	8 out of 8
Arsenic	ND to 97.7	25	1 out of 8
Beryllium	ND to 3.4	3	1 out of 8
Chromium	ND to 123	50	3 out of 8
Cobalt	ND to 53.7	5	6 out of 8
Copper	ND to 101,000	200	3 out of 8
Iron	340 to 145,000	300	8 out of 8
Lead	ND to 834	25	6 out of 8
Magnesium	15,100 to 48,600	35,000	1 out of 8
Manganese	199 to 3,260	300	7 out of 8
Nickel	ND to 144	100	1 out of 8
Sodium	36,800 to 259,000	20,000	8 out of 8
Vanadium	ND to 159	14	6 out of 8

a - ppb: parts per billion, which is equivalent to micrograms per liter, µg/L, in water.

b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

ND: Indicates compound not detected above the sample detection limit.

Samples were collected from Building Complex 1 sumps to supplement on-site groundwater data. These samples were collected without field filtering. The results indicate that contamination in groundwater at the site exceeds the SCGs for VOCs, SVOCs, and metals. Sump #5 exceeded the SCG for polychlorinated biphenyls (PCBs) (Figure 3). The results of the sump samples are summarized in Table 2. The sump waters had a wide range of turbidity readings, ranging from 1 to >1000 NTU. PCBs, SVOCs, and metals tend to adhere to solids and the detection of these substances in a turbid water sample may not be representative of actual groundwater dissolved phase concentrations. Sump data are included for informational purposes only, and were not used in the remedial decision process.

Table 2 - Building 16 Sumps			
Detected Constituents	Concentration Range Detected (ppb) ^a	SCG ^b (ppb)	Frequency Exceeding SCG
PCBs			
Total PCBs	ND to 5.9	0.09	1 out of 8
VOCs			
Benzene	ND to 5.3	1	2 out of 8
Cis-1,2-dichloroethene	ND to 35	5	3 out of 8
Vinyl Chloride	ND to 36	2	2 out of 8
SVOCs			
Acenaphthene	ND to 40 J	20	2 out of 8
Benzo(a)anthracene	ND to 130	0.002	2 out of 8
Benzo(a)pyrene	ND to 140	0.002	2 out of 8
Benzo(b)fluoranthene	ND to 180	0.002	2 out of 8
Bis(2-ethylhexyl) phthalate	ND to 250	5	1 out of 8
Chrysene	ND to 130	0.002	2 out of 8
Fluoranthene	ND to 420	50	2 out of 8
Phenanthrene	ND to 350	50	1 out of 8
Pyrene	ND to 310	50	2 out of 8
Inorganics			
Aluminum	ND to 14,500	100	3 out of 8
Antimony	ND to 25.9	3	1 out of 8
Arsenic	ND to 190	25	2 out of 8
Barium	83.5 to 1510	1000	2 out of 8
Beryllium	ND to 3.1	3	1 out of 8
Cadmium	ND to 20.9	5	1 out of 8
Cobalt	ND to 110	5	2 out of 8
Copper	18.5 to 43,600	200	3 out of 8
Iron	155 to 179,000	300	6 out of 8
Lead	ND to 2060	25	2 out of 8
Manganese	972 to 337,000	300	8 out of 8
Nickel	ND to 114	100	1 out of 8
Selenium	ND to 89.6	10	1 out of 8

Table 2 - Building 16 Sumps			
Detected Constituents	Concentration Range Detected (ppb) ^a	SCG ^b (ppb)	Frequency Exceeding SCG
Sodium	115,000 to 267,000	20,000	8 out of 8
Vanadium	ND to 194	14	2 out of 8
Zinc	ND to 13,200	14	1 out of 8

a - ppb: parts per billion, which is equivalent to micrograms per liter, µg/L, in water.

b- SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

Off-site Groundwater

Off-site groundwater samples were collected from nested monitoring wells to delineate the extent of off-site organic contamination. The well nests consisted of three wells screened just below the water table (shallow), in the middle of the aquifer (intermediate), and above the clay confining layer (deep). The results indicate that contamination in groundwater off-site exceeds the SCGs for volatile organic compounds. In wells where chlorinated organics were detected, impacts were typically observed in all of the screened intervals (shallow, intermediate, and deep locations). Contaminant levels tend to be highest in the shallow to intermediate depths. The approximate horizontal extent of the plume is shown in Figures 5 through 7. Off-site groundwater was only analyzed for contaminants related to the chlorinated organics plume. Metals were not analyzed for during this phase of the investigation because on-site metals are associated with historic fill, solid phase material, and widespread historic metal working operations. Off-site groundwater results (including the frequency exceeding SCGs) are summarized in Table 3.

Table 3 – Off-site Groundwater			
Detected Constituents	Concentration Range Detected (ppb) ^a	SCG ^b (ppb)	Frequency Exceeding SCG
VOCs			
1,1-Dichloroethene	ND to 6.7	5	6 out of 83
Cis-1,2-Dichloroethene	ND to 2,200 EJ	5	40 out of 83
Trans-1,2-Dichloroethene	ND to 280 EJ	5	17 out of 83
Tetrachloroethene	ND to 280 DJ	5	20 out of 83
Trichloroethene	ND to 1800 D	5	25 out of 83
Vinyl Chloride	ND to 280 EJ	2	29 out of 83

a - ppb: parts per billion, which is equivalent to micrograms per liter, ug/L, in water.

b - SCG: Standard Criteria or Guidance - Ambient Water Quality Standards and Guidance Values (TOGs 1.1.1), 6 NYCRR Part 703, Surface water and Groundwater Quality Standards, and Part 5 of the New York State Sanitary Code (10 NYCRR Part 5).

EJ: Indicates compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.

DJ: Indicates compounds identified in an analysis at the secondary dilution factor.

Based on the findings of the RI, the past disposal of hazardous waste has resulted in the contamination of groundwater. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of groundwater to be addressed by the remedy selection process are: tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cis-DCE), and vinyl chloride (VC).

Soil

Surface and subsurface soil samples were collected at the site during the RI. Surface soil samples were collected from a depth of 0-2 inches to assess direct human exposure. Subsurface soil samples were collected at varying depths. The results indicate that contamination in surface soil exceeds the unrestricted SCOs for SVOCs and metals. Contamination in surface soils also exceeds commercial SCOs for SVOCs and the lower of the protection of groundwater or commercial SCOs for metals. Contamination in subsurface soils exceeds unrestricted SCOs for VOCs and metals. Contamination in subsurface soils exceeds the protection of groundwater SCOs for VOCs and commercial SCOs for copper. The results of surface and subsurface soil samples (including the frequency exceeding SCGs) are summarized in Table 4 and 5, respectively.

Table 4 - Surface Soils					
Detected Constituents	Concentration Range Detected (ppm) ^a	Unrestricted SCO ^b (ppm)	Frequency Exceeding Unrestricted SCO	Restricted SCO ^c (ppm)	Frequency Exceeding Restricted SCO
SVOCs					
Acenaphthene	ND to 38 J	1	1 out of 6	500	0 out of 6
Benzo(a)anthracene	.48 J to 100 J	1	3 out of 6	5.6	3 out of 6
Benzo(a)pyrene	ND to 74 J	1	3 out of 6	1	3 out of 6
Benzo(b)fluoranthene	ND to 92 J	1	4 out of 6	5.6	3 out of 6
Benzo(k)fluoranthene	ND to 37 J	0.8	3 out of 6	56	0 out of 6
Chrysene	ND to 84 J	1	3 out of 6	56	1 out of 6
Dibenzo(a,h)anthracene	ND to 12 J	0.33	3 out of 6	0.56	2 out of 6
Fluoranthene	ND to 230	100	1 out of 6	500	0 out of 6
Fluroene	ND to 440 J	30	1 out of 6	500	0 out of 6

Table 4 - Surface Soils					
Detected Constituents	Concentration Range Detected (ppm) ^a	Unrestricted SCO ^b (ppm)	Frequency Exceeding Unrestricted SCO	Restricted SCO ^c (ppm)	Frequency Exceeding Restricted SCO
Indeno(1,2,3-cd) pyrene	ND to 31 J	0.5	3 out of 6	5.6	1 out of 6
Naphthalene	ND to 58 J	12	1 out of 6	500	0 out of 6
Phenanthrene	ND to 240 J	100	1 out of 6	500	0 out of 6
Pyrene	ND to 160 J	100	1 out of 6	500	0 out of 6
Metals					
Arsenic	ND to 22.6 J	13	1 out of 6	16	1 out of 6
Barium	19 J to 1040 J	350	1 out of 6	400	1 out of 6
Cadmium	ND to 1190 N	2.5	2 out of 6	7.5	0 out of 6
Chromium (tri)	5.5 to 66.7	30	2 out of 6	1500	0 out of 6
Copper	58.4 to 3280	50	6 out of 6	270	4 out of 6
Lead	24.4 to 10,500	63	5 out of 6	450	2 out of 6
Mercury	ND to 6.7 J	0.18	4 out of 6	0.73	2 out of 6
Nickel	5.8 to 209	30	2 out of 6	130	1 out of 6
Silver	ND to 10.4	2	1 out of 6	8	1 out of 6
Zinc	53.8 E to 5190	109	4 out of 6	2,480	1 out of 6

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 SVOCs are the Protection of Public Health for Commercial Use, unless otherwise noted. Restricted Use Soil Cleanup Objectives for metals are the lower of the Protection of Public Health for Commercial Use or Protection of Ground Water, unless otherwise noted.

Table 5 - Subsurface Soils					
Detected Constituents	Concentration Range Detected (ppm) ^a	Unrestricted SCO ^b (ppm)	Frequency Exceeding Unrestricted SCO	Restricted SCO ^c (ppm)	Frequency Exceeding Restricted SCO
VOCs					
Acetone	ND to .270	0.05	2 out of 8	0.05	2 out of 8
Cis-1,2-Dichloroethene	ND to .73 EJ	0.25	3 out of 17	0.25	3 out of 17
Tetrachloroethene	ND to 1.7 EJ	1.3	2 out of 17	1.3	2 out of 17
Trichloroethene	ND to .72 EJ	0.47	3 out of 17	0.7	1 out of 17
Metals					
Copper	ND to 2250	50	2 out of 8	270	2 out of 8

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 VOCs are the Protection of Public Health for Commercial Use, unless otherwise noted. Restricted Use Soil Cleanup Objectives for metals are the lower of the Protection of Public Health for Commercial Use or Protection of Ground Water, unless otherwise noted.

During the off-site groundwater investigation, an area of petroleum impacted soil was discovered in the vicinity of MW-8 and MW-15 that was attributed to a historic on-site fuel tank. Additional borings were completed to delineate the extent of petroleum impacts. Petroleum impacted soils were observed to extend from on-site to off-site areas under Ridge Street. While there were visual and olfactory signs of contamination, none of the borings sampled exceed commercial SCOs for petroleum-related VOCs and SVOCs. A majority of the impacted soil is beneath either Building Complex 1 or Ridge Street (Figure 10), beginning at six feet below grade. The results of petroleum impacted soil samples (including the frequency exceeding SCGs) are summarized in Table 6. Petroleum related organics were not detected in groundwater monitoring wells.

