OPERABLE UNIT THREE RECORD OF DECISION FOR THE OLEAN WELL FIELD SUPERFUND SITE RELATED TO THE ALCAS SOURCE AREA

AMENDMENT TO THE OPERABLE UNIT TWO RECORD OF DECISION FOR THE OLEAN WELL FIELD SUPERFUND SITE RELATED TO THE ALCAS SOURCE AREA

City of Olean, Cattaraugus County, New York

United States Environmental Protection Agency
Region 2
New York, New York
September 2014

DECLARATION FOR OPERABLE UNIT THREE RECORD OF DECISION
AND
AMENDMENT TO OPERABLE UNIT TWO RECORD OF DECISION

SITE NAME AND LOCATION

Olean Well Field Superfund Site
City of Olean, Cattaraugus County, New York

Superfund Site Identification Number: NYD980528657
Operable Unit 02 and Operable Unit 03

STATEMENT OF BASIS AND PURPOSE

This decision document comprises the third operable unit Record of Decision (OU3 ROD) for the area identified herein as Parcel B of the Alcas Source Area at the Olean Well Field Superfund Site (Site), as well as an amendment to the September 1996 operable unit two Record of Decision (OU2 ROD Amendment) for the area identified herein as the Alcas Facility of the Alcas Source Area at the Site. By this document, the U.S. Environmental Protection Agency (EPA) selects a groundwater remedy for Parcel B and a modification to the groundwater and soil remedy for the Alcas Facility. These remedies are being chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. Sections 9601-9675, and the National Oil and Hazardous Substances Pollution Contingency Plan, 40 CFR Part 300. This decision document explains the factual and legal basis for selecting the OU3 remedy and the amended OU2 remedy for the Alcas Source Area. The attached index (see Appendix III) identifies the items that comprise the Administrative Record upon which the OU3 remedy and amended OU2 remedy are based.

The New York State Department of Environmental Conservation (NYSDEC) was consulted on the proposed remedy and proposed amended remedy in accordance with CERCLA Section 121(f), 42 U.S.C. Section 9621(f), and it concurs with the selected remedy and amended remedy (see Appendix IV).

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the Site, if not addressed by implementing the response actions selected in this OU3 ROD and OU2 ROD Amendment, may present an imminent and substantial endangerment to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The response actions in this OU3 ROD and OU2 ROD Amendment actively address soil and groundwater contamination at the Alcas Source Area. For purposes of this OU3 ROD and OU2 ROD Amendment, the Alcas Source Area includes the real property at which the Alcas Cutlery Corporation formerly conducted manufacturing operations, located at 1116 East State Street, which is currently occupied by the Cutco Corporation (this facility is hereafter referred to as the Alcas Facility). The Alcas Source Area also includes several parcels of land to the south of the Alcas Facility that are impacted by contaminated groundwater including, but not necessarily limited to parcels identified on the City of Olean tax map as Block 2, Lots 23, 24 and a portion of Lot 44 (these parcels are hereafter referred to as Parcel B).

The major components of the selected amended remedy for the Alcas Facility include the following:

- *In-situ* chemical oxidation (ISCO) involving injection of an alkaline-activated sodium persulfate solution through a series of injection wells located beneath the main building and along the exterior of the southern portion of the main building to treat soil and groundwater contamination;

- Excavation of remaining contaminated soil beneath and adjacent to the main building that are determined to be impacting the ability to achieve the groundwater Remedial Action Objectives (RAOs), subsequent to treatment with ISCO and after a determination is made by the EPA that it is not inappropriate to access the material based upon factors that include the use of the building;

- Additional sampling during the pre-remedial design phase to determine whether an upgradient source of groundwater contamination is present in the northern portion of the Alcas Facility or off-property;

- Institutional controls for soil and groundwater use restrictions until RAOs are achieved to ensure the remedy remains protective. A plan will be developed which specifies institutional controls to restrict exposure to hazardous substances (e.g., via groundwater consumption, contact with contaminated groundwater, and contact with contaminated soil) until RAOs are met which are anticipated to include proprietary controls, such as deed restrictions for groundwater and soil use**,** existing governmental controls, such as well permit requirements, and informational devices, such as publishing advisories in local newspapers and issuing advisory letters to local governmental agencies regarding groundwater use in the impacted area;

- Implementation of a long-term groundwater monitoring program to track and monitor changes in the groundwater contaminant levels to ensure the RAOs are attained. The sampling program will also monitor groundwater quality including degradation by-products generated by the treatment processes to ensure that drinking water quality standards are met at the nearby municipal water supply well 18M and to address the potential for migration of vapors from groundwater to indoor air at the Alcas Facility that could result from the ISCO treatment. The results from the long-term monitoring program will be used to evaluate the migration and changes in volatile organic compound (VOC) contaminants over time; and

- Development of a site management plan (SMP) to provide for the proper management of the Site remedy post-construction, including through the use of institutional controls until RAOs are met, and will also include long-term groundwater monitoring, periodic reviews and certifications. The SMP will also provide for the proper management of any contaminated unsaturated soils remaining beneath the concrete slab of the building and the evaluation of the potential for soil vapor intrusion should the building use at the Alcas Facility change or for any buildings developed on the Alcas Facility.

The major components of the selected remedy for Parcel B include the following:

- Enhanced anaerobic bioremediation (EAB) to promote reductive dechlorination of contamination through a series of injection wells to degrade organic contaminants;

- Institutional controls for groundwater use restrictions until RAOs are achieved to ensure the remedy remains protective. A plan will be developed which specifies institutional controls to restrict exposure to hazardous substances (e.g. via groundwater consumption and contact with contaminated groundwater) until RAOs are met which are anticipated to include proprietary controls, such as deed restrictions for groundwater use, existing governmental controls, such as well permit requirements, and informational devices, such as publishing advisories in local newspapers and issuing advisory letters to local governmental agencies regarding groundwater use in the impacted area;

- Implementation of a long-term groundwater monitoring program to track and monitor changes in the groundwater contamination to ensure the RAOs are attained. The sampling program will also monitor groundwater quality including degradation by-products generated by the treatment processes to ensure that drinking water quality standards are met at the nearby municipal water supply well 18M. The results from the long-term monitoring program will be used to evaluate the migration and changes in VOC contaminants over time; and

- Development of an SMP to provide for the proper management of the Site remedy post-construction, including through the use of institutional controls until RAOs are met, and will also include long-term groundwater monitoring, periodic reviews and certifications. The SMP will also provide for the evaluation of the potential for soil vapor intrusion for any buildings developed on Parcel B.

The environmental benefits of the selected amended remedy for the Alcas Facility and the selected remedy for Parcel B may be enhanced by employing design technologies, considerations and practices that are sustainable in accordance with the EPA Region 2's Clean and Green Energy Policy.[1]

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy for OU3 and the amended OU2 remedy meet the requirements for remedial actions set forth in CERCLA Section 121, 42 U.S.C. § 9621, in that they: 1) are protective of human health and the environment; 2) meet a level or standard of control of the hazardous substances, pollutants, and contaminants which at least attains the legally applicable or relevant and appropriate requirements under federal and State laws (unless a statutory waiver is justified);

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[1] See http://epa.gov/region2/superfund/green_remediation.

3) are cost-effective; and 4) utilize permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable. The remedies also satisfy a preference for treatment as a principal element of the remedy (i.e., it reduces the toxicity, mobility, or volume of hazardous substances, pollutants, or contaminants as a principal element through treatment) through the use of ISCO at the Alcas Facility and EAB at Parcel B.

These remedies will result in hazardous substances, pollutants, or contaminants at levels that will not allow for unrestricted use and unlimited exposure until performance standards are attained, and as such, use and exposure must be limited until standards are met. Since it may take more than five years to attain the cleanup levels, policy reviews pursuant to Section 121(c) of CERCLA will be conducted no less often than once every five years after the completion of construction to ensure that the remedy is, or will be, protective of human health and environment.

ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this OU3 ROD and OU2 ROD Amendment. Additional information can be found in the Administrative Record for this Site.

- A discussion of the current nature and extent of soil and groundwater contamination is included in Section 5;
- Chemicals of concern and their respective concentrations may be found in Section 7 "Summary of Site Risks" and Table 1 in Appendix II;
- Potential adverse effects associated with exposure to Site contaminants may be found in Section 7, "Summary of Site Risks;"
- A discussion of remediation goals for chemicals of concern may be found in Section 8 "Remedial Action Objectives" and in Table 6 in Appendix II;
- A discussion of principal threat waste is contained in Section 11 "Principal Threat Wastes;"
- Current and reasonably-anticipated future land use assumptions are discussed in Section 6 "Current and Potential Future Land and Resources Uses;"
- Estimated capital, annual operation and maintenance, and total present worth costs are discussed in Section 9 "Descriptions of Alternatives;" and
- Key Factors in detailed analyses of viable remedial alternatives (*e.g.*, how the selected remedy provides the best balance of tradeoffs with respect to the balancing and modifying criteria) may be found in Section 10 "Comparative Analysis of Alternatives" and Section 13 "Statutory Determinations."

AUTHORIZING SIGNATURE

[signature]

Walter E. Mugdan, Director
Emergency and Remedial Response Division

Sept. 30, 2014
Date

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DECISION SUMMARY

1. SITE NAME, LOCATION, AND DESCRIPTION

The Olean Well Field Superfund Site (Site) is located in the eastern portion of the City of Olean and west and northwest of the towns of Olean and Portville in Cattaraugus County, New York. The Site is characterized by contaminated groundwater encompassing an area approximately 800 acres underlying the City of Olean, the Town of Olean and the Town of Portville, and by contaminated soil at certain locations in the City and Town of Olean. The Site is approximately 65 miles southeast of Buffalo, New York, and seven miles north of the New York/Pennsylvania border. The Allegheny River, a principal tributary of the Ohio River, and two of its tributaries, the Olean and Haskell Creeks, flow west-northwest through the southern portion of the Site. A Site location map is provided as Figure 1 in Appendix I.

The EPA has divided the Site into separate phases, or operable units, for remediation purposes. Operable Unit 1 (OU1) addresses the drinking water supply for the City and Town of Olean. OU2 addresses the sources of volatile organic compound (VOC) contamination to groundwater. Investigations conducted to date identified four source areas of VOC contamination to groundwater at the Site: Alcas Cutlery Corporation (Alcas); Loohn's Dry Cleaners and Launderers (Loohn's); McGraw-Edison Company (McGraw); and AVX Corporation (AVX). The Alcas source area includes the real property at which Alcas formerly conducted manufacturing operations, located at 1116 East State Street, which is currently occupied by the Cutco Corporation (this facility is hereafter referred to as the Alcas Facility). The Alcas Source Area also includes several parcels of land to the south of the Alcas Facility that are impacted by contaminated groundwater including, but not necessarily limited to parcels identified on the City of Olean tax map as Block 2, Lots 23, 24 and a portion of Lot 44 (collectively, these parcels are hereafter referred to as Parcel B). OU3 has been developed to address groundwater contamination at Parcel B. The Alcas Facility and Parcel B hereafter constitute the Alcas Source Area.

This Record of Decision (ROD) for Operable Unit 3 (OU3) and ROD Amendment for OU2 addresses soil and groundwater contamination for the Alcas Source Area. A map of the Alcas Source Area is provided as Figure 2 in Appendix I.

2. SITE HISTORY AND ENFORCEMENT ACTIVITIES

Site History

Three municipal water supply wells (18M, 37M and 38M) at the Site (see Figure 1) were constructed and completed in the late 1970s to provide water for the City of Olean, New York. The supply wells draw water from a water-bearing zone known as the City Aquifer. Prior to the construction of these municipal wells, city water was supplied by a surface-water treatment facility which drew water from the Olean Creek. In 1981, these supply wells were found to contain trichloroethene (TCE) and other chlorinated organic solvents at concentrations exceeding federal maximum contaminant levels (MCLs) and drinking water standards set by the New York State Department of Health (NYSDOH). As a result, these wells were closed and the surface water treatment facility operations were reactivated to provide water to residents.

The EPA subsequently evaluated the Site for inclusion on the National Priorities List (NPL) of known or threatened releases of hazardous substances. As a result of this evaluation, the Site was included on the National Interim Priorities List, by publication in the Federal Register on October 23, 1981, and was included on the first NPL on September 9, 1983.

Subsequent to the discovery of TCE contamination in the municipal wells, the Cattaraugus County Department of Health and the NYSDOH discovered TCE at a number of private wells in the City and Town of Olean. These private wells all received groundwater from a portion of the water-bearing zone above the City Aquifer, known as the upper aquifer. The EPA performed an initial removal action in January 1982. This action involved the installation of carbon adsorption filters on 16 contaminated private wells in the City and Town of Olean and periodic monitoring of those wells. In June 1984, the EPA conducted a second removal action which included the replacement of one of the carbon filters installed as part of the initial removal action, installation of carbon units on ten additional contaminated private wells, and monitoring. In March 1985, the EPA conducted a third removal action which consisted of the installation of carbon filter systems on two additional homes.

Between 1981 and 1985, several separate federal-, state- and potentially responsible party (PRP)-led investigations were conducted to identify the sources of contamination to the municipal wells and evaluate the nature and extent of groundwater contamination at the Site.

The results of these investigations were documented in a first operable unit ROD (OU1 ROD) for the Site issued by the EPA on September 24, 1985. The OU1 ROD called for the following: 1) installation of an air stripper to treat the contaminated groundwater from municipal water supply wells 18M, 37M and 38M; 2) extension of the City of Olean's public water supply line into the Town of Olean to connect approximately 93 residences served by private wells; 3) inspection of an industrial sewer; 4) recommendations for institutional controls to restrict the withdrawal of contaminated groundwater; 5) institution of a Site Monitoring Plan; and 6) performance of a supplemental Remedial Investigation/Feasibility Study (RI/FS) to evaluate source control measures at all facilities that were contributing to the groundwater contamination.

On February 7, 1986, the EPA issued an administrative Order under Section 106(a) of CERCLA, 42 U.S.C. §9606, (OU1 UAO) to AVX, McGraw-Edison Company, Cooper Industries, Inc. (parent corporation of McGraw-Edison Company), Alcas, Aluminum Company of America (which at the time owned a percentage share of Alcas), and W.R. Case and Sons Cutlery Co. (Case) (which at the time owned the remaining percentage share of Alcas), requiring them to implement the remedial action selected in the OU1 ROD.

All of the PRPs, with the exception of Case, agreed to perform the actions pursuant to the OU1 UAO. Case subsequently filed for bankruptcy. The trustee in bankruptcy for the bankruptcy estate of Case entered into a consent decree with the United States which required the bankruptcy estate to pay a portion of the EPA's past costs and a penalty for Case's failure to comply with the OU1 UAO.

Pursuant to the OU1 UAO, the extension of the City of Olean's water line was completed in 1988. In 1989, the private well users were connected to the water line extension. Although all residents impacted by the Site were offered connection to the public water supply pursuant to the OU1 ROD, some refused and, to date, some residents continue to use private wells as a source of potable water. Also in 1989, the industrial sewer at the McGraw-Edison property was inspected and repaired. In

February 1990, construction of the air strippers was completed and the municipal well water supply service was reactivated. The current total pumping rate for the municipal wells is approximately 3 million gallons per day. Since the air strippers began operating, sampling indicates that the system effectively removes site contaminants from the groundwater pumped from the City Aquifer to meet State and Federal drinking water standards prior to distribution to the public.

On November 13, 1989, the EPA issued an additional administrative order to Alcas. The order required Alcas to excavate approximately 10 cubic yards of contaminated soil from an area at the Alcas Facility where TCE had previously been used as a weed killer. This work was completed in 1989.

On June 25, 1991, an administrative order on consent was entered into between the EPA and AVX, McGraw-Edison, Cooper Industries, Alcas and Alcoa, Inc., (formerly known as Aluminum Company of America) for performance of a supplemental (OU2) RI/FS. The supplemental RI/FS was a mixed work project. Pursuant to this administrative order, the PRPs were required to investigate their respective properties. In addition, the EPA conducted studies on 10 additional properties. The results from the investigations conducted by the EPA were provided to the PRPs for incorporation into the supplemental RI/FS. In addition to the AVX, Alcas and McGraw-Edison properties, the supplemental RI/FS identified the Loohn's property as an additional source area.

Based on the results of the supplemental RI/FS, the EPA issued a ROD for OU2 on September 30, 1996. The major components of the selected remedy for OU2 for the Alcas property included the following:

- Vacuum Enhanced Recovery (VER) of VOCs from contaminated soil;
- Upgradient and downgradient groundwater monitoring; and
- Implementation of groundwater use restrictions.