Table 6 - Petroleum Source Soils					
Detected Constituents	Concentration Range Detected (ppm) ^a	Unrestricted SCO ^b (ppm)	Frequency Exceeding Unrestricted SCO	Restricted SCO ^c (ppm)	Frequency Exceeding Restricted SCO
VOCs					
Acetone	ND to .190	0.05	5 out of 19	0.05	5 out of 19
Methylene Chloride	.007 B to .07 B	0.05	2 out of 19	0.05	2 out of 19
Xylene (total)	ND to .30	0.26	1 out of 19	1.6	0 out of 19
SVOCs					
Benzo(a)anthracene	ND to 1.6 J	1	1 out of 19	5.6	0 out of 19
Benzo(b)fluoranthene	ND to 1.9 J	1	1 out of 19	5.6	0 out of 19
Chrysene	ND to 3.2 BJ	1	2 out of 19	56	0 out of 19

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 SVOCs are the Protection of Public Health for Commercial Use, unless otherwise noted. Restricted Use Soil Cleanup Objectives for VOCs are the lower of the Protection of Public Health for Commercial Use or Protection of Ground Water, unless otherwise noted.

The primary surface soil contaminants are polycyclic aromatic hydrocarbons (PAHs) associated with historic fill and copper associated with residues from the operation of the former wire extrusion operations. PAHs were detected at SS-06, SS-07, and SS-09 and copper was detected at SS-04, SS-06, and SS-07 (Figure 4). The surface soil contamination is primarily located along the perimeter of the site.

PAHs and copper were found above the Protection of Public Health SCO for a commercial use. The copper contamination is from historical copper wire extrusion operations. PAH contamination is likely attributed to historic fill material found in site surface soils.

Copper was the only contaminant that exceeded the Protection of Public Health SCO for a commercial property in subsurface soils. While there were visual and olfactory indicators of petroleum contamination in subsurface soils along Ridge Street, none of the samples exceeded the Protection of Public Health SCO for a commercial property. Additionally the petroleum contamination is located at depth under a roadway and an industrial building.

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, copper, PAHs, and petroleum.

Soil Vapor

The evaluation of the potential for soil vapor intrusion (SVI) resulting from the presence of site related soil or groundwater contamination was evaluated by the sampling of soil vapor, sub-slab soil vapor under structures, and indoor air inside structures. Due to the presence of buildings in the impacted area a full suite of samples were collected to evaluate whether soil vapor intrusion was occurring.

One off-site commercial building was evaluated for SVI. The results indicated that sub-slab levels of trichloroethene and cis-1,2-dichloroethene warranted mitigation. A sub-slab depressurization system (SSDS) was installed as an IRM to protect building occupants from exposure to soil vapors. Sampling locations are shown on Figure 8.

The SVI evaluation was expanded to include five residential properties overlying, or immediately adjacent to, the contaminated groundwater plume. The results of these evaluations indicate elevated levels of trichloroethene in both indoor air and sub-slab samples, and elevated levels of vinyl chloride in indoor air, at one of the off-site residential properties. The results of this sampling, along with the environmental sampling above, indicated monitoring was warranted at one property and no further action at four properties.

Based on the findings of the Remedial Investigation, the disposal of hazardous waste has resulted in the contamination of soil vapor. The site contaminants that are considered to be the primary contaminants of concern which will drive the remediation of soil vapor to be addressed by the remedy selection process are, tetrachloroethene (PCE), trichloroethene (TCE), 1,1-dichloroethene (DCE), cis-1,2-DCE, trans-1,2-DCE and vinyl chloride (VC).

Soil vapor contamination identified during the RI was partially addressed during the IRM described in Section 6.2. Monitoring of indoor air and sub slab vapor is recommended at one off-site residential property. The completion of a SVI evaluation is recommended in the existing Building Complex 1.

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 Further Action

The No Further Action Alternative recognizes the remediation of the site completed by the IRM(s) described in Section 6.2. This alternative leaves the site in its present condition and does not provide any additional protection of the environment.

Groundwater Alternatives:

Alternative GW-1: Monitored Natural Attenuation and Institutional Controls

Present Worth: \$660,000
Capital Cost: \$7,000
Annual Costs: (Years 1-30): \$40,000

The Monitored Natural Attenuation and Site Management Alternative recognizes that engineering and institutional controls are necessary to confirm the effectiveness of this remedy and to protect public health and the environment.

The monitored natural attenuation remedial alternative includes various natural, physical, chemical, or biological processes that, under favorable conditions, will act without human intervention to reduce the mass, mobility, volume, and/or concentration of dissolved phase chlorinated ethane contaminants in the groundwater.

These processes include biodegradation, dispersion, dilution, sorption and volatilization. In order to evaluate the attenuation process and potential exposures to vapors emanating from the contaminant plume, groundwater, indoor air, and sub-slab soil vapor samples would need to be collected and analyzed on a periodic basis for an indefinite period of time.

The time to design and implement this alternative would be less than six months. The OM&M program costs would be based on a 30 year monitoring period. The monitoring program would include the collection and analysis of groundwater from approximately 20 wells within and beyond the current boundaries of the defined plume.

Alternative GW-2: Groundwater Control System with Discharge to Sanitary Sewer

Present Worth: \$1,025,000
Capital Cost: \$237,000
Annual Costs: (Years 1-5): \$71,000
Annual Costs: (Years 6-30): \$40,000

Alternative GW-3: Groundwater Control System with On-site Treatment

Present Worth:	\$1,465,000
Capital Cost	\$417,000
Annual Costs: (Years 1-5):	\$130,000
Annual Costs: (Years 6-30):	\$40,000

Alternatives GW-2 and GW-3 include the collection of the contaminated groundwater plume in the suspected source area and from beneath the off-site commercial office building. It is assumed that this would be accomplished utilizing two (2) large diameter, fully penetrating recovery wells. Options for both treatment of effluent on-site prior to surface water discharge and direct groundwater effluent discharge to the City of Rome sanitary sewer system are evaluated in this section.

Pilot testing would be conducted to estimate the physical and chemical parameters necessary to design the groundwater recovery well and a pre-treatment system (if selected). The recovery wells diameter, sand filter pack and well material would be designed based on pilot test data. For the purpose of this estimate, 6-inch diameter, continuous slot stainless steel-screened wells yielding a total of 40 gallons per minute (gpm) (20 gpm each) are assumed. A submersible pump and controls would be installed in each well. If the local publicly owned treatment works (POTW) can accept the quantity and water quality without treatment, the effluent discharge would go directly into the sanitary sewer (Alternative GW-2). If not, a treatment system consisting of a suspended sediment filter, an air stripper unit, followed by one (1) or more high pressure carbon filter units are assumed prior to discharge to surface water via the local storm sewer system (Alternative GW-3).

Weekly site visits would be conducted to inspect the groundwater recovery and effluent systems and conduct minor repairs, filter changes, or other system maintenance activities. Monthly system effluent discharge compliance VOC sampling would be conducted. Quarterly system operation reports are also assumed. It is assumed that no vapor phase discharge treatment or monitoring would be required.

Monitored natural attenuation (as monitored attenuation) and one (1) of the soil vapor interception alternatives will be implemented in conjunction with physical groundwater removal. The time to design and implement the system would be less than six months. The site management program costs would be based on a 30 year monitoring period. The site would have restrictions on the use of groundwater and future development. The cost for this alternative assumes an initial capital costs for installing the system, followed by 30 years of monitoring.

Alternative GW-4: In-Situ Groundwater Treatment by Injections Based on Pilot Study

Present Worth:	\$3,988,000
Capital Cost:	\$2,400,000
Annual Costs: (Years 1-2):	\$540,000
Annual Costs: (Years 3-30):	\$40,000

Groundwater treatment will consist of an in-situ treatment technology to restore groundwater to pre-release conditions (to the extent practicable), remove the source of groundwater contamination, and reduce contact with, or inhalation of volatiles, from contaminated groundwater. Both chemical oxidation/reduction and enhanced bioremediation are being considered as potential treatment technologies. A pilot test will be conducted to determine which technology is most efficient and will be selected for full implementation.

In-Situ Chemical Oxidation/Reduction (ISCO/ISCR)

ISCO/ISCR are technologies in which a chemical solution is injected into the subsurface to destroy the contaminants in groundwater. Injections will be targeted at areas down gradient from the Former Rome Cable Complex #1 Building. The method and depth of injection will be determined during the remedial design. The byproducts of the ISCO/ISCR process are less toxic than the existing contamination, provided that all chlorinated species are fully oxidized/reduced. Hydrochloric acid (HCl) production may result in secondary water quality concerns.

Prior to the full implementation of this technology on-site pilot scale studies will be conducted to more clearly define design parameters. During the pilot test it is estimated that 1-3 shallow, medium, and deep injection points will be installed. It is estimated that the chemical agent will be injected during approximately 1-5 separate events over several months.

Enhanced Bioremediation

Enhanced bioremediation is a technology that uses biological processes to breakdown and destroy contaminants. A substrate solution will be injected downgradient Former Rome Cable Complex #1 Building to enhance the anaerobic reductive dechlorination and promote microbial growth. The method and depth of injection will be determined during the remedial design. Buffering amendments will be injected as needed to maintain appropriate pH levels.

Prior to the full implementation of this technology, laboratory and on-site pilot scale studies will be conducted to more clearly define design parameters. During the pilot test it is estimated that 1-3 shallow, medium, and deep injection points will be installed. It is estimated that the substrate and any necessary amendments will be injected during approximately 1-3 separate events over several months.

Petroleum Source Area:

Alternative PS-1: Institutional Controls / Site Management Plan

Present Worth:	\$82,000
Capital Cost:.....	\$0.00
Annual Costs (Years 1-30):	\$5,000

This alternative would leave the site soils in place and require that of these soils be managed under the site management plan and institutional controls. Institutional controls in the form of an environmental easement for the controlled property and an environmental notice for off-site areas that would:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional controls in accordance with Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
- restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County DOH; and
- requires compliance with the Department approved Site Management Plan.

The Site Management Plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- a provision for removal or treatment of the petroleum source area located under Building Complex 1 if and when the building is demolished;
- a provision for removal or treatment of the petroleum source area located Ridge Street if and when the road is removed or replaced; and
- provisions for maintaining site access controls and Department notification.

Alternative PS-2: Chemical Injection

Present Worth:	\$450,000
Capital Cost:.....	\$275,000
Annual Costs (Years 2-3):	\$72,500

In-situ chemical oxidation (ISCO) will be implemented to treat petroleum impacted soils. A chemical oxidant or oxygenates will be injected into the subsurface to destroy the contaminants in an approximately 11,000 square-foot area found in the vicinity of Owl Wire and MW-8 via direct push injection points. The method and depth of injection will be determined during the remedial design. The injection areas would include areas below the building slab, in the grassy medium and below Ridge Street.

The time to design and implement the chemical injection program would be less than six months. Injections would be done twice the first year and then annually for the next two years. Site soils and groundwater would be evaluated during the third year to determine if SCGs had been achieved.

Alternative PS-3: Excavation with Off-Site Disposal

Present Worth:\$1,650,000
 Capital Cost:.....\$1,650,000

This alternative would require petroleum impacted soils exceeding commercial SCOs, as defined by 6 NYCRR Part 375-6.8, or that create a nuisance condition, as defined in Commissioner Policy CP-51 Section G, to be excavated and transported off-site for disposal. Approximately 2,100 cubic yards of soil, up to a depth of 18 feet below grade, will be removed from the site and disposed of off-site. The excavation would require the demolition of portions of Building Complex 1 and removal sections of Ridge Street to access all impacted soils.

On-site soil which does not exceed SCOs for the use of the site may be used to backfill the excavation to the extent that a sufficient volume of on-site soil is available. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to complete the backfilling of the excavation and establish the designed grades at the site.

Soil:

Alternative SS-1: No Action

This alternative would leave the site soils in place and not place further restrictions on future activities. The narrow grassy strip of land between the Building Complex 1 and the City of Rome Streets and/or railroad tracks would remain as is and future disturbance of these soils would not require any further action.

Alternative SS-2: Soil Cover with Institutional Controls

Present Worth: \$87,000
 Capital Cost:.....\$10,000
 Annual Costs (Years 2-30): \$5,000

A site cover will be required to allow for commercial use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). 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 the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws; and
- requires compliance with the Department approved Site Management Plan.

The Site Management Plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination; and
- provisions for maintaining site access controls and Department notification.

Alternative SS-3: Excavation with Off-Site Disposal of Soils

Present Worth:	\$100,000
Capital Cost:	\$25,000
Annual Costs (Years 2-30):	\$5,000

This alternative would require the removal of the top 1 foot of soils exceeding commercial SCOs as defined by 6 NYCRR Part 375-6.8, will be excavated and transported off-site for disposal. Approximately 400 cubic yards of soil will be removed from the area surrounding SS-06/SS-07 and SS-09. Excavated soils will be treated prior to disposal to meet land disposal restrictions, if necessary. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil and establish the designed grades at the site.

A site cover will be required to allow for commercial use of the site. The cover will consist either of the structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable soil cleanup objectives (SCOs). 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 the identified site use as set forth in 6 NYCRR Part 375-6.7(d).

Imposition of an institutional control in the form of an environmental easement for the controlled property that:

- requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8 (h)(3);
- allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws; and
- requires compliance with the Department approved Site Management Plan.

The Site Management Plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination; and
- provisions for maintaining site access controls and Department notification.

Soil Vapor:

Alternative SV-1: Periodic SVI Monitoring with On-Site SVI Evaluation

Present Worth: \$162,000
 Annual Costs: \$10,000

Indoor air and sub-slab soil vapor monitoring will be conducted at one off-site residential property and a SVI evaluation will be conducted in Building Complex 1. Each monitoring and sampling event will be conducted during the heating season, and will use individually certified Summa canisters. Results will be compared to NYSDOH guidance to determine whether no further action, monitoring, or mitigation is appropriate. If necessary, actions will be implemented to address exposures related to soil vapor intrusion.

Alternative SV-2: Sub-Slab Depressurization System with On-Site SVI Evaluation

Present Worth: \$96,000
 Capital Costs: \$15,000
 Annual Costs: \$5,000

Installation of an active sub-slab depressurization system (SSDS) will be completed at the off-site residential property to mitigate impacts from SVI. The systems should be designed to minimize soil vapor intrusion effectively while minimizing excess energy usage, to avoid compromising moisture and temperature controls and other comfort features, and to minimize noise. Maintenance and periodic certification of the system will be conducted according to NYSDOH Soil Vapor Intrusion Guidance. Construction of the SSDS will require the property owner's consent.

A SVI evaluation will be conducted in Building Complex 1. Each sampling event will be conducted during the heating season, and will use individually certified Summa canisters. Results will be compared to NYSDOH guidance to determine whether no further action, monitoring, or mitigation is appropriate. If necessary, actions will be implemented to address exposures related to soil vapor intrusion.

Exhibit C

Remedial Alternative Costs

Remedial Alternative	Capital Cost (\$)	Annual Costs (\$)^a	Total Present Worth (\$)
Alternative 1: No Further Action	0	0	0
Alternative GW-1: No Further Action with Monitored Natural Attenuation	7,000	40,000	660,000
Alternative GW-2: Groundwater Collection with Discharge to Sanitary Sewer	237,000	Year 1-5 - 71,000 Year 6-30 - 40,000	1,025,000
Alternative GW-3: Groundwater Collection with Onsite Treatment	417,000	Year 1-5 - 130,000 Year 6-30 - 40,000	1,465,000
Alternative GW-4: In-Situ Groundwater Treatment by Injections Based on Pilot Study	2,400,000	Year 1-2 - 540,000 Year 3-30 - 40,000	3,988,000
Alternative PS-1: Institutional Controls / Site Management Plan	0	5,000	82,000
Alternative PS-2: Chemical Injection	275,000	Years 2-3 - 72,500	450,000
Alternative PS-3: Excavation with Off-Site Disposal	1,650,000	0	1,650,000
Alternative SS-1: No Action	0	0	0
Alternative SS-2: Soil Cover with Institutional Controls	10,000	5,000	87,000
Alternative SS-3: Excavation with Off-Site Disposal of Surface Soils	25,000	1,000	100,000
Alternative SV-1: Periodic SVI Monitoring with On-Site SVI Evaluation	0	10,000	162,000
Alternative SV-2: Sub-Slab Depressurization System with On-Site SVI Evaluation	15,000	5,000	96,000
Remedy: GW-4, PS-1, SS-3 and SV-2 In-Situ Groundwater Treatment, Institutional Controls, Surface Soil Excavation and Cover, Sub-Slab Depressurization System with On-Site SVI Evaluation	2,440,000	Year 1-2 - 555,000 Year 3-30 - 55,000	4,300,000

a – Annual costs are for 30 years unless noted otherwise.

Exhibit D

SUMMARY OF THE SELECTED REMEDY

The Department has selected Alternatives GW-4: In-Situ Groundwater Treatment by Injections Based on Pilot Study, PS-1: Institutional Controls / Site Management Plan, SS-3: Excavation with Off-Site Disposal of Soils, and SV-2: Alternative SV-2: Sub-Slab Depressurization System with On-Site SVI Evaluation as the remedy for this site. Alternative GW-4 will achieve the remediation goals for the site by treating the off-site groundwater plume to meet the applicable groundwater standards. Alternative PS-1 will achieve the remediation goals for the site by providing provisions to remove petroleum contaminated soils if and when they become accessible. Alternative SS-3 will achieve the remediation goals for the site by removing soils with high levels of metal contamination and providing controls on the remaining soils. Alternative SV-2 will achieve the remediation goals for the site by mitigating soil vapor impacts to the off-site residential property. The elements of this remedy are described in Section 7. The selected remedy is depicted in Figure 9.

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 RI/AA 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.

The selected remedy would satisfy this criterion by addressing the off-site groundwater contamination through active groundwater treatment, removing or covering contaminated soils, and mitigating soil vapor intrusion into impacted buildings. Alternative GW-4 addresses the off-site groundwater contamination, which presents a significant threat to public health and the environment. Alternative GW-1 does not provide active treatment of groundwater and requires a long period of monitoring. In the event that GW-1 does not reduce groundwater contamination, potential soil vapor intrusion impacts to off-site buildings will persist. It is uncertain whether Alternative GW-1 provides any protection to public health or the environment. Alternatives GW-2 and GW-3 would remove contamination through active pumping and treatment. Alternatives GW-2 and GW-3 would be protective of public health and the environment, but require a longer operating period than GW-4. There is also uncertainty if the extraction system will remove all contaminated groundwater given site soil types. There is potential for soil vapor intrusion to occur during all Alternatives, but GW-4 provides the shortest treatment time, reducing the risk to public health.

Alternative PS-1 is protects human health and the environment by limiting exposures through institutional controls. The site management plan will dictate how future excavations must handle

soil to minimize exposure. This alternative provides for the excavation and off-site disposal (i.e. Alternative PS-3) in the event that surface structures are demolished. Alternatives PS-2 and PS-3 protect human health and the environment by removing contamination through chemical treatment (PS-2) or excavation and disposal (PS-3).

Alternative SS-1 does not protect human health and the environment because it does not remove the contamination or prevent exposures. Thus, Alternative SS-1 is no longer considered. Alternative SS-2 protects human health and the environment by using a soil cover to prevent exposure to contamination. Alternative SS-3 protects human health and the environment by removing contaminated surface soils and covering the remaining contamination with a soil cover to prevent exposure. Both SS-2 and SS-3 will require institutional controls.

Alternatives SV-1 and SV-2 are both protective of public health because appropriate actions will be implemented to address exposures related to soil vapor intrusion at buildings on and off of the site. Neither SV-1 nor SV-2 provide any protection of the environment.

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.

Alternative GW-4 complies with SCGs to the extent practicable. It addresses off-site groundwater contamination through active chemical or biological treatment. Alternatives GW-2 and GW-3 will also comply with SCGs to the extent practicable, although it is anticipated that the treatment period will be significantly longer than GW-4. Alternative GW-1 does not achieve SCGs with any certainty. Because Alternatives GW-2, GW-3, and GW-4 satisfy the threshold criteria, the remaining criteria are particularly important in selecting a final remedy for the site. It is expected Alternative GW-4 will achieve groundwater SCGs in less than 5 years, while groundwater contamination above SCGs may remain on-site under Alternatives GW-2 and GW-3 for many years.

Alternatives PS-1, PS-2 and PS-3 all comply with the SCGs to the extent practicable. PS-1 complies with the SCGs through institutional controls, while PS-2 and PS-3 comply by treating or removing contaminated soils from the site.

Alternative SS-1 does not comply with the SCGs, and thus is no longer considered. Alternative SS-2 complies with the SCGs by covering all surface soils to meet the criteria for commercial use. Alternative SS-3 complies with the SCGs by removing areas of high surface soil contamination and covering subsurface contamination to meet the criteria for commercial use. Both SS-2 and SS-3 will require institutional controls.

Both Alternatives SV-1 and SV-2 comply with the SCGs set forth by the NYSDOH.

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.

Long-term effectiveness is best accomplished by those alternatives involving the treatment of contaminated groundwater (Alternative GW-4, and to a lesser extent Alternatives GW-2 and GW-3). GW-4 provides for in-situ treatment of the contamination through either chemical or biological means, and would be completed in 2-3 years. By treating the contamination in-situ the risk of exposure during treatment is greatly reduced as compared to GW-2 and GW-3. Alternative GW-4 would provide treatment of contamination that is sorbed to the aquifer matrix, whereas Alternatives GW-2 and GW-3 would not until the contaminants desorbed over time. For Alternatives GW-2, GW-3 and GW-4 there is the potential for soil vapor intrusion until the remedies reach completion. Under Alternative GW-4 there is potential for the generation of hydrochloric acid (HCl) and other byproducts, but this can be controlled by including a buffering amendment to the treatment injections.