The major components of the selected remedy for the Loohn's property included the following:

- VER or Soil Vapor Extraction with air sparging (SVE/AS). If design studies indicated VER and SVE/AS were impracticable due to the influence of the Allegheny River, the source area would be excavated;
- Upgradient and downgradient groundwater monitoring;
- Implementation of groundwater treatment if VER and SVE/AS or excavation do not adequately improve the quality of the City Aquifer, and if the Loohn's property continued to affect the groundwater entering the municipal wells; and
- Implementation of groundwater use restrictions.

The major components of the selected remedy for the McGraw-Edison property included the following:

- Groundwater treatment;
- Upgradient and downgradient groundwater monitoring; and
- Implementation of groundwater use restrictions.

The major components of the selected remedy for the AVX property included the following:

- Excavation and removal of contaminated soil;
- Off-Site low temperature desorption of soil contaminants, if necessary;
- Upgradient and downgradient groundwater monitoring;
- Implementation of groundwater treatment, if excavation and removal of the contaminated soil did not adequately improve the quality of the City Aquifer and if the property continued to affect the groundwater entering the municipal wells; and
- Implementation of groundwater use restrictions.

Implementation of the OU2 ROD

On March 17, 1998, three consent decrees were entered by the United States District Court for the Western District of New York. Each Consent Decree required either McGraw-Edison and Cooper Industries, Alcas and Alcoa, or AVX to perform the remedial design and remedial actions for their respective property as specified in the OU2 ROD. The remedial action for the Loohn's property was performed by the EPA.

McGraw-Edison - Cooper Industries:

Construction of a groundwater pump and treatment system for the contaminated upper groundwater aquifer at the McGraw-Edison property was initiated in 1999. In July 2001, operation of the groundwater treatment system commenced. The treatment system consists of two extraction wells with an average combined pumping rate of 20 gallons per minute (gpm) from the impacted upper groundwater bearing zone, a shallow tray air-stripper to remove VOCs from the extracted groundwater and a reinjection well to return treated water to the City Aquifer.

Loohn's Dry Cleaners and Launderers:

In the absence of a viable PRP, the EPA funded the implementation of the components of the selected remedy at the Loohn's property. A remedial design study was completed in 1998 by the EPA and based on this study, the EPA elected to implement the soil excavation option of the selected OU2 remedy in lieu of VER or SVE/AS.

In 2000, the EPA initiated the soil excavation activities and approximately 3,000 cubic yards of soil contaminated with tetrachloroethylene (PCE) and other VOCs were excavated and disposed of off-Site. After soil excavation activities commenced, additional data collected at the property revealed that the quantity of soil requiring excavation significantly exceeded the estimated design quantity. As a result, an additional 4,000 cubic yards of contaminated soil, was excavated and, along with the debris from the demolished remains of an old building on the property, disposed of off-Site.

Sampling of the groundwater monitoring wells at the Loohn's property have continued to reveal elevated concentrations of VOCs in groundwater. During the most recent sampling conducted in April 2014, TCE and PCE were detected at concentrations of 100 parts per billion (ppb) and 1,000 ppb, respectively. The EPA is in the process of determining whether further investigation at the Loohn's property is warranted.

<u>AVX</u>:

AVX initiated the excavation of contaminated soil at its property in July 2000. Approximately 5,055 tons of contaminated soil was excavated to a depth of approximately 10 feet below grade surface and transported off-Site for disposal before work was halted. AVX could not complete the excavation of contaminated soil because contaminated soil were beneath the southeast corner of the manufacturing building, which was fully occupied with AVX's manufacturing operations, and further excavation had the potential to impact the structural integrity of the occupied building. As a result, the excavation area was backfilled pending further study. Due to the discovery of the presence of elevated TCE concentrations under the building, AVX has been conducting further investigations and studies with EPA oversight. The EPA expects to issue a Proposed Plan for Remedy Modification for the AVX property in the near future.

<u>Alcas</u>:

A summary of the OU2 ROD implementation at the Alcas Source Area is discussed in Section 5, below.

3. COMMUNITY PARTICIPATION

On July 23, 2014, the EPA released the Proposed Plan for cleanup of the Alcas Source Area of the Site to the public for comment. The EPA assembled supporting documentation, which comprises the administrative record, and has made it available to the public at the information repositories maintained at the Olean Public Library located at Second and Laurens Streets, Olean, New York, and the EPA Region 2 Office in New York City.

Notice of the July 23, 2014 start of the public comment period and the availability of the above-referenced documents was published in *The Olean Times Herald* on July 23, 2014. A copy of the public notice published in *The Olean Times Herald* can be found in Appendix V. The EPA accepted public comments on the Proposed Plan from July 23, 2014 through August 22, 2014.

On August 5, 2014, the EPA held a public meeting at the Jamestown Community College, Cattaraugus County Campus, in the Cutco Theatre, located at 260 North Union Street, Olean, New York, to inform local officials and interested citizens about the Superfund process, to present the Proposed Plan for the Alcas Facility and Parcel B, including the preferred proposed remedial alternatives, and to respond to questions and comments from the attendees. Responses to the questions and comments received at the public meeting and in writing during the public comment period are included in the Responsiveness Summary (See Appendix V). No comments received during the comment period expressed disagreement with the EPA's preferred alternatives.

4. SCOPE AND ROLE OF RESPONSE ACTION AT ALCAS SOURCE AREA

Section 300.5 of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 C.F.R. Section 300.5, defines an OU as a discrete action that comprises an incremental step toward comprehensively addressing a site's problems. A discrete portion of a remedial response eliminates or mitigates a release, a threat of release, or pathway of exposure. Cleanup of a site can be divided into a number of OUs, depending on the complexity of the problems associated with the site.

The EPA has designated four OUs for the Olean Well Field Site. OU1 addresses the drinking water supply for the City and Town of Olean and the extension of the public water supply to residents utilizing private wells. OU2 addresses the sources of VOC contamination to groundwater, specifically: Alcas, Loohn's, McGraw and AVX. OU3 addresses groundwater contamination at Parcel B. The EPA is currently evaluating a potential source of VOC contamination to groundwater located south of the AVX property, which has been identified as OU4. The EPA expects to begin a preliminary study of this area in the near future.

Additional evaluations performed by the Alcas Source Area PRPs (Alcas and Alcoa), after the issuance of the OU2 ROD, revealed that a major component of the OU2 selected remedy for the Alcas Source Area, VER of VOCs, would not be successful and was, therefore, not protective of human health and the environment. As a result, modification to the Alcas Source Area component of the OU2 ROD is necessary. These investigations also revealed the presence of high levels of TCE in groundwater at Parcel B, necessitating the designation of Parcel B as a third operable unit and the issuance of this OU3 ROD.

The primary objectives of the actions set forth in this OU3 ROD and OU2 ROD Amendment are to minimize, contain and/or eliminate the migration of contaminants in soil and groundwater and to minimize any potential future health and environmental impacts at and from the Alcas Source Area.

This OU3 ROD and OU2 ROD Amendment does not modify the selected remedy for OU1 nor the OU2 remedy for the Loohn's, McGraw, or AVX source areas. The EPA anticipates that a modification to the AVX property component of the OU2 ROD will be necessary and a subsequent Proposed Plan and ROD Amendment will be issued to address the modification.

5. SUMMARY OF ALCAS SOURCE AREA CHARACTERISTICS

5.1 Site Geology/Hydrogeology

The Olean Well Field is underlain by approximately 300 feet of unconsolidated glacial deposits. Previous groundwater investigations in the Olean Well Field have shown that the upper 100 feet of glacial deposits can be divided into five lithologic units based on color, texture, grain size and mode of deposition. These lithologic units have been grouped in topographically descending order into four hydrogeologic units referred to as the upper aquifer, upper aquitard, lower aquifer, and lower aquitard.

The upper aquifer is comprised of glaciofluvial coarse sands and sandy gravels, recent fluvial deposits of fine sands, and silts with some clay. The upper aquifer is not continuous at the Olean Well Field. The thickest portion of the upper aquifer (approximately 41 feet) is found along the Allegheny River. The upper aquifer thins to the north, pinching out just south of the AVX property. The upper aquifer is recharged by the infiltration of precipitation. Groundwater in the upper aquifer is generally encountered at a depth of approximately 12 to 15 feet below land surface and flow is toward the Allegheny River.

The upper aquitard is located above the lower aquifer. This unit is a low permeability lodgement till composed of greater than 50 percent silt and clay. The thickness of the upper aquitard at the Olean Well Field Site ranges from as little as six feet in the south to over 30 feet in the north. In the northern portion of the Site this unit is present at the surface and consists of surficial till.

The lower aquifer, also referred to as the City Aquifer, consists of glacial outwash deposits of sand, silt, and gravel. The thickness of the lower aquifer is approximately 70 feet in the northern portion of the Site and thins to approximately 30 feet south of the Allegheny River to the south. The lower aquifer is the main source of drinking water for the City and Town of Olean. In addition several industrial facilities in the area utilize wells completed in the lower aquifer for manufacturing activities. The regional groundwater flow within the City Aquifer is generally in a west-southwest direction but within the vicinity of the Alcas Facility a localized eastward flow occurs due to the pumping influence of a nearby municipal supply well (18M).

Recharge to the lower aquifer is via leakage from the upper aquifer (or till where the upper aquifer is not present) through the upper aquitard. The magnitude of leakage over the Olean Well Field Site is variable and is dependent on the thickness and permeability of the till (upper aquitard) and relative groundwater level differences between the upper aquifer (or till) and lower aquifer.

The lower aquitard has been described as silt, clay, and fine to very fine sand deposited in a preglacial environment. Groundwater level data and potentiometric surface maps indicate that lines of equal elevation for the upper aquifer generally parallel the Allegheny River. This indicates that groundwater flow is towards the river from both sides of the river valley. Natural flow conditions in the lower or City Aquifer within the vicinity of the Site have been altered by the pumping of the municipal wells and an AVX production well, in operation since 1959.

5.2 Unknown Conditions or Information Related to Alcas Source Area

In 1999, the PRPs associated with the Alcas Facility initiated a series of property-specific pre-design investigations that involved further characterization studies necessary to design the VER component of the selected remedy. Based upon the initial results of these studies, it was determined that geological conditions in the till unit are heterogeneous and the source of groundwater contamination was not from the shallow soil at the rear of the Alcas Facility as identified in the OU2 ROD, but rather the data suggested that the main source of contamination resided beneath the main manufacturing building at the Alcas Facility. Based on this new information, the PRPs conducted further investigations in 2001 to support their belief that a residual dense non-aqueous phase liquid (DNAPL[2]) source is located under the main manufacturing building. In September 2001, the PRPs installed and sampled 17 microwells to define the direction of groundwater flow, to verify that affected groundwater is migrating from under the main manufacturing building, and to delineate the downgradient extent of shallow groundwater contamination. The investigation showed that elevated concentrations of TCE (16,000 to 310,000 ppb) were detected in groundwater samples collected in the upper aquifer along the southern edge of the main building. The presence of TCE in groundwater at these concentrations is typically recognized by the EPA as an indicator of the presence of residual

[2] A dense non-aqueous phase liquid or DNAPL is a liquid that is both denser than water and is immiscible or has low solubility in water.

DNAPL. DNAPL in soil represents a slowly dissolving source of groundwater contamination, prolonging groundwater restoration.

Based on this data, in February 2003, the EPA informed the PRPs that further Site investigation and characterization studies were warranted. The studies were needed to delineate the extent of the groundwater contamination in the upper aquifer beyond the southern boundary of the Alcas Facility (Parcel B) and to confirm the presence of a residual DNAPL source beneath the main manufacturing building.

As part of the additional investigation, in July 2004 soil and groundwater samples were collected from beneath and to the southwest of the main building and from the underlying City Aquifer to further determine the nature and extent of the VOC contamination in soil, shallow till and groundwater bearing zones at and downgradient of the Alcas Facility.

5.3 Soil/DNAPL Assessment Summary

Varying concentrations of VOCs were detected in the soil samples collected from the borings installed within the main manufacturing building. Results from the investigation showed concentrations of TCE as high as 280 parts per million (ppm), confirming the presence of residual DNAPL in the soil/till zone at an approximate depth of nine feet below the foundation of the main building. This concentration represents the highest concentration of TCE detected in soil at the Alcas Facility.

5.4 Groundwater Assessment Summary

The pre-design investigation groundwater sampling results for the upper aquifer revealed TCE concentrations ranging from nondetect to 310,000 ppb for the wells around the southeast corner of the main manufacturing building at the Alcas Facility. This indicates that a DNAPL source exists at or upgradient of this location, placing the likely source of DNAPL under the building. Generally, groundwater concentrations in the upper aquifer decrease from the building toward the river, which is the direction of groundwater flow in this upper-most unit.

Groundwater sampling results from five monitoring wells installed in the upper portion of the City Aquifer at the Alcas Facility revealed a maximum TCE concentration of 1,300 ppb at a depth of approximately 44 feet below the ground surface. Five additional monitoring wells were also installed at the Alcas Facility to further assess groundwater quality in the lower portion of the City Aquifer. TCE was detected at a maximum concentration of 10 ppb near the bottom of the City Aquifer at an approximate depth of 90 feet, exceeding the MCL of 5 ppb, which is the selected groundwater cleanup level in the OU2 ROD.

The results of these additional investigations confirmed the presence of a residual DNAPL source beneath the main manufacturing building at the Alcas Facility. Furthermore, the additional investigations revealed that groundwater contamination in the upper aquifer extends beyond the Alcas Facility limits. Groundwater sampling results from groundwater monitoring wells installed downgradient of the Alcas Facility revealed a maximum TCE and cis-1,2-dichloroethene (cis-1,2 DCE) concentration of 2,800 ppb and 1,000 ppb, respectively, at a depth of approximately 30 feet below the ground surface. Alcoa has since purchased the property south of the Alcas Facility overlying the contaminated groundwater plume (Parcel B).

5.5 Vapor Intrusion Investigation Summary

The EPA investigates the soil vapor intrusion pathway at homes and buildings situated at Superfund sites when the potential for vapor intrusion exists. VOC vapors released from contaminated groundwater and/or soil have the potential to move through the soil and seep through cracks in basements, foundations, sewer lines and other openings. The EPA's approach for investigating, assessing and remediating vapor intrusion was developed after issuance of the OU2 ROD. Recent studies of the Olean Well Field Site have included evaluation of the vapor intrusion pathway. The EPA is taking the opportunity of this decision document to summarize its vapor intrusion findings for the Site; thus, the discussion below pertains to the entire Olean Well Field Site, not just the Alcas portion of it.

In April 2009, the EPA initially conducted vapor intrusion sampling at 32 residences and commercial buildings near each of the four source areas at the Site. Although the EPA initially targeted additional properties near each of the source areas for vapor intrusion sampling based on their proximity to the underlying groundwater contamination, permission to perform the sampling was not received from all of the property owners. Where permission was granted, the EPA drilled through the sub-slabs in the basements and installed ports in order to sample the soil vapor under the buildings. Sampling devices called Summa canisters were attached to these ports to collect air at a slow flow rate over a 24-hour period. Summa canisters were also placed in indoor areas in each structure, and outside several residences to determine if there were any outdoor sources that may impact indoor air. The Summa canisters were then collected and sent to a laboratory for analysis.

The analytical results of the April 2009 vapor intrusion sampling indicated that nine homes and one commercial building had concentrations of VOCs at or above the EPA Region 2 screening levels in sub-slab vapor gases. However, all locations tested showed no concentrations of vapor intrusion gases in the indoor air of these locations above the EPA health-based levels.

In 2010 and 2011, the EPA re-tested seven of the homes where permission was granted and one commercial establishment for the presence of vapor intrusion gases in both the sub-slab and indoor air. The data gathered revealed a declining trend in concentrations of vapor gases in the sub-slab of the retested homes. The commercial building located near the McGraw-Edison property showed TCE concentrations in the sub-slab vapor gas at 350 micrograms per cubic meter (ug/m^3) in 2009, 250 ug/m^3 in 2010, and nondetect in 2011. This building was retested in 2012 and 2014 and showed concentrations of TCE in the subslab gas at 512 ug/m^3 and 443 ug/m^3, respectively. However, no vapor intrusion constituents above health-based levels were detected in the indoor air. Based on the presence of elevated concentrations of TCE in the subslab gas, the EPA intends to continue performing vapor intrusion monitoring.

In April 2011, the EPA performed an additional study in an area southwest of the Alcas Facility, and soil and groundwater samples were collected along Billington and Taggerty Avenues to, among other things, determine whether this area could be potentially impacted by vapor intrusion. The results did not reveal Site-related contamination in the soil samples. TCE was present in the groundwater at low levels (maximum concentration of 3.52 ppb).

Based on the EPA's investigation, the vapor-intrusion pathway was determined not to constitute a significant risk to human health or the environment.

6. CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

6.1 Land Use

The Alcas Facility is situated within a designated industrial zone in the City of Olean. Farming and agriculture are nonexistent within the general vicinity. Parcel B is comprised of several residential parcels of land, acquired by Alcoa, immediately to the south of the Alcas Facility. Parcel B is bordered to the east and west by sparsely populated residential areas, and to the south by the Allegheny River, a principal tributary of the Ohio River, which flows west-northwest through the southern portion of the Site. The EPA expects that the land-use pattern at and surrounding both the Alcas Facility and Parcel B will not change.

6.2 Groundwater Use

Three municipal water supply wells (18M, 37M and 38M) at the Site provide water for the City of Olean. These water supply wells draw water from the City Aquifer. An air stripper at municipal supply well 18M and a separate air stripper at municipal supply wells 37M and 38M treat the extracted groundwater before distribution to the public. The current total pumping rate for these municipal wells is approximately 3 million gallons per day. In addition, although the extension of the City of Olean's water line was completed in 1988, and in 1989 private well users were connected to the water line extension, to date, some residents continue to use private wells as a source of potable water.

7. SUMMARY OF SITE RISKS

A baseline human health risk assessment (HHRA) was conducted in 1995 as part of the OU2 ROD to estimate the risks associated with current and future site conditions at the Alcas Facility and a qualitative human health risk was performed in 2014 to assess potential risks at Parcel B. A baseline or qualitative human health risk assessment is an analysis of the potential adverse human health effects caused by hazardous substance exposure in the absence of any actions to control or mitigate exposure under current and future land uses.

7.1 Human Health Risk Assessment Process

The HHRA performed as part of the OU2 RI considered exposure to chemicals of potential concern (COPCs) at the Site. The qualitative human health risk assessment for OU3 considered exposure to COPCs at Parcel B. As required by EPA policy, these assessments estimated the human health risk which could result from the contamination at the Site if no remedial actions were taken at the Alcas Facility or Parcel B. Tables 1 through 5 in Appendix II present the relevant subset of information from the HHRA.

For the OU2 HHRA, a four-step human health risk assessment process was used for assessing site-related cancer risks and noncancer health hazards. The four-step process is comprised of:

Hazard Identification – this step identifies the COPCs at a site based on several factors such as toxicity, frequency of occurrence, and concentration;

Exposure Assessment – this step estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways by which humans are potentially exposed (i.e., ingestion and dermal contact with contaminated soil);

Toxicity Assessment – this step identifies the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response); and

Risk Characterization – this step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site-related risks. During this step, contaminants with concentrations that exceed federal Superfund guidelines for acceptable exposure are identified. These guidelines are 10^{-4} to 10^{-6}, or one-in-ten-thousand to one-in-a-million excess occurrences for cancer, and a Hazard Index (HI) of greater than 1.0 (discussed further below) for noncancer health hazards. Contaminants with concentrations that exceed these guidelines are then considered chemicals of concern (COCs) for a site and are typically those that will require remediation. The uncertainties associated with the risk calculations are also evaluated under this step.

7.2 Human Health Risk Assessment

The risk assessment that was conducted to support the remedial decision for the OU2 ROD evaluated the potential risks and hazards that may be associated with exposure to groundwater contamination at the Site through ingestion, dermal contact and inhalation of vapors during showering.

The results of the baseline risk assessment performed for OU2 indicated that ingestion of and dermal contact with untreated groundwater at the Site posed unacceptable risks to human health. The baseline risk assessment evaluated all Site-related contaminants, however the estimated total risks are primarily due to TCE and trichloroethane (TCA). Cancer risks due to ingestion of groundwater were determined to be approximately one-in-one-hundred for adults and young children (1.49×10^{-2} and 1.3×10^{-2}, respectively) and six-in-one-thousand (5.94×10^{-3}) for older children. The noncarcinogenic HIs for these exposure groups were 3.36 for adults, 14.7 for young children and 6.73 for older children. Cancer risks due to dermal contact with groundwater contaminants were determined to be 2.35×10^{-3} for adults, 9.21×10^{-4} for young children and 6.68×10^{-4} for older children. The noncarcinogenic HIs for these exposure groups were less than one.

Cancer and noncancer risks due to inhalation of contaminants from untreated groundwater during showering were within the EPA's acceptable risk range. Cancer risks for adults were determined to be 6.38×10^{-5} for adults and 5.98×10^{-5} young children, and 2.73×10^{-5} for older children. The noncarcinogenic HIs for these exposure groups were less than one.

The cumulative upper-bound cancer risks for exposure through ingestion, dermal contact, and inhalation to untreated groundwater at the Site were 1.73×10^{-2} for adults, 1.39×10^{-2} for young children and 6.64×10^{-3} for older children, which are greater than the acceptable risk range of 10^{-4} to 10^{-6}. The estimated total risks are primarily due to TCE, which contributed significantly to the carcinogenic risk calculations and was attributable to releases of the contaminant into the ground and eventually into the groundwater.

Although the baseline risk assessment performed for OU2 evaluated exposure to untreated groundwater for the four sources areas collectively, each COC detected at the Alcas Facility exceeded federal MCLs and State standards. The maximum concentration of TCE detected in groundwater during the OU2 RI at the Site was 110,000 ppb, compared to the federal MCL and State standards of 5 ppb. Although the OU2 RI had revealed a maximum concentration of 8,800 ppb for TCE at the Alcas Facility, additional data collected subsequent to the OU2 ROD revealed a maximum concentration of 310,000 ppb for TCE at the Alcas Facility. Therefore, based on the data collected to date, the results of the baseline risk assessment contained in the OU2 ROD for groundwater have not substantially changed.

Cancer risks and noncarcinogenic hazards from exposure to surface and subsurface soils through ingestion or inhalation by construction workers were also evaluated for the OU2 ROD. Cancer risks were found to be acceptable for the Alcas Facility. Noncancinogenic HIs were less than 1, and as such, found to be acceptable at the Alcas Facility. A residential exposure scenario for soil was not calculated because all of the properties studied during the OU2 RI/FS are zoned for and operated as either industrial or commercial uses.

Investigations conducted at the Alcas Facility subsequent to the OU2 ROD revealed concentrations of TCE in soils beneath the main building that were higher than the concentrations in soil used for the OU2 Risk Assessment. These investigations revealed a maximum concentration of TCE of 280 ppm at a depth of nine to ten feet below the concrete slab floor of the main building, compared to a maximum TCE concentration of 12 ppm detected in soil prior to the issuance of the OU2 ROD. As part of the remedy modification process, the EPA has conducted a qualitative analysis of the data to estimate the risks associated with the elevated TCE concentrations detected in soils at the Alcas Facility. The Alcas Facility is zoned for and operated as either industrial or commercial uses and it is expected that such use would continue in the future. Because the higher concentrations of TCE is at depth (i.e., 10 feet deep or greater), the exposure pathway to the contamination is not complete. Therefore, based on this qualitative analysis considering current and anticipated site use, the EPA has determined that the higher concentrations of TCE in soils at depth beneath the main building have not substantially changed the results of the baseline risk assessment contained in the OU2 ROD for soils at the Alcas Facility. Discovery of the higher soil concentrations below the Alcas building, while not impacting the potential risk and hazards due to depth, could serve as a source material for continued groundwater contamination and therefore it is prudent to address the deep soil contamination in relation to the groundwater remedy.

As to Parcel B, additional groundwater and soil investigations were conducted at Parcel B, after the OU2 ROD was issued. The data collected from these investigations found that maximum TCE concentrations in groundwater under Parcel B (2,800 ppb) was within an order-of-magnitude of the maximum groundwater concentration found under the Alcas Facility during the OU2 RI (8,800 ppb), which indicates that the risks and hazards for exposure to groundwater under Parcel B would be similar to those calculated for the Alcas Facility. The data collected from the soil investigations at Parcel B did not reveal Site-related contamination in soils.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

- environmental chemistry sampling and analysis
- environmental parameter measurement
- fate and transport modeling
- exposure parameter estimation
- toxicological data

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is uncertainty as to the actual levels present. Environmental chemistry-analysis error can stem from several sources including the errors inherent in the analytical methods and characteristics of the matrix being sampled. Uncertainties in the exposure assessments are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure could occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure. Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals.

These uncertainties are addressed by making conservative assumptions concerning risk and exposure parameters throughout the assessment. As a result, the Risk Assessment provides upper-bound estimates of the risks to populations near the site, and is unlikely to underestimate actual risks related to the site.

7.3 Ecological Risk Assessment

The Alcas Facility and Parcel B are located within the developed industrial zone of the City of Olean. The Alcas Facility main building is surrounded by asphalt and some limited patches of lawn. Parcel B is a vacant area of land to the immediate south. Parcel B is covered with grass and is surrounded by residences. There are no significant habitats present at the Alcas Facility which could potentially support indigenous wildlife receptor species. At Parcel B, there is no complete exposure pathway for any ecological receptors present because soils are not contaminated and groundwater contamination occurs at depth. An ecological risk assessment was not conducted as part of the OU2 investigations for the Alcas Facility or the OU3 Site investigation process for Parcel B.

7.4 Basis for Taking Action

The results of the investigations and the human health risk assessments indicate that the contaminated groundwater at both the Alcas Facility and Parcel B presents an unacceptable exposure risk. The ecological evaluation indicates that the Alcas Facility does not pose any unacceptable risks to aquatic or terrestrial ecological receptors.

Discovery of elevated concentrations of VOCs in soil below the building at the Alcas Facility does not appear to pose unacceptable direct-contact risks to users of that property, given the depth of contamination and the presence of the building; however, the contaminated soil serves as source material for continued groundwater contamination. Therefore, it is necessary to address the soil contamination in order to remediate the groundwater.

It is the EPA's determination that selected remedies for the Alcas Facility and for Parcel B are necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

8. REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are specific goals to protect human health and the environment. These objectives are based on available information and standards, such as applicable or relevant and appropriate requirements (ARARs), to-be-considered guidance, and site-specific risk-based levels.

The RAOs for the Alcas Facility in the OU2 ROD were developed for two contaminated media – groundwater and soil. The RAOs are designed to, among other things, restore the upper and lower aquifers to their beneficial use as a source of drinking water. Groundwater objectives included the removal and/or control of the sources of contamination to the groundwater and the removal of contamination already in the groundwater. The RAOs for the groundwater for the Alcas Facility (the OU2 ROD Amendment) are consistent with the OU2 ROD. The RAOs for the groundwater at Parcel B (the OU3 ROD) are the same as the RAOs for the Alcas Facility. The groundwater RAOs are as follows:

- Restore the City Aquifer beneath the Alcas Facility and Parcel B to its beneficial use as a source of drinking water by reducing contaminant levels to the more stringent of federal MCLs or New York State standards;
- Minimize, contain and/or eliminate sources of VOC contaminants already in the shallow groundwater at the Alcas Facility and Parcel B; and
- Minimize and/or eliminate the potential for future human exposure to Site contaminants via contact with contaminated groundwater.

The groundwater remediation goals established for both the OU2 ROD Amendment and the OU3 ROD are identified in Table 6.

Soil objectives in the OU2 ROD include the elimination of leaching of contaminants of concern from the soil into the groundwater. The soil RAOs for the Alcas Facility for this OU2 ROD Amendment include:

- Minimize, contain and/or eliminate VOC contaminants from soils at the Alcas Facility that are leaching into the groundwater; and
- Minimize and/or eliminate the potential for human exposure to Site contaminants via contact with contaminated soil.

Soil remediation goals for addressing the Alcas Facility soil contamination are identified in Table 6.

9. SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA § 121(b)(1), 42 U.S.C. § 9621(b)(1), mandates that remedial actions be protective of human health and the environment, cost-effective, comply with ARARs, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants and contaminants at a site. CERCLA § 121(d), 42 U.S.C. § 9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants, which at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA § 121(d)(4), 42 U.S.C. § 9621(d)(4).

The 1996 OU2 ROD evaluated five remedial alternatives to address the contamination at the Alcas Facility: 1) no action; 2) institutional controls and access control; 3) soil capping and groundwater treatment; 4) soil vapor extraction/VER and groundwater treatment; and 5) soil removal and groundwater treatment.

Pilot tests conducted at the Alcas Facility during the FS indicated that VER could effectively desorb VOCs from the contaminated subsurface at the Alcas Facility. However, in 2000, after the OU2 ROD was issued, Alcas and Alcoa petitioned the EPA for a change of the VER component of the OU2 ROD, on the basis that the technology could not feasibly or effectively remediate a suspected DNAPL mass underneath the Alcas main building. The presence of DNAPL under the main manufacturing building was not known in 1994 when the pilot study was performed or in 1996 when the OU2 ROD was issued. In addition, further characterization of geological conditions revealed that subsurface conditions in the area of the pilot study were not representative of conditions at the Alcas Facility. The additional investigations conducted in 2000 and 2001 also revealed the groundwater contamination in the upper aquifer on Parcel B, which was similarly not known when the OU2 ROD was issued.

Following the additional characterization of the nature and extent of contamination at the Alcas Source Area, remedial technologies were evaluated by the PRPs as part of a Focused Feasibility Study (FFS) to address the Alcas Facility and Parcel B. The FFS Report was finalized in July, 2014.

The FFS process evaluated various technologies to remediate the contaminated soil and groundwater at the Alcas Source Area. As part of the screening process conducted for the FFS, pilot studies were conducted for some of the technologies.

Between August and October 2011, the PRPs conducted bench-scale treatability tests to evaluate the effectiveness of activated sodium persulfate to reduce concentrations of TCE in soil and groundwater at the Alcas Facility. Based on the positive results of this initial bench-scale treatability study, in April 2012, the PRPs performed an additional *in-situ* treatability pilot study to further evaluate the potential for chemical oxidation using activated sodium persulfate to reduce concentrations of TCE in soils at the Alcas Facility. The data from this study indicated that activated sodium persulfate can be effective in destroying TCE at the Alcas Facility.

In November 2011, the PRPs also initiated an *in-situ* Enhanced Anaerobic Bioremediation (EAB) pilot study to evaluate the effectiveness of bioremediation with bioaugmentation in groundwater at Parcel B. The pilot study revealed the successful distribution of the injected compounds within the aquifer and the maintenance of strong reducing conditions following injection.

The FFS Report evaluated ten remedial alternatives for the Alcas Facility and five remedial alternatives for Parcel B. The EPA has further screened out several active remedial alternatives from the FFS Report including a limited excavation of impacted soils, groundwater extraction and treatment, monitored natural attenuation, zero valent iron (ZVI) treatment, permeable reactive barrier, and barrier wall containment. These alternatives are not discussed in this decision document because as separate alternatives they would not meet the RAOs for the Alcas Source Area. This decision document summarizes three alternatives from the FFS Report for consideration as a potential remedy for the soil and groundwater contamination at the Alcas Facility and three alternatives to remediate groundwater contamination at Parcel B. This decision document summarizes No Action (Alternative 1), VER (Alternative 2) which was the remedy selected in the OU2 ROD, and *in-situ* chemical oxidation (ISCO) with activated persulfate, with and without excavation (Alternatives 3a and 3b, respectively) to remediate soil and groundwater contamination beneath and adjacent to the main building at the Alcas Facility. Although additional evaluations revealed VER of VOCs would not be successful, for the purposes of the OU2 ROD Amendment, Alternative 2 was maintained for comparison purposes. To remediate groundwater contamination at Parcel B, this decision document evaluates No Action (Alternative 1), EAB (Alternative 4), and ISCO using ozone (Alternative 5). Detailed descriptions of these remedial alternatives can be found in the July 2014 FFS Report.

The construction time for each remedial alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate the performance of the remedy with any PRPs, or procure contracts for design and construction.

9.1 Description of Common Elements among Remedial Alternatives

All of the alternatives, with the exception of the no action alternative (Alternative 1), include common components. Alternatives 2 through 5 include long-term monitoring to ensure that groundwater quality improves following implementation of the given remedy until cleanup levels are achieved. The groundwater sampling would also monitor degradation by-products generated by the treatment processes to ensure that drinking water quality standards are met at the nearby municipal water supply well 18M. Alternatives 2 through 5 also include implementation of institutional controls for soil and groundwater use restrictions until RAOs are achieved to ensure the remedy remains protective. A plan would be developed which would specify institutional controls to restrict exposure to hazardous substances (e.g. via groundwater consumption, contact with contaminated groundwater, and contact with contaminated soil) until RAOs are met which are anticipated to include proprietary controls, such as deed restrictions for groundwater and soil use, existing governmental controls, such as well permit requirements, and informational devices, such as publishing advisories in local newspapers and issuing advisory letters to local governmental agencies regarding groundwater use in the impacted area. A site management plan (SMP) would be developed to provide for the proper management of the Site remedy post-construction, such as through the use of institutional controls until RAOs are met, and will also include long-term groundwater monitoring, periodic reviews and certifications. Until the RAOs are achieved, the SMP would also provide for the proper management of any contaminated unsaturated soils remaining beneath the concrete slab of the building and the evaluation of the potential for soil vapor intrusion should the building use at the Alcas Facility change or for any buildings developed on the Alcas Facility and Parcel B.