Alternatives PS-2 and PS-3 are effective in the long term because they remove contamination through either treatment or excavation. More uncertainty is associated with PS-2 because it relies on chemicals to treat contamination in-situ. Alternative PS-1 is also effective in the long term, provided that the institutional controls are maintained. While PS-1 does leave contamination in place, the magnitude of the contamination is low and is at depth. Based on current data the petroleum contamination is not readily mobile.

Alternatives SS-2 and SS-3 both rely on engineering and institutional controls to remain effective in the long term. SS-3 mitigates the risk of future exposure to a greater extent than SS-2 by excavating areas of high contamination for off-site disposal. Based on current data the engineering and institutional controls in Alternatives SS-2 and SS-3 adequately reduce risk, albeit SS-3 to a greater degree of certainty.

Alternatives SV-1 and SV-2 both include actions that provide long-term protection of public health at buildings on and off of the site.

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.

Alternative GW-2 would reduce the volume of contaminants remaining through groundwater extraction wells. Under this alternative extracted groundwater would be discharged to nearby sanitary sewers for treatment by the local publically owned treatment works (POTW). The POTW would potentially reduce the toxicity of the contaminants through treatment, but would require a detailed analysis of the existing treatment system. Alternative GW-3 would reduce the volume of contaminants similar to Alternative GW-2, except that toxicity is reduce via an on-site treatment system. The on-site treatment system would likely consist of an activated carbon filter and an air stripper. This would not destroy the contaminants, but simply transfer them to another media

(carbon filters and the atmosphere, respectively). Alternative GW-4 would reduce the volume and toxicity of the remaining contaminants through in-situ chemical or biological treatment. The in-situ treatments would reduce (in the REDOX sense) the contaminants to non-toxic organic compounds and chlorine. Amendments to the injections would likely be required to maintain ideal reaction conditions and protect secondary water quality parameters. All Alternatives would reduce the potential for soil vapor intrusion over the course of remediation by reducing the volume of contaminants in groundwater.

Alternative PS-1 does little to reduce the toxicity, mobility, or volume of contamination at the site. Alternative PS-2 reduces the toxicity, mobility, and volume of contamination at the site by completely destroying the contamination using chemical injections. Alternative PS-3 reduces the mobility and volume of contamination at the site by excavating contaminated soils and disposing of them in an off-site landfill. The landfilled soils will remain contaminated.

Alternative SS-2 does not reduce the toxicity, mobility, or volume of contamination at the site. SS-2 only prevents direct exposure using a soil cover. Alternative SS-3 provides some reduction of the mobility and volume of contamination at the site by excavating areas of high surface contamination for off-site disposal. SS-3 may reduce toxicity if the excavated soils require treatment to meet land disposal restrictions.

Neither SV-1, nor SV-2 reduce the toxicity, mobility, or volume of contamination at the site.

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.

Alternative GW-2 would have minimal short-term impacts on the surrounding areas. There is some potential for the discharge of contaminated groundwater to the POTW to have impacts on effluent of the treatment plant. This would need to be evaluated prior to implementation. Alternative GW-3 has the potential for short-term impacts to surrounding air quality. The operation of an air stripper on-site could release low levels of VOCs into the surrounding atmosphere. This impact can be readily controlled by including additional controls in the treatment system design. Alternative GW-4 has potential to impact local groundwater and soil vapor in the short term. Various byproducts will be produced as a result of the chemical/biological treatment selected. There are amendments that can, and will, be added to the injections to control these byproducts. The time needed to achieve the remediation goals is shortest for Alternative GW-4, and longer for Alternatives GW-2 and GW-3. Alternatives GW-2 and GW-3 are anticipated to have similar treatment times.

Alternative PS-1 has no short term impacts as no remedial actions are required at this time. Alternative PS-2 may disrupt surrounding roadways and businesses while the chemical injection is ongoing. Initial injections could be completed in 1-2 months. Short term effectiveness is dependent on the injected material reaching all the contaminated soils and the rate of the chemical reaction. Alternative PS-3 will significantly disturb surrounding areas in the short term. PS-3 will require tearing up portions of Ridge Street, excavating underneath existing building foundations,

and excavating around numerous utilities. Remedial actions would require at least several months to be completed. PS-3 effectively removes the contamination in the short term.

Alternative SS-2 and SS-3 would have similar short term impacts while the soil cover is being constructed, with SS-3 taking longer due to the additional excavation. Both alternatives should take a month or less to implement.

Alternative SV-1 could be completed in approximately one month, allowing for lab analytical times. SV-1 does not provide any short term protection from contamination. Alternative SV-2 could be implemented in under one week. SV-2 is very effective in the short term as it quickly provides protection from soil vapor intrusion.

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.

Alternatives GW-2 and GW-3 are readily implementable. They require significantly fewer installations when compared to Alternative GW-4. The low hydraulic conductivity of the surrounding aquifer inhibits the amount of groundwater that can be recovered, and will extend the duration of the remedy. Alternative GW-3 will require agreements with property owners to construct the groundwater treatment system. Given the track record of other groundwater control systems it is uncertain how long groundwater extraction will need to continue to remove all remaining contaminants. Alternative GW-4 will require a pilot test to determine whether chemical or biological injections are more implementable. The low hydraulic conductivity of the aquifer may require numerous injection points, which may be obstructed by existing structures and buildings. The implementability of the biological treatment is highly dependent on the composition of local microbial populations and geochemical parameters. If the pilot test results are favorable, Alternative GW-4 would be capable of implementing a complete remedy in a shorter time than either Alternative GW-2 or GW-3.

Alternative PS-1 is readily implementable as it only requires institutional controls with a site management plan. Alternative PS-2 is moderately implementable as it would require chemical injections in a highly developed area. Geophysical surveys would be needed prior to injecting to locate utilities and other subsurface features. PS-2 would also need to inject through Ridge Street and under Building Complex 1 foundations. Alternative PS-3 is not considered implementable. It would require the partial demolition of Building Complex 1, which is being actively used by Owl Wire Corporation, and removing sections of Ridge Street.

Alternatives SS-2 and SS-3 are both considered implementable. SS-3 would better meet existing site grades as it will excavate contaminated soils prior to constructing the site cover.

The implementability of Alternatives SV-1 and SV-2 are dependent on being granted access to the off-site residential property. While SV-2 is more intrusive in the short term (constructing the mitigation system), SV-1 will require periodic monitoring events that may disturb the residents.

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.

Alternative GW-4 has higher capital costs than either Alternative GW-2 or GW-3, but can be completed in a much shorter time-frame. Alternatives GW-2 or GW-3 have much lower capital costs when compared to Alternative GW-4, but require extensive operation, maintenance, and monitoring costs for many years, at which time it is uncertain whether the remedial goals will be achieved. Alternative GW-4's high capital cost is balanced by the potential to have a substantially reduced operational and monitoring period.

The cost of Alternative PS-3 is considered to be cost prohibitive when compared to its overall remedial impacts. A large portion of the remedial costs would be spent on building and road demolition, not remediation. Alternative PS-1 is more cost effective than Alternative PS-2 based on present worth calculations. It is important to note that in the event Building Complex 1 is demolished the provisions of PS-1 would require the remediation of impacted soils from beneath the building, incurring additional costs.

Alternatives SS-2 and SS-3 are very similar in cost-effectiveness. SS-3 has slightly higher costs associated with the excavation and disposal of contaminated surface soils.

Alternative SV-2 is more cost-effective than Alternative SV-1. SV-2 balances its higher capital costs by having significantly lower annual costs. The present worth of SV-1 may increase or decrease depending on the results of the periodic monitoring program.

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.

Off-site contamination is required to be remediated to pre-disposal conditions, to the extent practicable. Alternatives GW-2, GW-3, and GW-4 all address this need to varying extents. Alternatives SV-1 and SV-2 do not offer active cleanup, but provide means to ensure human exposure to contamination is minimized. The off-site area is a mix of commercial and residential properties.

On-site areas are restored to pre-disposal conditions, to the extent practicable, by Alternatives PS-2 and PS-3. Alternatives PS-1, SS-2, and SS-3 all provide cleanup levels that meet commercial use, which is consistent with the current, intended, and reasonable anticipated future land use of the site and its surroundings.

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 were evaluated. A responsiveness summary was prepared that describes public comments received and the manner in which the Department addressed the concerns raised.

Alternatives GW-4: In-Situ Groundwater Treatment by Injections Based on Pilot Study, PS-1: Institutional Controls / Site Management Plan, SS-3: Excavation with Off-Site Disposal of Surface Soils, and SV-2: Sub-Slab Depressurization System were selected because, as described above, they satisfy the threshold criteria and provide the best balance of the balancing criterion.