Additionally, because it will take longer than five years to achieve MCLs under any of the active Alternatives, a review of conditions at the Site will be conducted no less often than once every five years until cleanup levels are achieved.

9.2 Description of Remedial Alternatives

Alternative 1: No Action (Considered for Both Alcas Facility and Parcel B)

Capital Cost:	$0
Annual Operation & Maintenance (O&M) Costs:	$0
Present Worth Cost:	$0
Construction Time:	Not Applicable

The NCP requires that a “No Action” alternative be used as a baseline for comparing other remedial alternatives. Under this alternative, there would be no remedial actions conducted at the Alcas Source Area to control or remove soil and groundwater contamination. This alternative does not include monitoring or institutional controls. Because this alternative would result in contaminants remaining above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years. If justified by the review, additional response actions might be implemented.

Alternative 2: Vacuum Enhanced Recovery (the OU2 ROD Remedy) (Considered for Alcas Facility Only)

Capital Cost:	$338,000
Annual Operation & Maintenance (O&M) Costs:	$100,000
Present Worth Cost:	$1,400,000
Construction Time:	6 months

VER involves the use of negative air pressure, generated by a high powered vacuum pump, which is applied to a series of recovery wells to cause the movement of soil vapor and some groundwater towards the wells for recovery. The vapor recovery causes desorption (removal of contaminants which are adsorbed onto soil particles) and volatilization of VOCs by continuously removing contaminated vapors and forcing clean air into the contaminated areas. An off-gas treatment system using granular activated carbon (GAC) would be constructed and operated at the Alcas Facility to remove contaminants from the effluent which are above federal and NYS air emissions standards. Any groundwater recovered with the soil vapor would also be treated with GAC prior to discharge to a publicly owned treatment works (POTW).

This was the remedy selected in the OU2 ROD and is presented here again as a basis for comparing this remedy to the other alternatives. For the purpose of developing a conceptual design and cost estimate for comparison with other technologies in the FFS, the conceptual design for VER from the OU2 ROD was modified from a one-step application to an interceptor system whereby the technology would be utilized immediately downgradient of the DNAPL source beneath the main building and operate full time. Installation of the VER wells were assumed in the conceptual design for the FFS to be limited to the area outside of the main building on the Alcas Facility to mitigate disturbance to ongoing manufacturing operations. VER wells would be installed up to a depth of approximately 27 feet below ground surface (bgs) to target the source material. An estimated remediation time frame of 30 years was used for developing costs associated with O&M activities.

Alternative 3a: *In-situ* Chemical Oxidation (ISCO) Using Persulfate (Considered for Alcas Facility Only)

Capital & Periodic Injection Cost:	$783,000
Annual Operation & Maintenance (O&M) Costs:	$82,994
Present Worth Cost:	$1,101,000
Construction Time:	1- 2 years

This remedial alternative would involve the injection of an alkaline-activated sodium persulfate solution through a series of injection wells located beneath the main building at the Alcas Facility and along the exterior of the southern portion of the main building to treat the contamination. *In-situ* treatment using ISCO results in the transformation of the VOC contaminants into less harmful chemical compounds. Site-specific, bench-scale tests with alkaline-activated sodium persulfate were found to be successful, and this treatment chemical was assumed, for cost-estimating purposes; however, other ISCO treatment methods could also be employed as part of this remedial alternative. For the purposes of developing a conceptual design and cost estimate for comparison with other technologies, the FFS estimated that eight injection wells would be installed. Due to possible accessibility constraints for drilling equipment within the main building, the conceptual design may need to incorporate measures to mitigate disturbance to the facility operations. Figure 3 provides the conceptual design for the injection well network. The FFS also estimated three injection events over a period of up to five years. The conceptual design and cost estimate are based on the results of pilot studies conducted at the Alcas Facility using ISCO. The actual cost of this alternative depends on numerous factors, including the number of injections and the percentage of contaminant mass remaining upon completion of each injection event. This alternative would require additional sampling during the pre-remedial design phase to determine whether an upgradient source of groundwater contamination is present in the northern portion of the Alcas Facility or off-property. Based on the results of this additional pre-design investigation, the conceptual design may require some modification to address any source identified. This alternative assumes that any upgradient source impacting the Alcas Facility would be identified and effectively remediated or controlled.

This alternative would include long-term monitoring of the VOC contamination transformation resulting from the ISCO injections and the attenuation processes to ensure that the groundwater quality improves until the cleanup levels identified in Table 6 are achieved. Additional injections beyond the initial rounds outlined in the conceptual design may be required to achieve and maintain the remedial action. An estimated remediation time frame of 20 years was used for developing costs associated with O&M activities, including well maintenance and groundwater monitoring of the attenuation processes.

Alternative 3b: *In-situ* Chemical Oxidation (ISCO) Using Persulfate with Excavation (Considered for Alcas Facility Only)

Excavation Capital Cost	$190,000
ISCO Capital & Periodic Injection Cost:	$783,000
Total Capital Cost:	$973,000
Annual Operation & Maintenance (O&M) ISCO Costs:	$82,994
Total Present Worth Cost:	$1,291,000
Excavation Construction Time:	3 - 6 months
ISCO Construction Time	1 – 2 years

This alternative is comprised of the remedial measures included in Alternative 3a, and adds excavation of what is estimated to be approximately 70 cubic yards of soils if, subsequent to treatment with ISCO, soils remain beneath or adjacent to the main building at the Alcas Facility at concentrations that are impacting the ability to achieve the groundwater RAOs using ISCO alone, and after a determination is made by the EPA that it is not inappropriate to access the material based upon factors that include the use of the building. Excavation would remove remaining contaminated soil serving as a source material to the groundwater contamination of the upper aquifer.

Alternative 4: Enhanced *In-situ* Anaerobic Bioremediation (EAB) (Considered for Parcel B Only)

Capital and Periodic Injection Cost:	$642,000
Annual Operation & Maintenance (O&M) Costs:	$101,000
Present Worth:	$1,103,000
Construction Time:	1 – 2 years

EAB would involve the injection of amendments into the groundwater at the impacted depths using an injection well network. Once delivered, these chemicals promote reductive dechlorination, a process used to describe the degradation of VOCs, by microorganisms in the subsurface. Lactate, emulsified vegetable oil (EVO), and whey are examples of carbon sources used to augment and promote the biodegradation of chlorinated solvents by naturally occurring microorganisms called *dehalococcoides*. Under this alternative, bioaugmentation would likely be necessary to supplement the existing bacterial community at and around Parcel B. For the purposes of developing a conceptual design and cost estimate for comparison with other technologies, the FFS estimated the installation of 13 temporary injection points at Parcel B to depths between 10 and 40 feet bgs. Figure 3 provides the conceptual design for the injection well network. The FFS also estimated three injection events over a period of up to five years. The conceptual design and cost estimate are based on the results of a pilot study conducted at Parcel B using EAB.

Additional injections beyond the initial rounds outlined in the conceptual design may be required to achieve and maintain the remedial action. An estimated remediation time frame of 30 years was used for developing costs associated with O&M activities, including well maintenance and groundwater monitoring of attenuation processes.

Alternative 5: *In-situ* Chemical Oxidation (ISCO) Using Ozone (Considered for Parcel B Only)

Capital & Periodic Injection Cost:	$823,000
Annual Operation & Maintenance (O&M) Costs:	$81,444
Present Worth:	$1,010,000
Construction Time:	1 – 2 years

This remedial alternative would involve the injection of ozone gas through a series of injection wells to degrade organic contaminants in the groundwater. *In-situ* chemical oxidation results in the transformation through chemical reactions of the VOC contaminants into less harmful chemical compounds. For the purposes of developing a conceptual design and cost estimate for comparison with other technologies, the FFS estimated 170 injection wells would be installed to a depth of 20 feet bgs to treat the dissolved phase plume at Parcel B. The FFS also estimated five to 10 injection events over a period of up to five years. The actual cost of this alternative depends on numerous factors, including the number of injections and the percentage of contaminant mass remaining upon completion of each injection event.

Additional injections beyond the initial rounds outlined in the conceptual design may be required to achieve and maintain the remedial action. An estimated remediation time frame of 20 years was used for developing costs associated with O&M activities, including well maintenance and groundwater monitoring of attenuation processes.

10. COMPARATIVE ANALYSIS OF ALTERNATIVES

In selecting a remedy for a site, the EPA considers the factors set forth in CERCLA Section 121, 42 U.S.C. § 9621, by conducting a detailed analysis of the remedial alternatives FS pursuant to the requirements of the NCP at 40 C.F.R. § 300.430(e)(9), the EPA's *Guidance for Conducting Remedial Investigations and Feasibility Studies*, OSWER Directive 9355.3-01, and the EPA's *A Guide to Preparing Superfund Proposed Plans, Records of Decision, and Other Remedy Selection Decision Documents*, OSWER 9200.1-23.P. The detailed analysis consists of an assessment of the individual alternatives against each of the nine evaluation criteria set forth at 40 C.F.R. § 300.430(e)(9)(iii) and a comparative analysis focusing upon the relative performance of each alternative against those criteria.

The following **"threshold"** criteria are the most important and must be satisfied by any remedial alternative in order to be eligible for selection:

1. **Overall protection of human health and the environment** addresses whether or not a remedy provides adequate protection and describes how risks posed through each exposure pathway (based on a reasonable maximum exposure scenario) are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.
2. **Compliance with ARARs** addresses whether a remedy would meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and regulations or provide grounds for invoking a waiver. Other federal or state advisories, criteria, or guidance are TBCs. While TBCs are not required to be adhered to by the NCP,

the NCP recognizes that they may be very useful in determining what is protective of a site or how to carry out certain actions or requirements.

The following **“primary balancing”** criteria are used to make comparisons and to identify the major tradeoffs between alternatives:

3. **Long-term effectiveness and permanence** refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup levels have been met. It also addresses the magnitude and effectiveness of the measures that may be required to manage the risk posed by treatment residuals and/or untreated wastes.

4. **Reduction of toxicity, mobility, or volume through treatment** is the anticipated performance of the treatment technologies, with respect to these parameters, that a remedy may employ.

5. **Short-term effectiveness** addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation of the remedy.

6. **Implementability** is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

7. **Cost** includes estimated capital, O&M, and present worth costs.

The following **“modifying”** criteria are used in the final evaluation of the remedial alternatives after the formal comment period, and they may prompt modification of the preferred remedy that was presented in the Proposed Plan:

8. **State acceptance** indicates whether, based on its review of the RI/FS report, HHRA, and Proposed Plan, the State concurs with, opposes, or has no comments on the proposed remedy.

9. **Community acceptance** refers to the public's general response to the alternatives described in the RI/FS report, HHRA, and Proposed Plan.

A comparative analysis of the alternatives considered in this OU3 ROD and OU2 ROD Amendment, based upon the evaluation criteria noted above, follows.

10.1 Overall Protection of Human Health and the Environment

<u>Alcas Facility</u>

Since no action would be implemented, Alternative 1 would not meet RAOs, would not control exposure to contaminated soil, would not reduce risk to human health or the environment, and would not restore the groundwater. Alternative 2 would not be effective in reducing VOC contamination because of the heterogeneous soil conditions and the presence of DNAPL under the building and, therefore, would not be protective of human health and the environment. Alternatives 3a (ISCO using persulfate) and 3b (ISCO using persulfate with excavation) are expected to provide similar protection of human health and the environment at the Alcas Facility. Protectiveness under

Alternatives 3a and 3b require a combination of actively reducing contaminant concentrations and limiting exposure to residual contaminants through institutional controls until RAOs are met.

Parcel B

Alternative 1 (No Action) would not meet RAOs and would not provide protection of human health and the environment, since contamination would remain in groundwater, and no mechanism would be implemented to prevent exposure to contaminated groundwater or restore groundwater. Alternative 4 (EAB) and Alternative 5 (ISCO using ozone) are both active remedies that would restore groundwater quality within a reasonable timeframe. Protectiveness under Alternatives 4 and 5 requires a combination of actively reducing contaminant concentrations and limiting exposure to residual contaminants through institutional controls until RAOs are met.

10.2 Compliance with ARARs

The EPA and the NYSDOH have promulgated health-based protective MCLs (40 CFR Part 141, and 10 NYCRR § 5-1.51 Chapter 1), which are enforceable standards for various drinking water contaminants (chemical-specific ARARs). The aquifers are designated as a potable water supply. NYSDEC also has established groundwater standards at 6 NYCRR Part 703 which are applicable. The more stringent of the federal MCL and state Standard will be the groundwater cleanup standard for the Site. Because area groundwater is a source of drinking water, the MCLs are ARARs.

EPA has identified New York State's 6 NYCRR Part 375-6.3(b) for unrestricted use as an ARAR, a "to-be-considered", or other guidance to address contaminated soil at the Alcas Facility. A complete list of ARARs, TBCs and other guidelines is presented in Table 7 (chemical-specific), Table 8 (location-specific) and Table 9 (action-specific).

Alcas Facility

Alternative 1 would not comply with ARARs as no work would be conducted to address the contamination. Alternative 2 would not comply with chemical-specific ARARs since VER would not be effective in reducing VOC contamination in inaccessible areas beneath the main building. Alternative 3a is expected to reach chemical-specific ARARs within 20 years. Alternative 3b is expected to achieve chemical-specific ARARs at the same time as Alternative 3a unless there is soil excavation, in which case Alternative 3b would be expected to reach chemical-specific ARARs sooner. However, excavation would be conducted after implementation of ISCO with persulfate, after a determination is made by the EPA that it is not inappropriate to access the material based upon factors that include the use of the building.

RCRA is a federal law that mandates procedures for managing, treating, transporting, storing, and disposing of hazardous wastes. Relevant portions of RCRA would be met by Alternative 2, Alternative 3a and Alternative 3b. Alternative 3a and 3b would also comply with other location- and action-specific ARARs.

Parcel B

Alternative 1 would not comply with ARARs as no work would be conducted to address the contamination. Alternative 5 (ISCO with ozone) is expected to achieve chemical-specific ARARs within 20 years and Alternative 4 (EAB) is expected to achieve chemical-specific ARARs within 30 years. However, there is some additional uncertainty associated with the time frame under Alternative 5 since an *in-situ* pilot study using ISCO with ozone was not conducted.

Alternatives 4 and 5 would also comply with location- and action-specific ARARs.

10.3 Long-Term Effectiveness and Permanence

Alcas Facility

Alternative 1 does not provide long-term effectiveness or permanence because no active remedial measures are proposed. Alternative 2 (VER) would likely result in residual contamination mass remaining at the Alcas Facility resulting in continued releases of hazardous substances to the groundwater. Therefore, it would be the least effective and permanent of the active remedial alternatives considered.

ISCO has been demonstrated to be effective and reliable at numerous sites for treatment of VOCs in groundwater. Alternative 3a is expected to provide a high degree of long-term effectiveness and permanence since the pilot studies conducted at the Alcas Facility in 2011 and 2012 demonstrated that the oxidant can oxidize residual nonaqueous TCE, reducing contaminant mass in the shallow groundwater, which would reduce the flow into the City Aquifer. Alternative 3b could potentially provide the highest degree of long-term effectiveness and permanence since additional excavation activities could be performed in the future, if after a determination is made by the EPA that it is not inappropriate to access the material based upon factors including the use of the building necessary.

Parcel B

Alternative 1 does not provide long-term effectiveness or permanence because no active remedial measures are proposed. EAB (Alternative 4) and ISCO with ozone (Alternative 5) have been demonstrated to be effective and reliable at numerous sites for treatment of VOCs in groundwater. The pilot study conducted at Parcel B in 2011 demonstrated that reductive dechlorination under Alternative 4 (EAB) could be achieved through the injection of an electron donor allowing for the degradation of chlorinated ethenes. Based on the results of the *in-situ* pilot study, bioaugmentation would likely be necessary in order to supplement the existing bacterial community to achieve complete reductive dechlorination of the contaminants. The bench scale treatability study performed to evaluate ISCO with ozone (Alternative 5) also demonstrated the ability to oxidize VOC contamination, though it would be difficult to manage the significant quantities of gas generated during the oxidation process.

10.4 Reduction of Toxicity, Mobility or Volume

Alcas Facility

Alternative 1 does not address contamination through treatment as no action would be taken. Additionally, Alternative 1 does not provide the means to assess a reduction in toxicity, mobility or volume (TMV) through treatment. Alternative 2 (VER) would likely only partially remove the contamination in the dense clay/till subsurface. Alternatives 3a and 3b would both provide a large reduction of contamination volume and toxicity, and thus mobility. The reduction of contaminant TMV under Alternatives 3a and 3b includes the DNAPL. The pilot study conducted in 2012 demonstrated as much as a 50 percent reduction in TCE concentrations for each round of injection within the treatment area using ISCO with persulfate. Alternative 3b could potentially provide the greatest reduction in the volume of the soil contamination, if excavation is performed, as soils exceeding the remediation goals would be removed and disposed at an approved off-site facility.

Parcel B

Alternative 1 does not address contamination through treatment as no action would be taken. Additionally, Alternative 1 does not provide the means to assess a reduction in toxicity, mobility or volume (TMV) through treatment. Alternative 4 (EAB) would provide a greater reduction of contamination volume and toxicity, and thus mobility as compared to Alternative 5 (ISCO using ozone). The November 2011 pilot study demonstrated that reductive dechlorination occurred with a reduction in TCE concentration of approximately 95 percent and a reduction in total chloroethenes of approximately 85 percent. During the EAB under Alternative 4, TCE could be transformed into the more toxic vinyl chloride in the subsurface, prior to the degradation to the less toxic ethane. This transformation would need to be monitored and managed to prevent exposure via drinking contaminated water or inhalation through the vapor intrusion pathway.

10.5 Short-Term Effectiveness

Alcas Facility

Alternative 1 would have the fewest short-term impacts since no work would be performed and, therefore, there would be no risks posed. Alternatives 2, 3a, and 3b may have potential short-term impacts to remediation workers, the public, and the environment during implementation. Remedy-related construction (e.g., well installation) under Alternatives 2, 3a, and 3b would involve disruptions to the manufacturing operations at the Alcas Facility. The well installation and injection activities can be sequenced in a manner that attempts to minimize disruption to manufacturing activities at the Alcas Facility. Additionally, injection lines to a majority of the wells inside the building can be trenched in place to allow for injection to occur without disruption to facility operations.

Drilling activities, including the installation of injection and monitoring wells, for Alternatives 2, 3a, and 3b could produce contaminated liquids that present some risk to remediation workers at the Site. The injection of oxidants under Alternatives 3a and 3b would also generate some waste that would be managed through the implementation of engineering controls, personnel protective equipment and safe work practices. The pilot study revealed a temporary increase in dissolved metals concentration following oxidant injection, but the effects were short-lived and the metals are likely to attenuate following depletion of the oxidant. However, a monitoring program would be implemented to monitor chemical by-products to ensure that the injections do not negatively impact drinking water. Removal of contaminated soil under Alternative 3b presents a higher short-term risk because of the greater potential for exposure associated with excavation and transportation of contaminated soil. However, measures would be implemented to mitigate potential impacts to workers and the community through the use of personnel protective equipment and standard health and safety practices. Under Alternative 3b, appropriate transportation safety measures would be required during the shipping of the contaminated soil to the off-site disposal facility.

Parcel B

Alternative 1 would be the most effective in the short term as there would be no work performed and therefore no risks posed. Alternatives 4 (EAB) and 5 (ISCO using ozone) may have potential short-term impacts to remediation workers, the public, and the environment during implementation. Drilling activities, including the installation of monitoring and injection wells, could produce contaminated liquids that present some risk to remediation workers at the Site. However, measures would be implemented to mitigate exposure risks through the use of personnel protective equipment and standard health and safety practices. Alternative 5 is expected to have more short-term impacts compared to Alternative 4 because the quantity of ozone required to remove the dissolved phase contaminants under Alternative 5 could strip VOCs from the groundwater causing the gases to volatilize into the unsaturated soils. The off-gas generated during the stripping process would present a potential risk to the workers, via inhalation of the gas, and the environment, via the spread of contaminants from the groundwater to unsaturated soils. Data would be collected to monitor the off-gas generated and procedures would be implemented to mitigate potential impacts to workers. During the EAB under Alternative 4, TCE and cis-1,2 DCE could be transformed into the more toxic vinyl chloride under anaerobic conditions in the subsurface, prior to degradation to the less toxic ethane. This transformation would need to be monitored to ensure concentrations remain below levels that would present risk from exposure via drinking contaminated water or inhalation through the vapor intrusion pathway. No difficulties are foreseen with the required quantity of the injection material needed for Alternative 4 (EAB), as it is nonhazardous.

10.6 Implementability

Alcas Facility

Alternative 1 is no action and, therefore, there is nothing to implement. The presence of DNAPL beneath the main building at the Alcas Facility poses significant challenges because of the existing manufacturing operations at the facility. It is doubtful that Alternative 2 can be successfully implemented due to the presence of DNAPL under the building and the heterogeneous nature of the soil at the Alcas Facility. For the purposes of the ROD Amendment, Alternative 2 was maintained for comparison purposes. Alternatives 2, 3 and 3b are established technologies with commercially available equipment. Alternative 3a is a well-established technology and would be designed to address the DNAPL source under the building. The effectiveness of Alternative 3a would be controlled by the ability to distribute the oxidant in the subsurface under the main manufacturing building. However, through injection of sufficient oxidant volumes at appropriately spaced locations, distribution of the chemical oxidant can be achieved. Alternative 3b uses the same technology as Alternative 3a (ISCO using persulfate), however it also includes excavation if necessary. Excavation has implementation challenges due to the limited accessibility underneath the existing operating facility. Excavation activities determined to be necessary to achieve the groundwater RAOs under Alternative 3b would require a significant amount of coordination given the existing manufacturing operations at the Alcas Facility. Existing operations at the Alcas Facility would be negatively impacted by the excavation alternative as certain areas of the building critical to the manufacturing process might need to be partially demolished and this might involve substantial demolition costs. However if future operations change, or for instance if the portion of the building overlying the contamination is no longer in use or demolished, impacts resulting from excavation may not be significant; in fact, if the building is demolished excavation would be more readily implementable and be more important as unsaturated soils may be more amenable to leaching if the slab is compromised.

Alternatives 2, 3a, and 3b would require routine groundwater quality, performance, and administrative monitoring, including CERCLA five-year reviews. Alternatives 3a and 3b also may require periodic injection of the solution and well maintenance for the life of each remedy. These activities are all easily implemented.

Parcel B

Alternative 1 is no action and, therefore, there is nothing to implement. Alternatives 4 and 5 are established technologies with commercially available equipment and are implementable. However, the injection of ozone gas under Alternative 5 (ISCO using ozone) may be somewhat more difficult than Alternative 4 (EAB) because of the highly heterogeneous soils that may prevent uniform distribution of the ozone gas. Ozone gas that does not come in contact with contamination is expected to react rapidly, thus hindering the ability of the ozone to travel laterally and creating a limited radius of influence. The bench-scale treatability study determined that approximately five to 10 ozone applications would be required to completely oxidize high concentrations of dissolved phase TCE. The proximity of public drinking water supply well 18M to the treatment area also increases the design challenges with ISCO using ozone. However, these challenges can be addressed through the proper placement of injection wells and management of ozone gas quantities. No difficulties are foreseen with the required quantity of the injection material needed for Alternative 4 (EAB), as it is nonhazardous.

10.7 Cost

The estimated capital costs, operation, maintenance and monitoring (O&M) costs, and present worth costs for the Alternatives discussed in this Proposed Plan are presented below. Further detail may be found in the July 2014 FFS Report. The cost estimates are based on the best available information. The alternatives for the Alcas Facility assume that any upgradient sources impacting the Alcas Facility would be identified and effectively remediated or controlled. In that event, any change to the conceptual design at the Alcas Facility would be expected to result in a cost estimate that is within the “plus 50 percent to minus 30 percent” range of the actual project cost employed in Superfund cleanups. The present worth cost was calculated using a 7 percent discount rate.

Alternative	Capital Cost[3]	Annual O&M Cost	Present Worth Cost
Alcas Facility			
1 No Action	$0	$0	$0
2 VER	$338,000	$100,000	$1,400,000
3a ISCO	$783,000	$82,994	$1,101,000
3b ISCO with excavation	$973,000	$82,994	$1,291,000
			Parcel B
1 No Action	$0	$0	$0
4 EAB	$642,000	$101,000	$1,103,000
5 ISCO with ozone	$823,000	$81,444	$1,010,000

10.8 State/Support Agency Acceptance

NYSDEC concurs with the selected remedy for OU3 and the amended OU2 remedy.

10.9 Community Acceptance

The EPA solicited input from the community on the remedial alternatives proposed for the OU3 remedy and the amended OU2 remedy at the Alcas Source Area. Verbal comments received from community members at the August 5, 2014, public meeting generally related to the extent of contamination at the Alcas Source Area and the negative impact of the historical operations at the source areas to the drinking water supply for the City and Town of Olean. During the comment period from July 23, 2014, through August 22, 2014, one written comment was received. A copy of the written comment is provided as Attachment 5 to Appendix V. A summary of significant comments made, as well as the EPA's responses to those comments, are provided in the Responsiveness Summary (Appendix V).

11. PRINCIPAL THREAT WASTES

The NCP establishes an expectation that the EPA will use treatment to address the principal threats posed by a Site whenever practicable (NCP Section 300.430(a) (1) (iii) (A)). The "principal threat" concept is applied to the characterization of "source materials" at a Superfund site. A source material is material that includes or contains hazardous substances, pollutants, or contaminants, such as DNAPL in soil, that act as a reservoir for the migration of contamination to groundwater, surface water, or air, or act as a source for direct exposure. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment in the event exposure should occur. The decision to treat these wastes is made on a site-specific basis through a detailed analysis of alternatives, using the remedy selection criteria which are described above. The manner in which principal threat wastes are addressed provides a basis for making a statutory finding that the remedy employs treatment as a principal element.

[3] Capital Cost for Alternatives 3a, 3b and 4 include periodic injection costs.

Varying concentrations of VOCs were detected in soil samples collected from borings installed within the main manufacturing building at the Alcas Facility. Results from the investigation showed concentrations of TCE as high as 280 ppm, confirming the presence of DNAPL, in the soil/till zone at an approximate depth of nine feet below the foundation of the main building. This concentration represents the highest concentration of TCE detected in soil at the Alcas Facility.

These findings show the presence of "principal threat" wastes at the Alcas Facility. The selected amended OU2 remedy will actively treat this contamination through the use of ISCO.

12. THE SELECTED REMEDY

12.1 Summary of the Rationale for the Selected Remedy

Based upon the requirements of CERCLA, the results of Site investigations, the detailed analysis of the alternatives, and public comments, the EPA has determined that Alternative 3b for the Alcas Facility, in conjunction with Alternative 4 for Parcel B, best satisfy the requirements of CERCLA Section 121, 42 U.S.C. §9621, and provides the best balance of tradeoffs among the remedial alternatives with respect to the NCP's nine evaluation criteria, 40 CFR §300.430(e)(9).

Additional investigations conducted subsequent to the OU2 ROD revealed conditions at the Alcas Facility that were not known at the time of the issuance of the OU2 ROD. The additional investigations revealed a DNAPL mass underneath the Alcas Facility main building and geological conditions in the till unit, which could not feasibly nor effectively be remediated using VER, the remedy selected in the OU2 ROD, making VER (Alternative 2) impractical. Alternative 1 was not selected, because it is simply a baseline for comparison with other alternatives and is not protective of human health and the environment. Groundwater would continue to be impacted by DNAPL-impacted soil for an indefinite period of time. The impacted groundwater would continue to contain COCs at concentrations that exceed federal MCLs and/or the NYSDEC standards. Pilot studies conducted at the Alcas Facility have demonstrated the effectiveness of treating the contaminated soil and groundwater at the Alcas Facility, including the DNAPL mass underneath the main building, by injecting ISCO with activated persulfate. Although both Alternatives 3a and 3b involve the use of ISCO with activated persulfate to treat the contaminated soil and groundwater at the Alcas Facility, Alternative 3b provides for the excavation of remaining contaminated soil beneath and adjacent to the main building that are determined to be impacting groundwater RAOs, subsequent to treatment with ISCO, if the EPA determines that it is not inappropriate to access the material, based upon factors including the use of the building, thereby providing a higher degree of long-term effectiveness and permanence.

In addition, these additional investigations revealed groundwater contamination in the upper aquifer on Parcel B, which was also not known in when the OU2 ROD was issued. While studies have demonstrated the effectiveness of treating VOC-contaminated groundwater using EAB (Alternative 4) and ISCO using ozone (Alternative 5), Alternative 4 is preferable to Alternative 5 because EAB has fewer short-term impacts during implementation.

12.2 Description of the Selected Remedy

The major components of the selected amended remedy for OU2 for the Alcas Facility include the following:

- *In-situ* chemical oxidation (ISCO) involving injection of an alkaline-activated sodium persulfate solution through a series of injection wells located beneath the main building and along the exterior of the southern portion of the main building to treat soil and groundwater contamination;

- Excavation of remaining contaminated soil beneath and adjacent to the main building that are determined to be impacting the ability to achieve the groundwater RAOs, subsequent to treatment with ISCO and after a determination is made by the EPA that it is not inappropriate to access the material based upon factors that include the use of the building;

- Additional sampling during the pre-remedial design phase to determine whether an upgradient source of groundwater contamination is present in the northern portion of the Alcas Facility or off-property;

- Institutional controls for soil and groundwater use restrictions until RAOs are achieved to ensure the remedy remains protective. A plan will be developed which specifies institutional controls to restrict exposure to hazardous substances (e.g. via groundwater consumption, contact with contaminated groundwater, and contact with contaminated soil) until RAOs are met which are anticipated to include proprietary controls, such as deed restrictions for groundwater and soil use**,** existing governmental controls, such as well permit requirements, and informational devices, such as publishing advisories in local newspapers and issuing advisory letters to local governmental agencies regarding groundwater use in the impacted area;

- Implementation of a long-term groundwater monitoring program to track and monitor changes in the groundwater contaminant levels to ensure the RAOs are attained. The sampling program will also monitor groundwater quality including degradation by-products generated by the treatment processes to ensure that drinking water quality standards are met at the nearby municipal water supply well 18M and to address the potential for migration of vapors from groundwater to indoor air at the Alcas Facility that could result from the ISCO treatment. The results from the long-term monitoring program will be used to evaluate the migration and changes in VOC contaminants over time; and

- Development of a site management plan (SMP) to provide for the proper management of the Site remedy post-construction, including through the use of institutional controls until RAOs are met, and will also include long-term groundwater monitoring, periodic reviews and certifications. The SMP will also provide for the proper management of any contaminated unsaturated soils remaining beneath the concrete slab of the building and the evaluation of the potential for soil vapor intrusion should the building use at the Alcas Facility change or for any buildings developed on the Alcas Facility.

The major components of the selected OU3 remedy for Parcel B include the following:

- Enhanced anaerobic bioremediation (EAB) to promote reductive dechlorination of contamination through a series of injection wells to degrade organic contaminants;

- Institutional controls for groundwater use restrictions until RAOs are achieved to ensure the remedy remains protective. A plan will be developed which specifies institutional controls to restrict exposure to hazardous substances (e.g. via groundwater consumption and contact with contaminated groundwater) until RAOs are met which are anticipated to include proprietary controls, such as deed restrictions for groundwater use**,** existing governmental controls, such as well permit requirements, and informational devices, such as publishing advisories in local newspapers and issuing advisory letters to local governmental agencies regarding groundwater use in the impacted area;

- Implementation of a long-term groundwater monitoring program to track and monitor changes in the groundwater contamination to ensure the RAOs are attained. The sampling program will also monitor groundwater quality including degradation by-products generated by the treatment processes to ensure that drinking water quality standards are met at the nearby municipal water supply well 18M. The results from the long-term monitoring program will be used to evaluate the migration and changes in VOC contaminants over time; and

- Development of a site management plan (SMP) to provide for the proper management of the Site remedy post-construction, including through the use of institutional controls until RAOs are met, and will also include long-term groundwater monitoring, periodic reviews and certifications. The SMP will also provide for the evaluation of the potential for soil vapor intrusion for any buildings developed on Parcel B.

The environmental benefits of the selected remedy for the Alcas Source Area may be enhanced by employing design technologies and practices that are sustainable in accordance with the EPA Region 2's Clean and Green Energy Policy[4].