Figure 1: Site Location Map

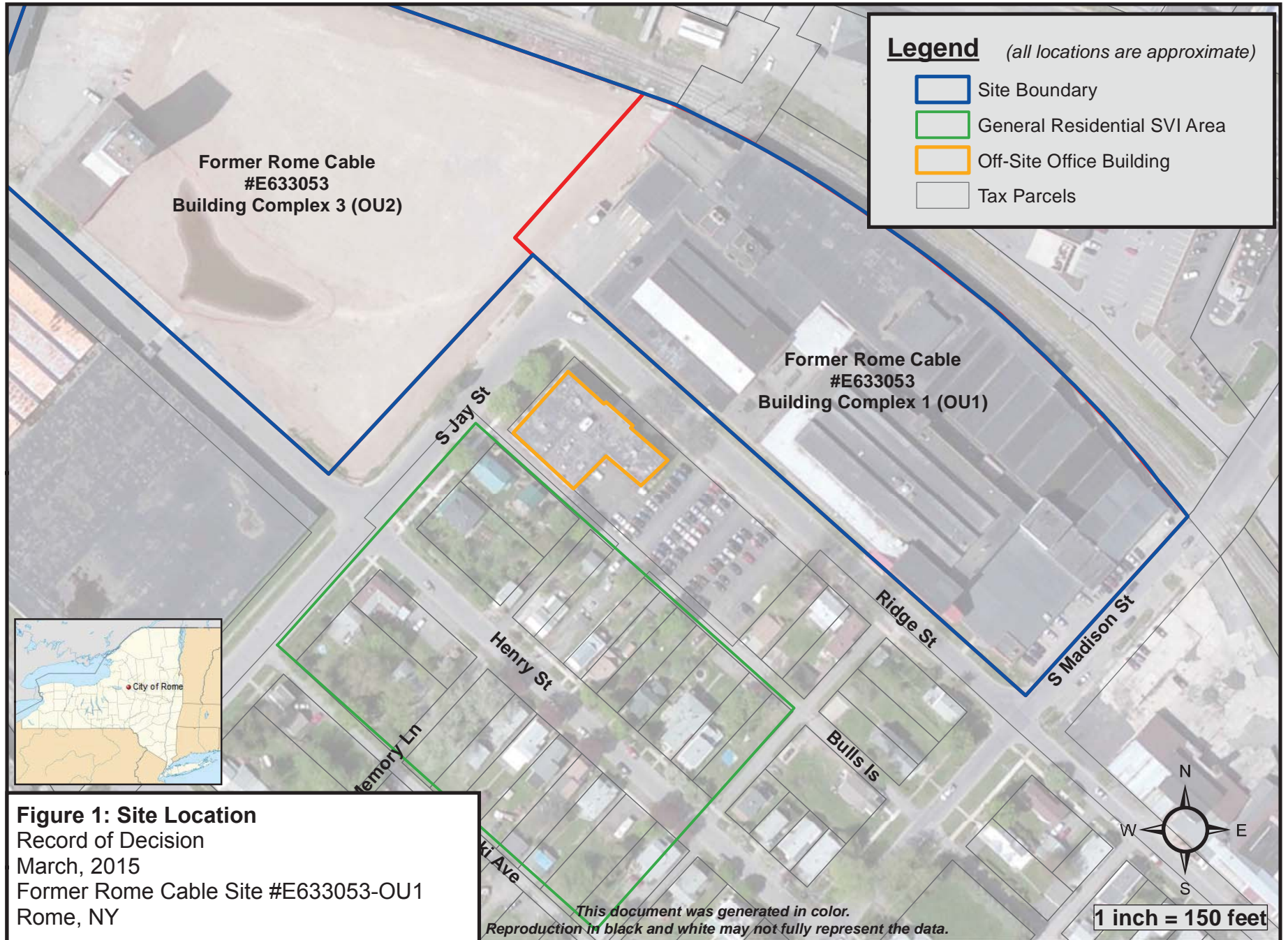


Figure 2: Monitoring Well Locations

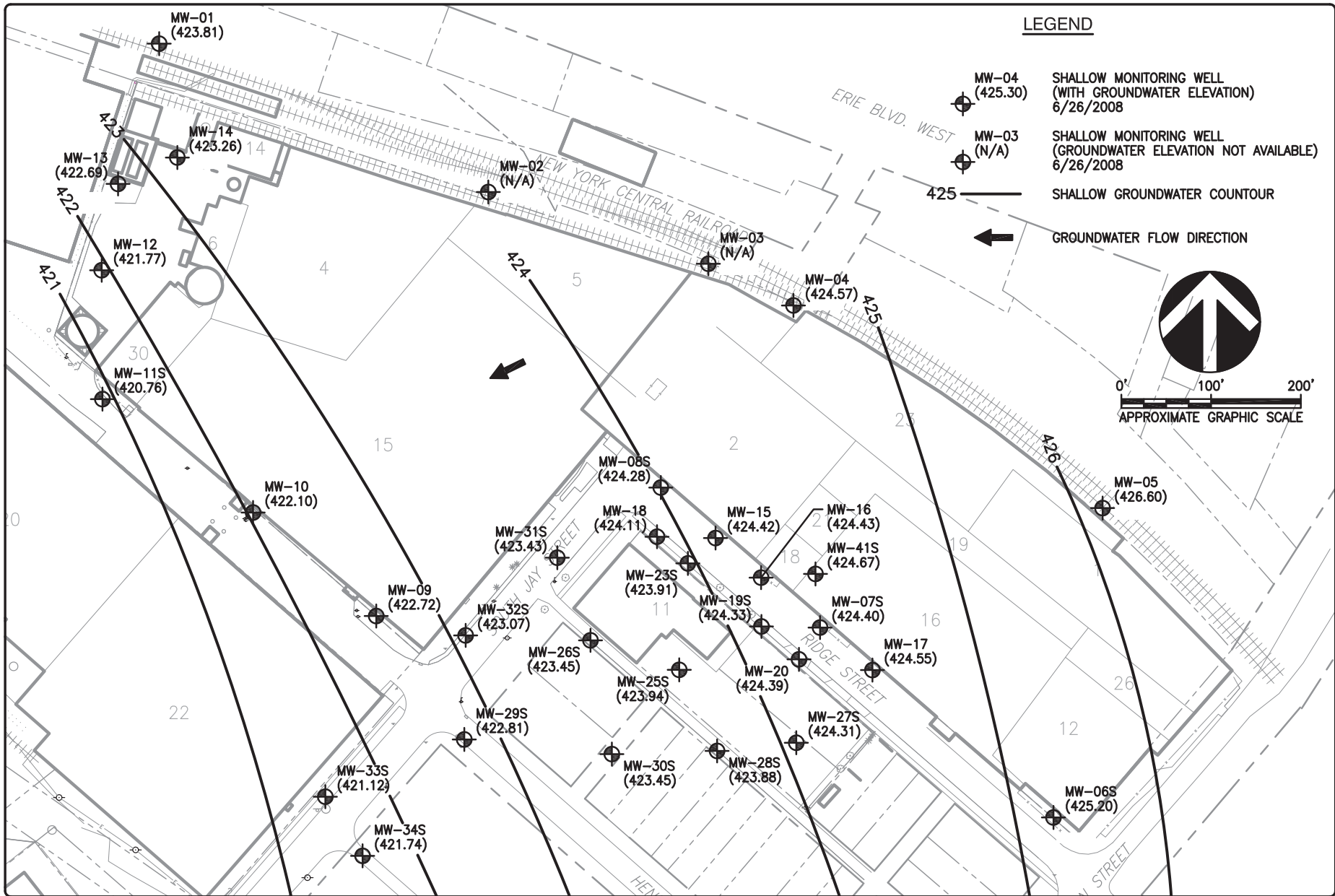


FIGURE
14

Drawn By: RMM
Checked By: RAK
Project Mgr: SEPT 2009
Date: SEPT 2009
Project No: 00514.02