12.3 Summary of Estimated Remedy Costs

The estimated capital, annual O&M, and total present worth costs for the selected remedy for OU3 and amended OU2 remedy are discussed in detail in the 2014 FFS Report. The costs estimates are based on available information and are order-of-magnitude engineering cost estimates that are expected between +50 to -30 percent of the actual project cost. Changes to the cost estimate can occur as a result of new information and data collected during the design of the remedies.

A cost estimate summary for the selected remedies is presented in Table 10. The estimated capital, annual O&M, and total present worth costs for the Alcas Facility and Parcel B are presented below:

Alternative	Capital Cost[5]	Annual O&M Cost	Present Worth Cost
Alcas Facility	$973,000	$82,994	$1,291,000
Parcel B	$642,000	$101,000	$1,103,000
Total	**$1,615,000**	**$183,994**	**$2,394,000**

[4] See http://epa.gov/region2/superfund/green_remediation.
[5] The capital cost for the selected remedies include periodic injection costs.

12.4 **Expected Outcomes of the Selected Remedy**

The selected OU3 remedy and amended OU2 remedy address areas of VOC contamination in the Parcel B groundwater and Alcas Facility soil and groundwater, respectively. The results of the human health risk assessments indicate that the contaminated groundwater at OU2 and OU3 present an unacceptable exposure risk.

The contaminated soil below the building at the Alcas Facility, does not necessarily present a direct-contact risk due to the depth of the soil and the fact that it is under the building. However, the contaminated soil serves as source material (and is principal threat waste) for continued groundwater contamination and, therefore, it is necessary to address the soil contamination in relation to the groundwater remedy.

Under the selected OU2 amended remedy, *in-situ* chemical oxidation with persulfate will be used to remediate contaminated soil and groundwater at the Alcas Facility. Subsequent to the treatment of contaminated soil by ISCO, if the soil continues to be impacting the ability to achieve groundwater RAOs, factors including the use of the building will be considered by the EPA to determine whether it is not inappropriate to excavate any remaining contaminated soil. An estimated 70 cubic yards of soil beneath or adjacent to the main building at the Alcas Facility RAOs would be excavated. In addition, performance and long-term monitoring data will be evaluated to update the estimated time frame to achieve groundwater RAOs. Based on this evaluation, and if the EPA determines that it is not inappropriate to excavate the material, the benefits of excavation/removal of source material to reduce TMV, versus remediation through ISCO only will be taken into consideration by the EPA.

The selected OU3 remedy will use EAB to promote reductive dechlorination of contamination and remediate contaminated groundwater at Parcel B. The selected OU2 amended remedy for the Alcas Facility and the selected OU3 remedy for Parcel B will restore the aquifer at the Alcas Source Area, which is designated by New York State for use as a source of drinking water, in a reasonable timeframe by reducing contaminant levels to federal MCLs and State standards.

Remediation Goals for the Contaminants of Concern at the Alcas Source Area are presented in Appendix II, Table 6.

13. STATUTORY DETERMINATIONS

The EPA has determined that the selected OU3 and the amended OU2 remedies comply with the CERCLA and NCP provisions for remedy selection, meet the threshold criteria, and provide the best balance of tradeoffs among the alternatives with respect to the balancing and modifying criteria. These provisions require the selection of remedies that are protective of human health and the environment, comply with ARARs (or justify a waiver from such requirements), are cost effective, and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the TMV of hazardous substances as a principal element (or justifies not satisfying the preference). The following sections discuss how the selected OU3 and amended OU2 remedies meet these statutory requirements.

13.1 Protection of Human Health and the Environment

The selected OU3 and amended OU2 remedies will protect human health and the environment because they will, over the long-term, restore groundwater quality at the Alcas Source Area to drinking-water standards. Protection will be achieved by addressing direct-contact and ingestion risks to human health associated with future consumption of contaminated groundwater, and will address the residual DNAPL-impacted subsurface soil that contains contamination which can then migrate to groundwater if untreated, thereby eliminating or reducing sources of contamination to the groundwater. The institutional controls required by both remedies will also assist in protecting human health over both the short- and long-term by helping to control and limit exposure to hazardous substances until the remedial action goals are met.

13.2 Compliance with ARARs

The selected OU3 and amended OU2 remedies comply with chemical-specific, location-specific and action-specific ARARs. A complete list of the ARARs, TBCs and other guidelines that concern the selected remedies is presented in Table 7 (chemical-specific), Table 8 (location-specific) and Table 9 (action-specific), which can be found in Appendix II.

13.3 Cost Effectiveness

A cost-effective remedy is one in which costs are proportional to the remedy's overall effectiveness (NCP Section 300.430(f)(1)(ii)(D)). The EPA evaluated the "overall effectiveness" of those alternatives that satisfied the threshold criteria (*i.e.,* those that were both protective of human health and the environment and ARAR-compliant). Overall effectiveness was evaluated by assessing three of the five balancing criteria in combination (long-term effectiveness and permanence; reduction in toxicity, mobility, and volume though treatment; and short-term effectiveness). Overall effectiveness was then compared to costs to determine cost-effectiveness.

Each of the alternatives has undergone a detailed cost analysis. In that analysis, capital and annual O&M costs were estimated and used to develop present worth costs. In the present worth cost analysis, annual O&M costs were calculated for the estimated life of each alternative. The estimated present worth cost for implementing the selected amended OU2 remedy for the Alcas Facility is $1,291,000, whereas the estimated present worth of Alternative 2 and 3a are $1,400,000 and $1,101,000, respectively. Based on the comparison of overall effectiveness to cost, the selected amended OU2 remedy, Alternative 3b, meets the requirement that Superfund remedies be cost effective (NCP Section 300.430(f)(1)(ii)(D)) in that it is only slightly more costly than the lowest cost active alternative, Alternative 3a, while potentially providing a higher degree of long-term effectiveness and permanence, and achieving groundwater RAOs more quickly than Alternative 3a, if excavation activities are performed. A 20-year timeframe was used for planning and estimating purposes to remediate groundwater at the Alcas Facility, although remediation timeframes could exceed this estimate.

The estimated present worth cost for implementing the selected remedy for Parcel B is $1,103,000, whereas the estimated present worth of Alternative 5 is $1,010,000. Based on the comparison of overall effectiveness to cost, the selected remedy, Alternative 4, meets the requirement that Superfund remedies be cost effective (NCP Section 300.430(f)(1)(ii)(D)) in that it is only slightly more costly than the lowest cost active alternative, Alternative 5, while providing the least short-term impacts during implementation. A 30-year timeframe was used for planning and estimating purposes to remediate groundwater at Parcel B, although remediation timeframes could exceed this estimate.

13.4 Utilization of Permanent Solutions and Alternative Treatment (or Resource Recovery) Technologies to Maximum Extent Practicable

The selected OU3 and amended OU2 remedies provide the best balance of tradeoffs among the alternatives with respect to the balancing criteria set forth in the NCP Section 300.430(f)(1)(i)(B), because they each represent the maximum extent to which permanent solutions and treatment technologies can be utilized in a practicable manner at the Alcas Source Area. The selected OU3 and amended OU2 remedies satisfy the criteria for long-term effectiveness and permanence by removing contaminant mass with elevated levels of VOC concentrations. The combination of *in-situ* chemical oxidation and soil excavation at the Alcas Facility and EAB at Parcel B will permanently reduce the mass of contaminants in soil and groundwater at the Alcas Source Area, thereby reducing the toxicity, mobility, and volume of contamination.

The selected OU3 remedy and amended OU2 remedies are implementable because they employ standard technologies that are readily available. Additionally, the selected amended OU2 remedy provides for the excavation of soils remaining beneath or adjacent to the main building at the Alcas Facility at concentrations that are impacting the ability to achieve the groundwater RAOs using ISCO alone, if and when a determination is made that it is not inappropriate to access the material based upon factors that include the use of the building. Excavation would remove remaining contaminated soil serving as a source material to the groundwater.

13.5 Preference for Treatment as a Principal Element

Through the use of *in-situ* (ISCO and EAB) treatment technologies, the selected amended OU2 remedy and selected OU3 remedy, respectively, satisfy the statutory preference for remedies that employ treatment as a principal element.

13.6 Five-Year Review Requirements

Both remedies will result in hazardous substances, pollutants, or contaminants remaining at the Alcas Source Area until performance standards are attained, and as such, use and exposure must be limited until such standards are met. Since it may take more than five years to attain the cleanup levels, policy reviews pursuant to Section 121(c) of CERCLA will be conducted no less often than once every five years after the completion of construction to ensure that the remedies are, or will be, protective of human health and environment.

14. DOCUMENTATION OF SIGNIFICANT CHANGES

The Proposed Plan for the Alcas Source Area was released on July 23, 2014. The Proposed Plan identified Alternative 3b as the preferred alternative for remediating the contaminated soil and groundwater at the Alcas Facility (OU2) and Alternative 4 as the preferred remedy for remediating contaminated groundwater at Parcel B (OU3).

The EPA reviewed all written (including electronic formats such as e-mail) and oral comments during the public comment period and has determined that no significant changes to the remedy, as originally identified in the Proposed Plan, are necessary or appropriate.