DRAWING TITLE
JUNE 2008
GROUNDWATER CONTOUR MAP
SHALLOW

FORMER ROME CABLE CORPORATION
RIDGE STREET SITE
REMEDIAL INVESTIGATION/ALTERNATIVES
ANALYSIS
NEW YORK
CITY OF ROME



Figure 3: Building Complex 1 Sump Locations

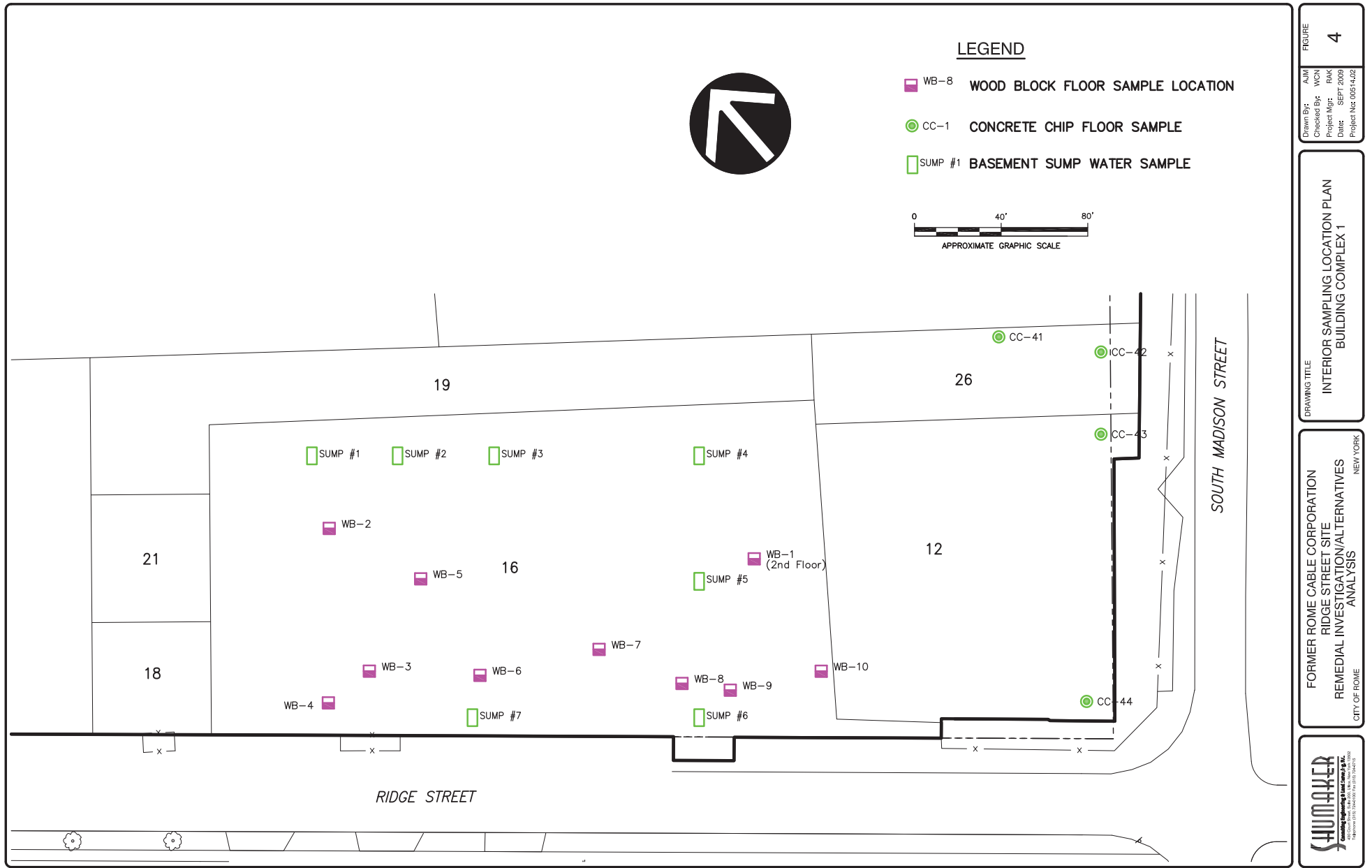


Figure 4: Soil Sampling Locations

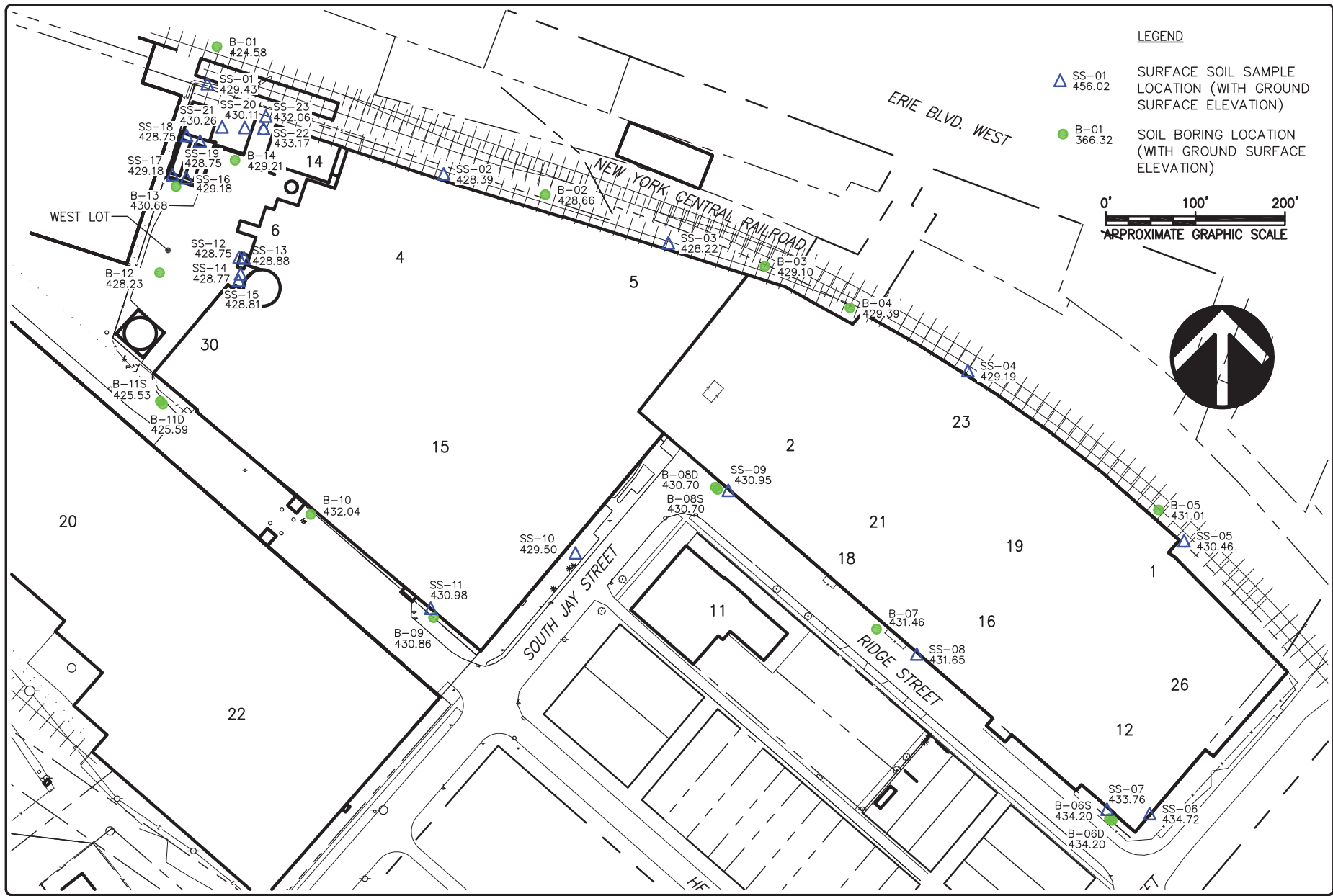


FIGURE 3A
 Drawn By: AJM
 Checked By: WCN
 Project Mgr: BAK
 Date: SEPT 2009
 Project No: 085-1-02

DRAWING TITLE
 EXTERIOR SOIL SAMPLE LOCATIONS

NEW YORK
 FORMER ROME CABLE CORPORATION
 RIDGE STREET SITE
 REMEDIAL INVESTIGATION/ALTERNATIVES ANALYSIS
 CITY OF ROME



Figure 5: Shallow Plume Contour Map

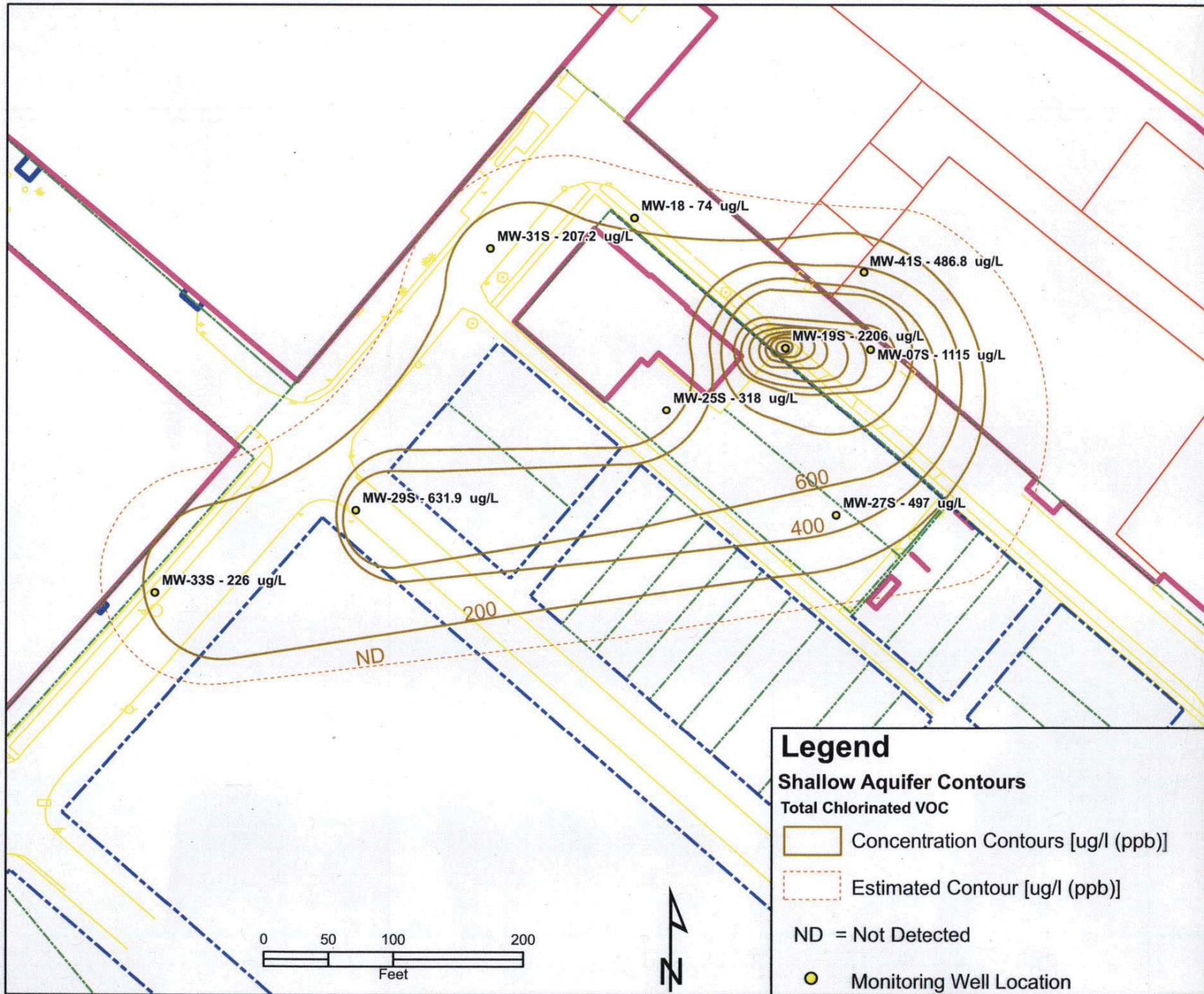
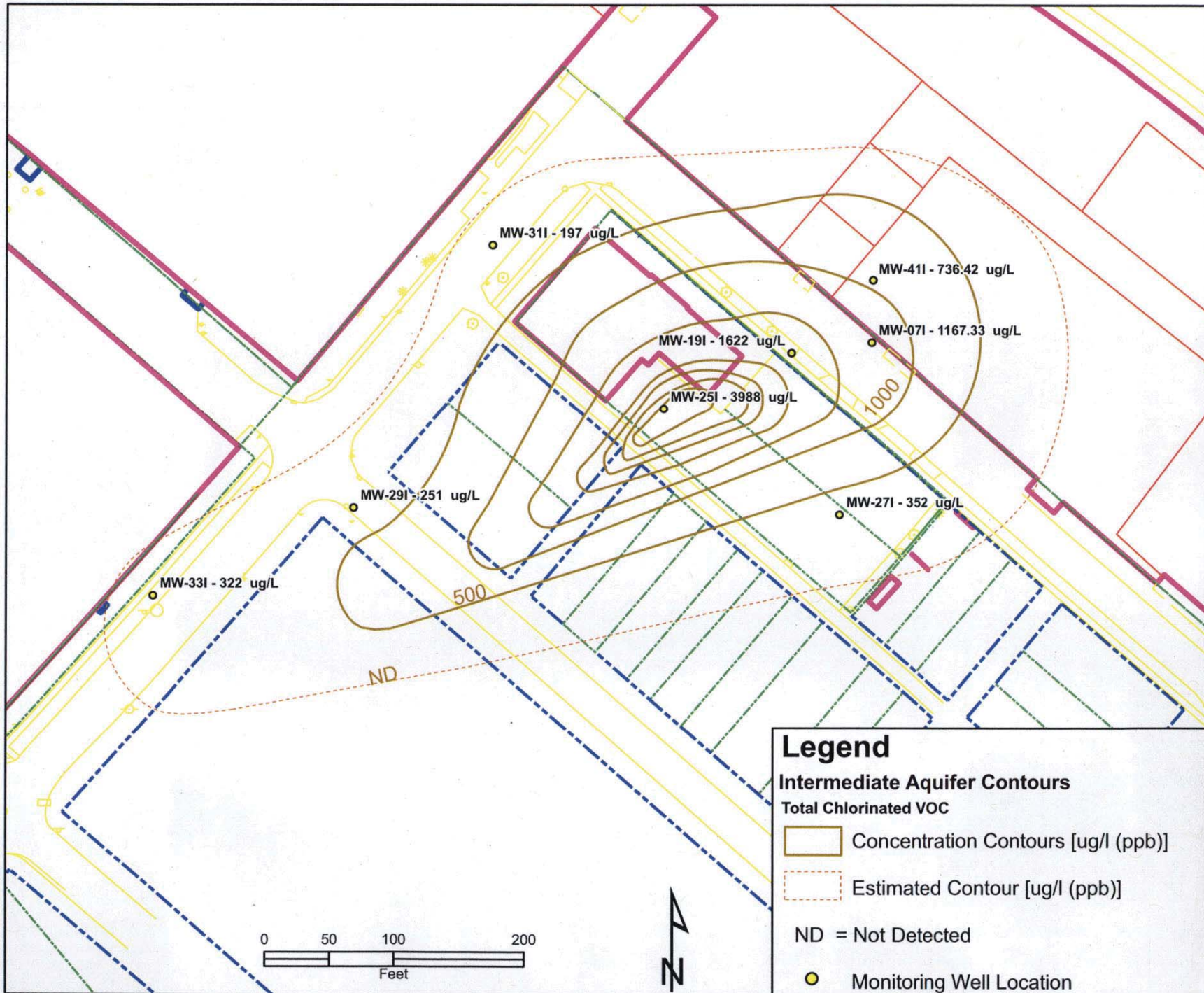