APPENDICES

APPENDIX I

FIGURES

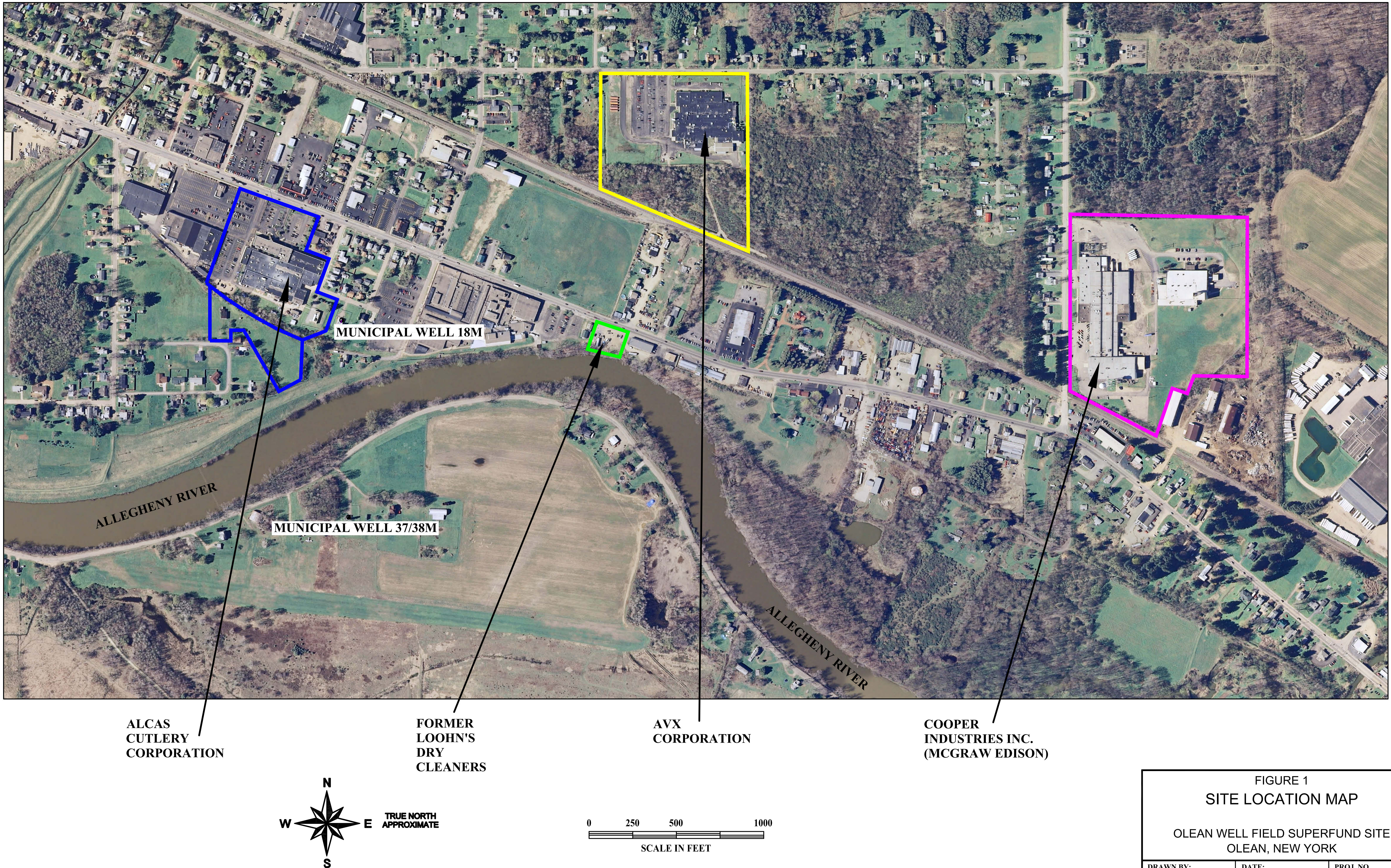


FIGURE 1

SITE LOCATION MAP

OLEAN WELL FIELD SUPERFUND SITE
OLEAN, NEW YORK

DRAWN BY:	DATE:	PROJ. NO.
MWW	09/24/2014	137-196

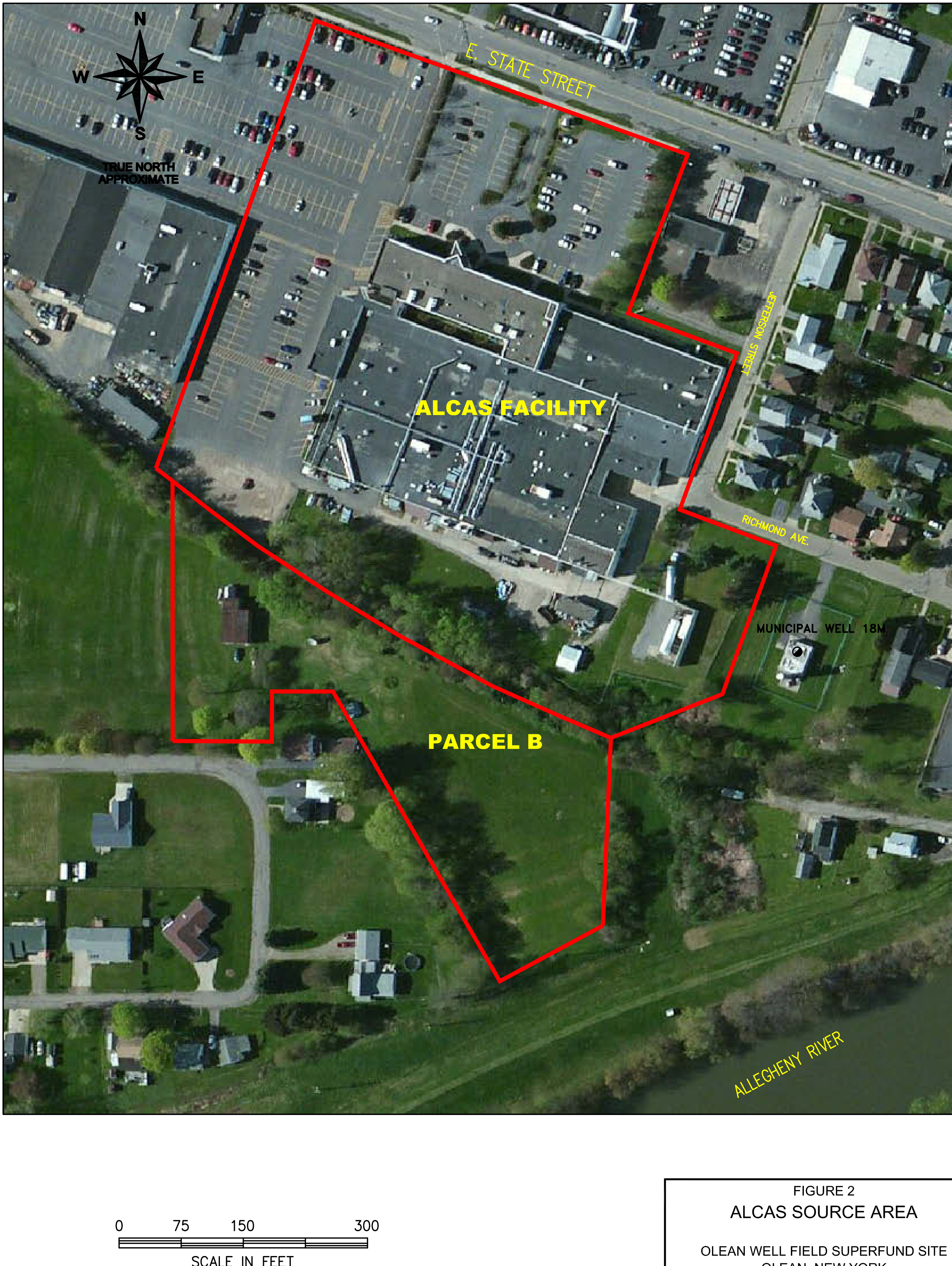
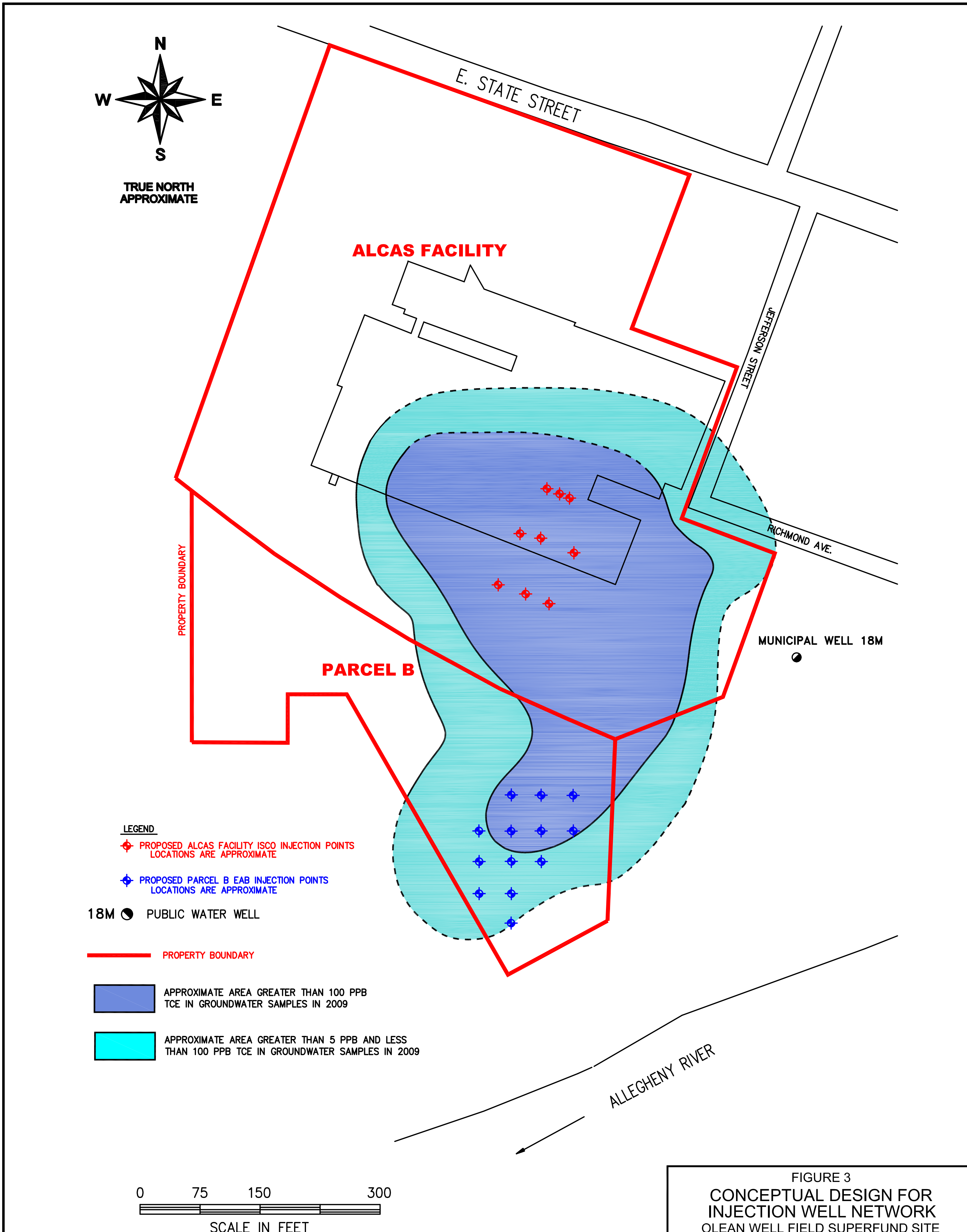


FIGURE 2

ALCAS SOURCE AREA

OLEAN WELL FIELD SUPERFUND SITE
OLEAN, NEW YORK

DRAWN BY:	DATE:	PROJ. NO.
MWW	09/24/2014	137-196



NOTE: FIGURE BASED ON 2009 DATA AND DOES NOT REFLECT RECENT INFORMATION INDICATING THAT THE >5 PPM and >100 PPM PLUME AREAS MAY BE SMALLER.

LOCATIONS APPROXIMATED FROM FIGURES 6-9, 6-10, AND 6-11 PROVIDED IN JULY 2014 FFS REPORT.

FIGURE 3

CONCEPTUAL DESIGN FOR INJECTION WELL NETWORK

OLEAN WELL FIELD SUPERFUND SITE
ALCAS SOURCE AREA
OLEAN, NEW YORK

DRAWN BY:	DATE:	PROJ. NO.
MWW	09/29/2014	137-196

APPENDIX II

TABLES

TABLE 1
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations

Scenario Timeframe: Current/Future
Medium: Alcas Facility Surface and Subsurface Soil
Exposure Medium: Surface and Subsurface Soil

Exposure Point	Chemical of Concern	Concentration Detected OU2 ROD (mg/kg)[1]		Concentration Detected Under Alcas Building (mg/kg)[2]	
		Min	Max	Min	Max
Surface and Subsurface Soil	2-butanone	2	0.004	0.016	0.019
	Cis-1,2-dichloroethene	1	1	0.001	0.22
	Trichloroethene	8	12	0.001	280
	Toluene	0.5	0.97	0.0005	0.14
	Vinyl chloride	100	0.1	0.0009	0.0009
	Xylene	1	0.1	0.001	0.009

Scenario Timeframe: Current/Future
Medium: Alcas Shallow Groundwater – Alcas Facility
Exposure Medium: Tap Water

Exposure Point	Chemical of Concern	Concentration Detected in Shallow Groundwater in OU2 ROD (ppb)[3]		Concentration Detected in Shallow Groundwater – Alcas (ppb)	
		Min	Max	Min	Max
Tap Water	1,1,1-trichloroethane	4	360,000	0.14	0.2
	Cis-1,2-dichloroethene	2	3,200	0.11	9,700
	Tetrachloroethene	0.7	14,000	0.19	10,000
	1,1-dichloroethane	0.9	26,000	------	------
	1,1-dichloroethene	0.9	16,000	------	------
	Trichloroethene	0.5	110,000	0.4	310,000

Scenario Timeframe: Current/Future
Medium: Alcas Shallow Groundwater – Parcel B
Exposure Medium: Tap water

Exposure Point	Chemical of Concern	Concentration Detected in Shallow Groundwater in OU2 ROD (ppb)		Concentration Detected in Shallow Groundwater – Parcel B (ppb)	
		Min	Max	Min	Max
Tap Water	1,1,1-trichloroethane	4	360,000	0.038	0.2
	Cis-1,2-dichloroethene	2	3,200	0.2	1,000
	Tetrachloroethene	0.7	14,000	0.5	50
	1,1-dichloroethane	0.9	26,000	------	------
	1,1-dichloroethene	0.9	16,000	------	------
	Trichloroethene	0.5	110,000	0.4	2,800

Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations

This table presents the minimum and maximum detected concentrations of the chemicals of concern (COCs) for each of the COCs detected in surface/subsurface soil and groundwater.

---

[1] Data represents soil and groundwater concentrations detected for all four source areas at the Olean Well Field Superfund Site identified in the OU2 ROD, including the Alcas Facility.
[2] Data represents soil and groundwater concentrations for the Alcas Facility collected after the issuance of the OU2 ROD.
[3] See footnote 1 above.

TABLE 2
SELECTION OF EXPOSURE PATHWAYS

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection or Exclusion of Exposure Pathway
Current/Future	Soil	Surface and Subsurface Soil	On-site soil (Alcas and Parcel B)	Worker	Adult	Ingestion/Dermal/Inhalation	Quant/Qual	Current or future adult workers could be exposed to on-site soil.
	Groundwater	Tap Water	Groundwater under Alcas and Parcel B	Resident	Adult	Ingestion/Dermal/Inhalation	Quant/Qual	Current or future residents could hypothetically be exposed to groundwater if existing restrictions that currently prohibit the drilling of groundwater wells were to be lifted.
				Resident	Young Child	Ingestion/Dermal/Inhalation	Quant/Qual	
				Residents	Older Child	Ingestion/Dermal/Inhalation	Quant/Qual	

Quant/Qual = Quantitative and qualitative risk analysis performed.

Summary of Selection of Exposure Pathways

The table describes the exposure pathways associated with the soil and groundwater that were evaluated for the quantitative and qualitative risk assessments supporting the OU2 ROD, the OU2 ROD Amendment, ,and the OU3 ROD and the rationale for the inclusion of each pathway. Exposure media, exposure points, and characteristics of receptor populations are included.

TABLE 3

Non-Cancer Toxicity Data Summary

Pathway: Oral/Dermal

Chemical of Concern	Oral RfD (OU2)	Units	Oral RfD (Current)	Units	Estimated Hazard Higher/Lower
1,1,1-trichloroethane	9.0E-01	mg/kg-day	2.0E+00	mg/kg-day	Lower
1,1-dichloroethane	1.0E+00	mg/kg-day	2.0E-01	mg/kg-day	Higher
1,1-dichloroethene	9.0E-03	mg/kg-day	5.0E-02	mg/kg-day	Lower
2-Butanone	5.0E-01	mg/kg-day	6.0E-01	mg/kg-day	Lower
Cis-1,2-dichloroethene	1.0E-02	mg/kg-day	2.0E-03	mg/kg-day	Higher
Tetrachloroethene	1.0E-01	mg/kg-day	6.0E-03	mg/kg-day	Higher
Toluene	2.0E+00	mg/kg-day	8.0E-02	mg/kg-day	Higher
Trichloroethene	------	------	5.0E-04	mg/kg-day	Higher
Vinyl chloride	------	------	3.0E-03	mg/kg-day	Higher
Xylene	4.0E+00	mg/kg-day	2.0E-01	mg/kg-day	Higher

Pathway: Inhalation

Chemical of Concern	Inhalation RfC (OU2)	Units	Inhalation RfC (Current)	Units	Estimated Hazard Higher/Lower
1,1,1-trichloroethane	------	------	5.0E+00	mg/m^3	Higher
1,1-dichloroethane	5.0E+00	mg/m^3	------	------	Lower
1,1-dichloroethene	------	------	2.0E-01	mg/m^3	Higher
2-Butanone	3.0E+00	mg/m^3	5.0E+00	mg/m^3	Lower
Cis-1,2-dichloroethene	------	------	------	------	------
Tetrachloroethene	------	------	4.0E-02	mg/m^3	Higher
Toluene	2.0E+00	mg/m^3	5.0E+00	mg/m^3	Lower
Trichloroethene	------	------	2.0E-03	mg/m^3	Higher
Vinyl chloride	------	------	1.0E-01	mg/m^3	Higher
Xylene	------	------	1.0E-01	mg/m^3	Higher

Summary of Toxicity Assessment

This table provides non-carcinogenic hazard information which is relevant to the contaminants of concern in soil and groundwater that were evaluated in the OU2 ROD. The last column identifies if the hazard index would be higher (increased hazard) or lower (decreased hazard) if the hazards were recalculated for the OU2 ROD Amendment and the OU3 ROD.

TABLE 4

Cancer Toxicity Data Summary

Pathway: Oral/Dermal

Chemical of Concern	Oral Cancer Slope Factor (OU2)	Units	Oral Cancer Slope Factor (Current)	Units	Risk Estimate Higher/Lower
1,1,1-trichloroethane	------	------	------	------	------
1,1-dichloroethane	------	------	5.7E-03	mg/kg-day	Higher
1,1-dichloroethene	6.0E-01	mg/kg-day	------	------	Lower
2-Butanone	------	------	------	------	------
Cis-1,2-dichloroethene	------	------	------	------	------
Tetrachloroethene	5.32E-02	mg/kg-day	2.1E-03	mg/kg-day	Lower
Toluene	------	------	------	------	------
Trichloroethene	1.1E-02	mg/kg-day	4.6E-02	mg/kg-day	Higher
Vinyl chloride	1.9E+00	mg/kg-day	7.2E-01	mg/kg-day	Lower
Xylene	------	------	------	------	------

Pathway: Inhalation

Chemical of Concern	Unit Risk (OU2)	Units	Unit Risk (Current)	Units	Risk Estimate Higher/Lower
1,1,1-trichloroethane	------	------	------	------	------
1,1-dichloroethane	------	------	1.6E-06	ug/m^3	Higher
1,1-dichloroethene	5.0E-05	ug/m^3	------	------	Lower
2-Butanone	------	------	------	------	------
Cis-1,2-dichloroethene	------	------	------	------	------
Tetrachloroethene	5.7E-07	ug/m^3	2.6E-07	ug/m^3	Lower
Toluene	------	------	------	------	------
Trichloroethene	1.7E-06	ug/m^3	4.1E-06	ug/m^3	Higher
Vinyl chloride	8.4E-05	ug/m^3	4.4E-06	ug/m^3	Lower
Xylene	------	------	------	------	------

Summary of Toxicity Assessment

This table provides carcinogenic risk information which is relevant to the contaminants of concern in soil and groundwater that were evaluated in the OU2 ROD. Toxicity data are provided for both the oral and inhalation routes of exposure. The last column identifies if the risk would be higher (increased risk) or lower (decreased risk) if the hazards were recalculated for the OU2 ROD Amendment and the OU3 ROD.

TABLE 5

Risk Characterization Summary – Carcinogens and Noncarcinogens

Scenario Timeframe: Current/Future
Medium: Tap Water

Receptor	Carcinogenic Risk				Non-Carcinogenic Hazard			
	Ingestion	**Dermal**	**Inhalation**	**Cancer Risk Total**	**Ingestion**	**Dermal**	**Inhalation**	**Hazard Index Total**
Adult Resident	1.49E-02	2.35E-03	6.38E-05	**1.73E-02**	3.36	0.14	0.00162	**3.5**
Young Child Resident	1.3E-02	9.21E-04	5.98E-05	**1.39E-02**	14.7	0.273	0.0755	**14.98**
Older Child Resident	5.94E-03	6.68E-04	2.73E-05	**1.39E-02**	6.73	0.198	0.0345	**6.93**

Scenario Timeframe: Current/Future
Medium: Surface and subsurface soil

Receptor	Carcinogenic Risk				Non-Carcinogenic Hazard			
	Ingestion	**Dermal**	**Inhalation**	**Cancer Risk Total**	**Ingestion**	**Dermal**	**Inhalation**	**Hazard Index Total**
Adult Construction Worker	4.97E-05	-----	2.32E-08	4.97E-05	0.502	------	0.0512	0.507

Summary of Risk Characterization – Carcinogens and Non-Carcinogens

The table presents cancer risks and non-cancer hazards for each route of exposure for soil and groundwater, which was presented in the OU2 ROD. As stated in the National Contingency Plan (NCP), the point of departure is 10^{-6} and the acceptable risk range for site-related exposure is 10^{-6} to 10^{-4}. The NCP also indicates that the acceptable non-cancer hazard index is 1.

The primary contaminant in groundwater and surface/subsurface soil is trichloroethene and concentrations detected in groundwater on the Alcas property is higher than the concentrations reported in the OU2 ROD (Alcas maximum is 310,000 ppm and OU2 ROD maximum was 110,000 ppm), thus a qualitative evaluation found that the risks and hazards would be similar or greater than those presented in the OU2 ROD. Parcel B had a maximum TCE value of 2,800 ppm, which is 560 times greater than the Federal maximum contaminant level (MCL) of 5 ppb. Since risks were above 10-4, hazards exceed a value 1, and the federal MCL was exceeded, a remedial action is warranted.