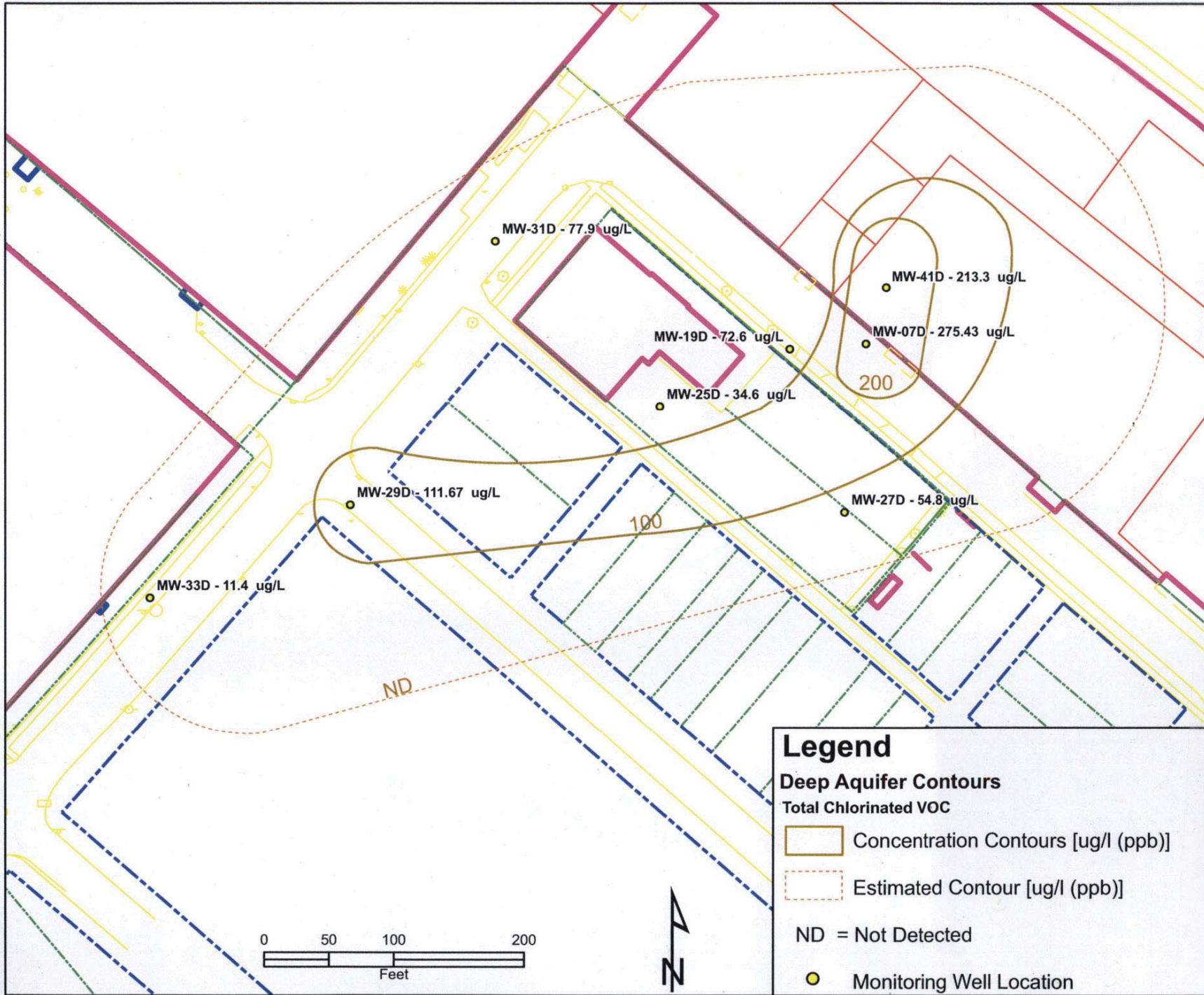
FIGURE	4
Drawn By:	AMU
Checked By:	RAK
Project Mgr:	RAK
Date:	12/21/09
Project No.:	514.02
FORMER ROME CABLE CORPORATION RIDGE STREET SITE - REMEDIAL INVESTIGATIONS TOTAL CHLORINATED VOC PLUME SHALLOW AQUIFER	
CITY OF ROME	NEW YORK
JULY 2008	

Figure 6: Intermediate Plume Contour Map



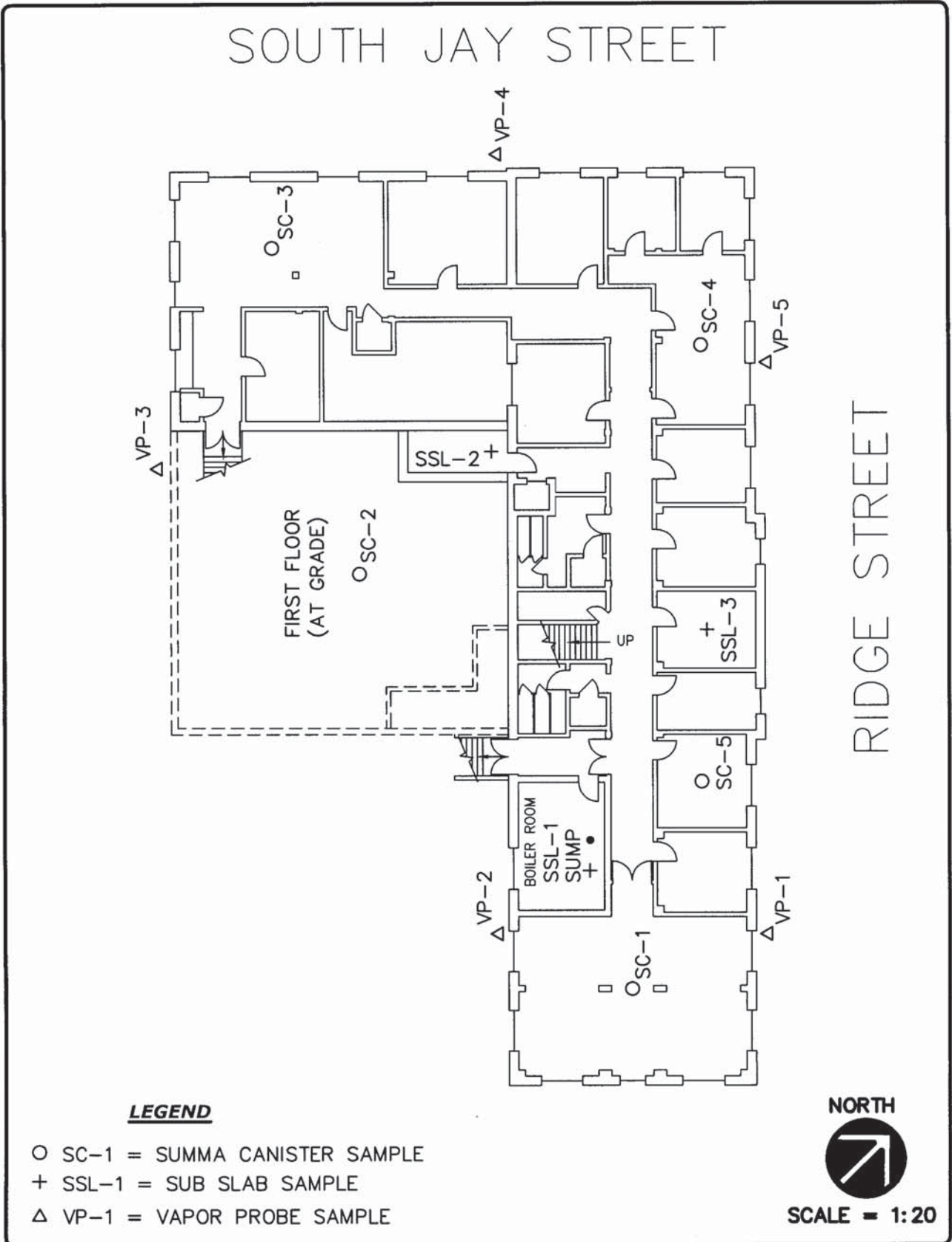
Drawn By: AMU	FIGURE	5
Checked By: RAK		
Project Mgr: RAK		
Date: 12/21/09		
Project No.: 514.02		
FORMER ROME CABLE CORPORATION RIDGE STREET SITE - REMEDIAL INVESTIGATIONS TOTAL CHLORINATED VOC PLUME INTERMEDIATE AQUIFER CITY OF ROME JULY 2008 NEW YORK		

Figure 7: Deep Plume Contour Map



<p>FORMER ROME CABLE CORPORATION RIDGE STREET SITE - REMEDIAL INVESTIGATIONS TOTAL CHLORINATED VOC PLUME DEEP AQUIFER</p> <p style="text-align: right;">CITY OF ROME JULY 2008 NEW YORK</p>	<p>FIGURE 6</p> <p>Drawn By: AMU Checked By: RAK Project Mgr: RAK Date: 12/21/09 Project No.: 514.02</p>
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Figure 8: Soil Vapor Intrusion Investigation



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**FORMER ROME CABLE
CORPARATION
421 RIDGE STREET SITE
REMEDIAL INVESTIGATION/
ALTERNATIVES ANALYSIS**

**PROJECT TASK
VAPOR
INTRUSION
INVESTIGATION**

DRAWN BY: SRR	DWG. NO.
CHECKED BY: RAK	2
PROJ. MGR: RAK	
DATE: 3/5/07	
PROJ. NO: 0514.02	

Figure 9: Selected Remedy



Figure 10: Petroleum Source Area

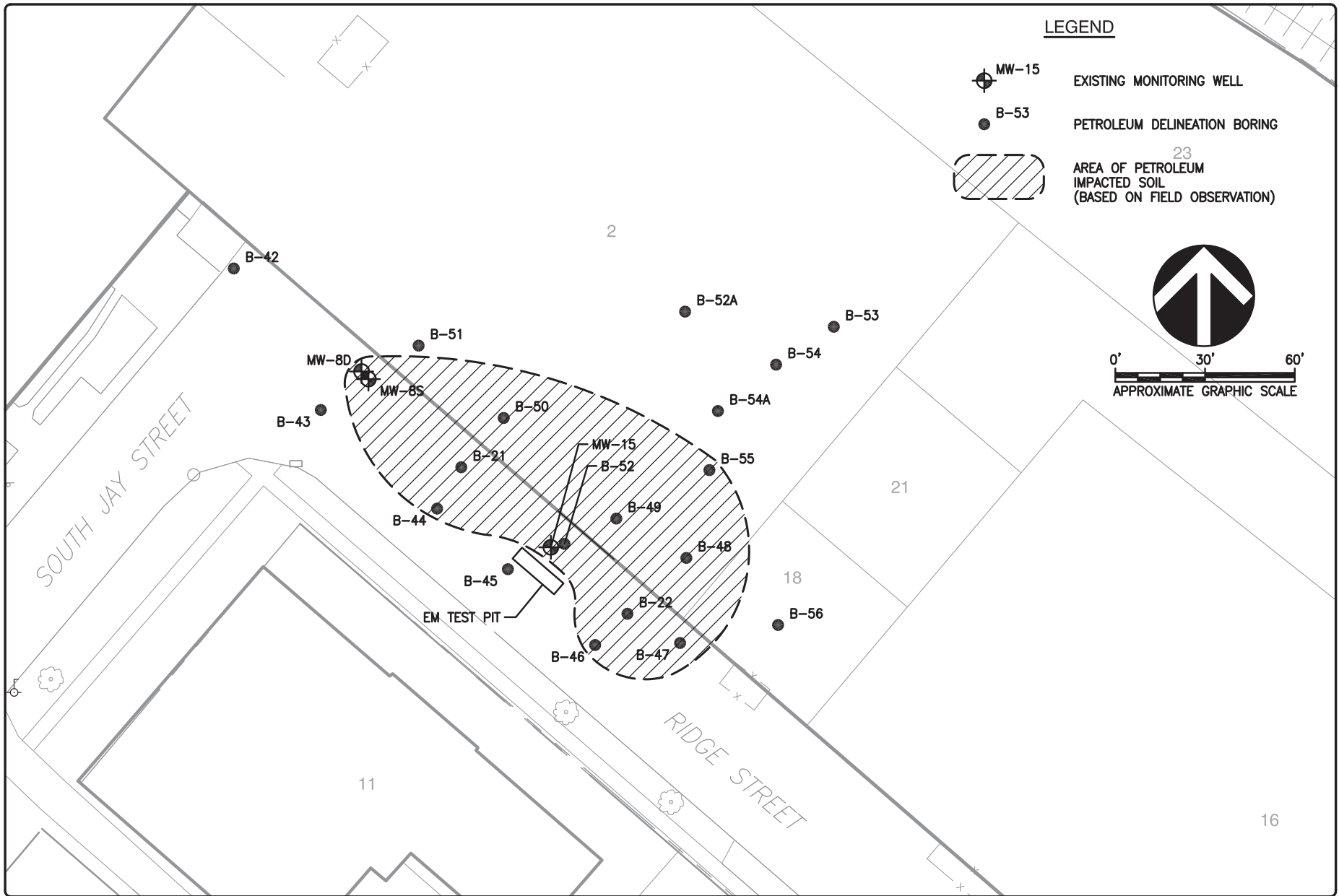


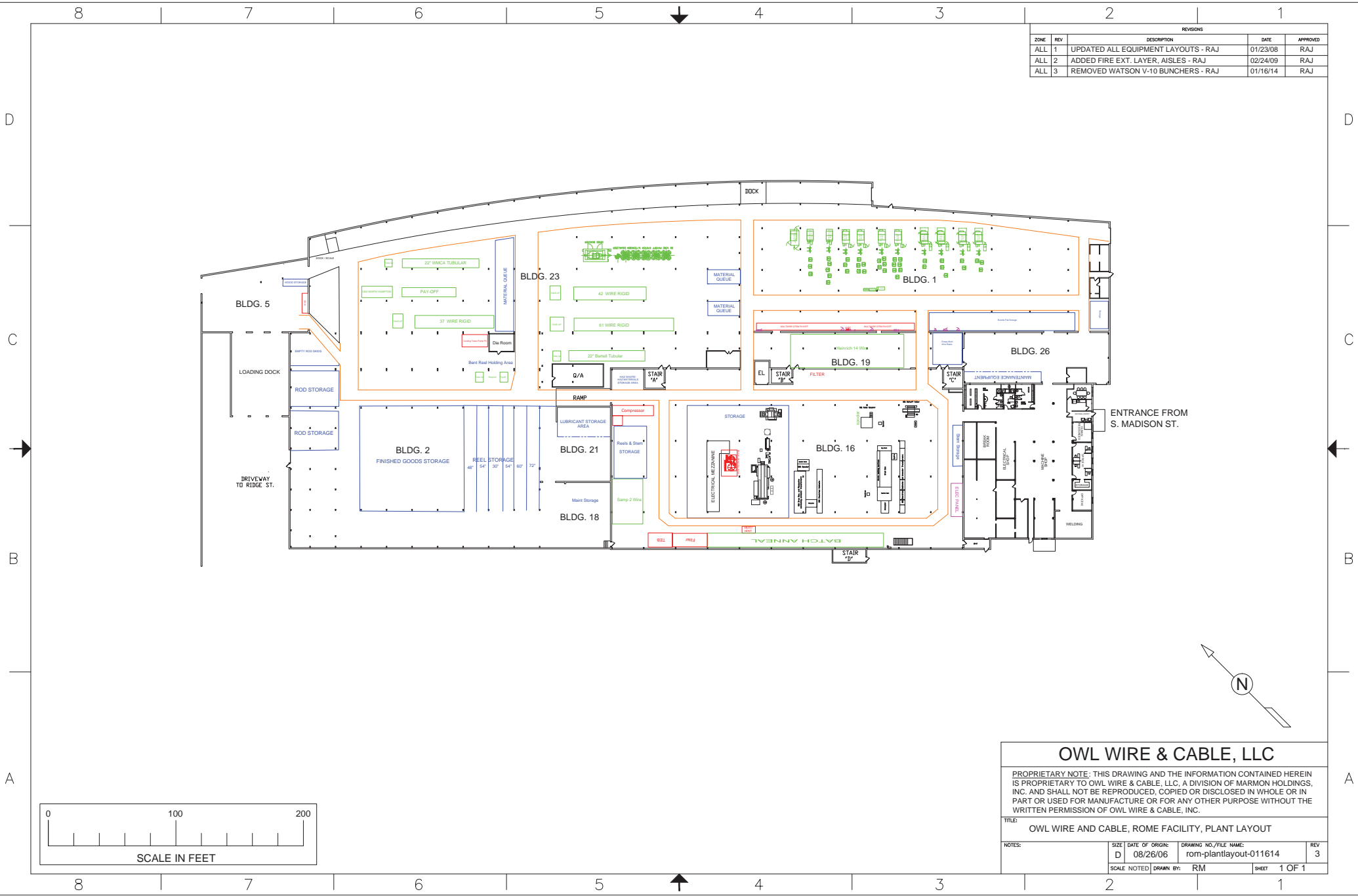
FIGURE
41
Drawn By: PHE
Checked By: RWM
Project Mgr: RAK
Date: SEPT 2009
Project No: 00514J2

DRAWING TITLE
PETROLEUM SOURCE AREA
DELINEATION BORING LOCATIONS

FORMER ROME CABLE CORPORATION
RIDGE STREET SITE
REMEDIAL INVESTIGATION/ALTERNATIVES
ANALYSIS
NEW YORK
CITY OF ROME



Figure 11: Currently Occupied Areas of Bld. Complex 1



APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

**Former Rome Cable Site, Bld. Complex #1
Operable Unit No. 01: Building Complex 1
Environmental Restoration Project
City of Rome, Oneida County, New York
Site No. E633053**

The Proposed Remedial Action Plan (PRAP) for the Former Rome Cable Site, Bld. Complex #1 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 12, 2015. The PRAP outlined the remedial measure proposed for the contaminated soil, groundwater, and soil vapor at the Former Rome Cable Site, Bld. Complex # 1 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 12, 2015, which included a presentation of the remedial investigation and alternative analysis (RI/AA) for the Former Rome Cable Site, Bld. Complex #1 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 29, 2015.

This responsiveness summary responds to all questions and comments raised during the public comment period. The following are the comments received, with the Department's responses:

COMMENT 1: The PRAP states that in-situ chemical oxidation (ISCO) is being proposed as the remedy. Why wouldn't in-situ chemical reduction (ISCR) be evaluated as well, since ISCO is on the opposite side of the oxidation-reduction spectrum present in the subsurface?

RESPONSE 1: The Department agrees that reducing conditions are already present in the aquifer. The purpose of the groundwater treatment pilot study is to evaluate the effectiveness of chemical injection versus enhanced bioremediation. The exact chemical compound(s) used for the injections will be determined during the design phase.

COMMENT 2: Who will be responsible for remedial work? Will it be the DEC or the Oneida County Industrial Development Agency (OCIDA)?

RESPONSE 2: The Oneida County Industrial Agency will not be responsible for implementing

the remedy at this time since funding under the Environmental Restoration Program (ERP) is not currently available, however, any new use of the site may be limited and they will not receive a Certificate of Completion for the site until the remedy is completed. If funding becomes available under the Environmental Restoration Program (ERP) the Department will work with OCIDA to implement the overall remedy, and costs will be shared based on program requirements. In the interim, it is anticipated that the Department will take steps to install the residential sub-slab depressurization system required by the ROD, upon issuance.

COMMENT 3: Why was monitored natural attenuation (MNA) not selected as the remedy?

RESPONSE 3: MNA was considered as one of the remedial alternatives, however, the Department has selected an active treatment remedy through either chemical or biological means to reduce the impacts (and potential for future impacts) observed off-site. The goal of the groundwater treatment is to reduce the contaminant mass so that the plume will be below groundwater standards in the shortest time possible, versus the longer period predicted for MNA.

COMMENT 4: Will the groundwater treatment target the entire aquifer (approximately 50 feet thick) or will treatment be focused in the shallow regions of the aquifer/plume?

RESPONSE 4: This has not been determined at this time, and will be evaluated during the pilot tests and design phase. Cost estimates developed for the PRAP were calculated assuming treatment of the entire saturated zone.

APPENDIX B

Administrative Record

Administrative Record

**Former Rome Cable Site, Bld. Complex #1
Operable Unit No. 01: Building Complex 1
Environmental Restoration Project
City of Rome, Oneida County, New York
Site No. E633053**

1. Proposed Remedial Action Plan for the Former Rome Cable Site, Bld. Complex #1 site, Operable Unit No. 01, dated February 2015, prepared by the Department.
2. The Department and the Oneida County Industrial Development Corporation (OCIDA) entered into a State Assistance Contract, Contract No. C302651, June 17, 2005.
3. "Phase 1 Environmental Site Assessment, Rome Cable Corporation", August 1999, prepared by GZA GeoEnvironmental of New York.
4. "Remedial Investigation/Alternatives Analysis Work Plan", July 2005, prepared by Shumaker Consulting Engineering & Land Surveying, P.C.
5. "Work Plan Amendment- Additional TCE Plume Investigation", March 2007, prepared by Shumaker Consulting Engineering & Land Surveying, P.C.
6. "Work Plan Amendment- Residential Soil Vapor Intrusion Investigations", April 2007, prepared by Shumaker Consulting Engineering & Land Surveying, P.C.
7. "Soil Vapor Intrusion Investigation Report- 421 Ridge Street", August 2007, prepared by Shumaker Consulting Engineering & Land Surveying, P.C.
8. "Soil Vapor Intrusion Investigation Report- Residential Properties", October and November 2007, prepared by Shumaker Consulting Engineering & Land Surveying, P.C. [note: there is an individual report for each property].
9. "Work Plan Amendment- TCE Plume Investigation", December 2007, prepared by Shumaker Consulting Engineering & Land Surveying, P.C.
10. "Interim Remedial Measures Closure Report- Former Rome Cable Corporation, Building Complex 3", December 2008, prepared by Shumaker Consulting Engineering & Land Surveying, P.C.
11. "Remedial Investigation/Alternatives Analysis Report", Volume I, April 2012, prepared by Shumaker Consulting Engineering & Land Surveying, P.C.
12. "Interim Remedial Measures Closure Report- Sub-Slab Depressurization System at 421 Ridge Street", October 2013, prepared by Shumaker Consulting Engineering & Land Surveying, P.C.