Table 6

Remediation Goals for Chemicals of Concern

Remediation Goals For Groundwater				
Contaminants of Concern	National Primary Drinking Water Standards[1]	NYS Groundwater Quality Standards[2]	NYSDOH Drinking Water Quality Standards[3]	Cleanup Level[4]
cis- 1,2-DCE	70	5	5	5
trans-1,2-DCE	100	5	5	5
TCE	5	5	5	5
PCE	5	5	5	5
Vinyl Chloride	2	2	2	2
Xylene	10,000	5	5	5

Remediation Goals For Soil	
Contaminants of Concern	Soil Remediation Goals[5] (ppm)
cis- 1,2-DCE	0.25
trans-1,2-DCE	0.19
Vinyl Chloride	0.02
TCE	0.47
PCE	1.3
Xylene	1.6

Notes:
1. EPA National Primary Drinking Water Standards (web page), EPA 816-F-09-004, May 2009.
2. New York Surface Water and Ground Water Quality Standards (6NYCRR Part 703), February 16, 2008.
3. New York State Department of Health Drinking Water Standards (10NYCRR Part 5), September 2007.
4. The Remediation Goals are selected based on NYS Groundwater Quality Standards, or NYSDOH Drinking Water Standards when groundwater quality standards are not available.
5. New York State Department of Environmental Conservation soil cleanup objectives for unrestricted use (6 NYCRR Section 375-6.3(b))

NYSDOH = New York State Department of Health.
ppb = parts per billion
ppm = parts per million

Table 7
Chemical-specific ARARs, TBCs, and other Guidelines

Regulatory Level	Regulatory Authority and Citation	Requirement Synopsis
Federal	National Primary Drinking Water Standards-Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs) (42 U.S.C. § 300f et seq. and 40 CFR Part 141, Subpart F)	Establishes health-based standards for public drinking water systems. Also establishes drinking water quality goals set at levels at which no adverse health effects are anticipated, with an adequate margin of safety.
State	NYSDOH Drinking Water Standards (10 NYCRR Part 5)	Sets MCLs for public drinking water supplies.
State	NYS Environmental Remediation Program Soil Cleanup Objectives (6 NYCRR Part 375.6)	Establishes standards for soil cleanups.
State	NYSDEC Commissioner Policy 51 (CP-51/Soil Cleanup Guidance)	Provides the framework and procedures for the selection of soil cleanup levels appropriate for each of the remedial programs.
State	NYS Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations (6 NYCRR Part 703)	Establishes numerical standards for groundwater and surface water cleanups.

Table 8
Location-Specific ARARs, TBCs, and other Guidelines

Regulatory Level	Citation	Requirement Synopsis
Federal	National Historic Preservation Act (16 U.S.C. §470 et seq. and 36 CFR Part 800) Endangered Species Act (16 U.S.C.	Establishes procedures to provide for preservation of historical and archeological data that might be destroyed through alteration of terrain as a result of a federal construction project or a federal licensed activity or program.
Federal	Endangered Species Act (16 U.S.C. §1531 et seq., 50 CFR Part 200)	Requires that the continued existence of any endangered or threatened species and/or its habitat not be impacted by a federal activity.
Federal	Clean Water Act Section 404; 40 CFR Part 230; 33 CFR Part 320-330	Prohibits discharge into wetlands.
Federal	National Environmental Policy Act (NEPA); 40 CFR Part 6 Appendix A § 4.	Provides procedures for floodplain management and wetlands protection.
Federal	National Environmental Policy Act (NEPA); 40 CFR 6.302(b)(2005)	Regulates activities within a floodplain.
State	Endangered and Threatened Species of Fish and Wildlife (6 NYCRR Part 182)	Provides standards for the protection of threatened and endangered species.
State	Freshwater Wetlands; 6 NYCRR 663-665j	Establishes permitting, mapping and classification, and local government and land use requirements for freshwater wetlands.
State	Floodplain Management; 6 NYCRR 500	Describes development permitting requirements for areas in floodplains.
State	Use and Protection of Waters; 6 NYCRR 608	Regulates the use and protection of waters.
State	Wild, Scenic, and Recreational Rivers; 6 NYCRR	Provides regulations for the administration and management of the wild, scenic and recreations rivers system in New York State.
State	Floodplains; 6 NYCRR 502	Provides floodplain management criteria for State projects.

Table 9
Action-specific ARARs, TBCs and other Guidelines

Regulatory Level	Regulatory Authority and Citation	Required Synopsis
General Requirement for Site Remediation		
Federal	OSHA[1] - Record keeping, Reporting, and Related Regulations (29 CFR 1904)	Outlines the record keeping and reporting requirements for an employer under OSHA.
Federal	OSHA – General Industry Standards (29 CFR 1910)	Specifies an 8-hour time-weighted average concentration for worker exposure to various organic compounds. Training requirements for workers at hazardous waste operations are specified in 29 CFR 1910.120.
Federal	OSHA – Construction Industry Standards (29 CFR 1926)	Specifies the type of safety equipment and procedures to be followed during site remediation.
Federal	RCRA[2] Identification and Listing of Hazardous Wastes (40 CFR 261)	Describes methods for identifying hazardous wastes and lists known hazardous wastes.
Federal	RCRA Standards Applicable to Generators of Hazardous Wastes (40 CFR 262)	Describes standards applicable to generators of hazardous wastes.
Federal	RCRA – Preparedness and Prevention (40 CFR 264.30 – 264.31)	Outlines the requirements for safety equipment and spill control.
Federal	RCRA – Contingency Plan and Emergency Procedures (40 CFR 264.50 – 264.56)	Outlines the requirements for emergency procedures to be used following explosions, fires, etc.
State	New York Hazardous Waste Management System – General (6 NYCRR Part 370)	Provides definition of terms and general standards applicable to hazardous waste management systems.
State	New York Identification and Listing of Hazardous Waste (6 NYCRR Part 371)	Describes methods for identifying hazardous wastes and lists known hazardous wastes.
State	New York Hazardous Management Facilities (6 NYCRR Part 373)	Regulates treatment, storage, and disposal of hazardous wastes.
State	New York Management of Specific Hazardous Waste (6 NYCRR Part 374)	Establishes standards for the management of specific hazardous wastes.
State	New York Environmental Remediation Programs (6 NYCRR Part 375)	Identifies process for investigation and remedial action at state funded Registry site; provides exception from NYSDEC permits.
State	New York Solid Waste Management Regulations (6 NYCRR 360)	Sets standards and criteria for all solid waste management facilities, including design, construction, operation, and closure requirements for municipal solid waste landfills.
Waste Transportation		
Federal	DOT[3] Rules for Transportation of Hazardous Materials (49 CFR Parts 107, 171, 172, 177 to 179)	Outlines procedures for the packaging, labeling, manifesting, and transporting of hazardous materials.
Federal	RCRA Standards Applicable to Transporters of Hazardous Waste (4 CFR 263)	Establishes standards for hazardous waste transporters.
State	New York Hazardous Waste Manifest System and Related Standards for Generators, Transporters and Facilities (6 NYCRR Part 372)	Establishes record keeping requirements and standards related to the manifest system for hazardous wastes.
State	New York Waste Transporter Permit Program (6 NYCRR Part 364)	Establishes permit requirements for transportation of regulated waste.
Disposal		
Federal	RCRA Land Disposal Restrictions (40 CFR 268)	Identifies hazardous wastes restricted from land disposal and provides treatment standards under which an otherwise prohibited waste may be land disposed.

State	New York Standards for Universal Waste (6 NYCRR Part 374-3) and Land Disposal Restrictions (6 NYCRR Part 376)	Establishes standards for the treatment and disposal of hazardous wastes.
Groundwater Discharge		
Federal	CWA[4] (40 CFR 122, 125)	Provides NPDES[5] permit requirements for point source discharges, including the NPDES Best Management Practice Program. These regulations include, but are not limited to, requirements for compliance with water quality standards, a discharge monitoring system, and records maintenance.
Federal	CWA - Federal Ambient Water Quality Criteria and Guidance Values (40 CFR 131.36)	Establishes criteria for surface water quality based on toxicity to aquatic organisms and human health.
Federal	Safe Drinking Water Act – Underground Injection Control Program (40 CFR 144, 146)	Establishes performance standards, well requirements, and permitting requirements for groundwater re-injection wells.
State	New York SPDES[6] Regulations (6 NYCRR Parts 750 – 757)	Governs the discharge of any wastes into or adjacent to State waters that may alter the physical, chemical, or biological properties of State waters, except as authorized pursuant to a NPDES or State permit.
State	New York Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations (6 NYCRR Part 703)	Establishes numerical criteria for groundwater treatment before discharge.
State	New York State Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations (TOGS[7] 1.1.1)	Provides groundwater effluent limitations for use where there are no standards.
Off-Gas Management		
Federal	CAA[8] – NAAQs[9] (40 CFR 50)	Provides air quality standards for pollutants including particulate matter, lead, NO_2, SO_2, CO, and ozone.
State	New York Air Quality Standards/DER-10 (6 NYCRR Part 257)	Provides time-weighted concentrations for particulate matter during excavation activities.
State	New York (DAR-1) Air Guide 1, Guidelines for the Control of Toxic Ambient Contaminants	Provides guidance for the control of toxic ambient air contaminants and outlines the procedures for evaluating sources.
State	New York Permits and Certificates (6 NYCRR Part 201)	Allows for permits to be exempted for listed trivial activities.
State	New York Emissions Verification (6 NYCRR Part 202)	Specifies the sampling and documentation requirements for off-gas emissions.
State	New York General Prohibitions (6 NYCRR Part 211)	Provides prohibitions which apply to any particulate, fume, gas, mist, odor, smoke, vapor, pollen, toxic or deleterious emissions.
State	New York General Process Emission Sources (6 NYCRR Part 212)	Sets the treatment requirements for certain emission rates.

[1] OSHA – Occupational Safety and Health Administration
[2] RCRA – Resource Conservation and Recovery Act
[3] DOT – Department of Transportation
[4] CWA - Clean Water Act
[5] NPDES – National Pollutant Discharge Elimination System
[6] SPDES – State Pollution Discharge Elimination System
[7] TOGS – Technical and Operational Guidance Series
[8] CAA – Clean Air Act
[9] NAAQS – National Ambient Air Quality Standards

Table 10 Cost Estimate Summary for the Selected Remedy		
ALCAS FACILITY		
ISCO W/ACTIVATED PERSULFATE COSTS		
Capital Costs		
General Conditions		
Project Management		$27,082
Remedial Design		$50,778
Construction Management		$33,582
Technical Support		$33,852
Construction Costs		
Monitoring Well Installation		$16,576
Injection Well Installation		$57,975
Amendment Injection		$207,548
Contingency (20%)		$56,420
Subtotal Capital Costs		$484,000
Periodic Costs		
First Round Injection		$218,000
Second Round Injection		$66,000
Well Maintenance		$15,000
Total Capital Costs		**$783,000**
Operation & Maintenance (O&M) Costs		**$82,994**
Present Worth Cost (7% Discount)		**$1,101,000**
EXCAVATION COSTS		
General Conditions		
Management, Design, and Planning		$36,635
Remediation Plans and Regulatory Approval		$31,096
Permitting		$6,240
Total Management, Design, and Planning Costs		$73,971
Excavation Costs		
Limited excavation of shallow soils (70 cy)		$15,000
Off-Site T&D		$21,000
Post excavation sampling		$4,500
Backfill		$1,890
Demolition Activities		$15,000
Restoration Activities		$35,000
Total Excavation Costs		$92,390
Subtotal Capital Costs		**$166,361**
Contingency (15%)		$24,954
Total Excavation Costs (rounded off)		**$190,000**
TOTAL COSTS: ALCAS FACILITY		**$1,291,000**

PARCEL B		
ENHANCED ANAEROBIC BIOREMEDIATION		
Capital Costs		
General Conditions		
Project Management		$28,994
Remedial Design		$33,170
Construction Management		$22,113
Technical Support		$21,196
Construction Costs		
Monitoring Well Installation		$18,055
EAB Injection		$117,755
Bioaugmentation		$48,466
Contingency		$60,406
Periodic Injection Costs		$348,000
Total Capital Costs		**$642,000**
Operation & Maintenance (O&M) Costs		**$101,000**
PRESENT WORTH COSTS (7% Discount)		**$1,103,000**

APPENDIX III

ADMINISTRATIVE RECORD INDEX

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

07/22/2014

REGION ID: 02

Site Name: OLEAN WELL FIELD
CERCLIS ID: NYD980528657
OUID: 02 / 03
SSID: 0216
Action: OU2 ROD MODIFICATION FOR ALCAS FACILITY & OU3 ROD FOR PARCEL B

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Beginning Bates:	Ending Bates:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
707829	07/22/2014	ADMINISTRATIVE RECORD INDEX FOR OU2 / OU3 - ALCAS SOURCE AREA FOR THE OLEAN WELL FIELD SITE	3	[INDEX]			[]	[]	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]
128178	01/01/1111	COMMUNITY RELATION PLAN FOR REMEDIAL ACTION FOR THE OLEAN WELL FIELD SITE	17	[PLAN]	R2-0000001	R2-0000017	[]	[]	[,]	[US ENVIRONMENTAL PROTECTION AGENCY REGION 2]
687145	03/17/1998	CONSENT DECREE - CIVIL ACTION NO. 98-CV_0052A BETWEEN THE US EPA AND ALCAS CUTLERY CORPORATION AND ALUMINUM COMPANY OF AMERICA FOR THE OLEAN WELL FIELD SITE	91	[ORDER]	R2-0000018	R2-0000108	[]	[]	[FOX, JEANNE M, GALLAGHER, MARK , GROSS, JOEL , MCKNIGHT, KEVIN L, ROACH, MARY K, STITT, JAMES E]	[ALCAS CUTLERY CORP, ALUMINUM COMPANY OF AMERICA, EPA, REGION 2, US DEPARTMENT OF JUSTICE, US DEPT OF JUSTICE]
122463	01/17/2000	SITE EVALUATION AND CONCEPTUAL MODEL REPORT FOR THE OLEAN WELL FIELD SITE	31	[REPORT]	R2-0000109	R2-0000139	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]	[,]	[ENVIRONEERING, INC., IT GROUP]
122671	01/25/2000	TRANSMITTAL OF REQUEST LETTER FOR UPDATE OF THE ORIGINAL REMEDY DECISION FOR THE OLEAN WELL FIELD SITE	1	[LETTER]	R2-0000140	R2-0000140	[TACCONE, THOMAS]	[US ENVIRONMENTAL PROTECTION AGENCY]	[PREZBINDOWSKI, ROBERT]	[ALCOA REMEDIATION]
122672	01/25/2000	ALCOA'S REQUEST LETTER FOR UPDATE OF THE ORIGINAL REMEDY DECISION FOR THE OLEAN WELL FIELD SITE	161	[LETTER]	R2-0000141	R2-0000301	[TACCONE, THOMAS]	[US ENVIRONMENTAL PROTECTION AGENCY]	[TRITICO, PHILIP A]	[ENVIRONEERING, INC.]
200470	03/21/2000	CORRESPONDENCE REGARDING REQUEST OF A REMEDY DECISION UPDATE FOR OU2 FOR THE OLEAN WELL FIELD SITE	2	[LETTER]	R2-0000302	R2-0000303	[HUGHES, DAMIEN , TACCONE, THOMAS]	[EPA, REGION 2, US ENVIRONMENTAL PROTECTION AGENCY]	[TRITICO, PHILIP A]	[ENVIRONEERING, INC.]
122464	07/14/2000	ALTERNATIVES ANALYSIS REPORT AND FORMAL REQUEST FOR A REMEDY DECISION UPDATE FOR THE OLEAN WELL FIELD SITE	64	[REPORT]	R2-0000304	R2-0000367	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]	[,]	[ENVIRONEERING, INC.]
122677	09/19/2000	FINAL REMEDIAL DESIGN REPORT FOR OU2 FOR THE OLEAN WELL FIELD SITE	739	[REPORT]	R2-0000368	R2-0001106	[,]	[COOPER INDUSTRIES INC]	[,]	[CIVIL & ENVIRONMENTAL CONSULTANTS, INC.]
122465	01/18/2001	CORRESPONDENCE REGARDING PHASE III PRE-DESIGN INVESTIGATION ANALYTICAL AND GEOTECHNICAL LABORATORY DATA SHEETS FOR OLEAN WELL FIELD SITE	1	[LETTER]	R2-0001107	R2-0001107	[HUGHES, DAMIEN]	[EPA, REGION 2]	[WHITE, TIMOTHY H]	[ENVIRONEERING, INC.]

712101

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

07/22/2014

REGION ID: 02

Site Name: OLEAN WELL FIELD
CERCLIS ID: NYD980528657
OUID: 02 / 03
SSID: 0216
Action: OU2 ROD MODIFICATION FOR ALCAS FACILITY & OU3 ROD FOR PARCEL B

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Beginning Bates:	Ending Bates:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
122666	01/19/2001	ANALYTICAL AND GEOTECHNICAL LABORATORY DATA SHEETS, PHASE III PRE-DESIGN INVESTIGATION FOR A REMEDY DECISION UPDATE FOR THE OLEAN WELL FIELD SITE	436	[REPORT]	R2-0001108	R2-0001543	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]	[,]	[ENVIRONEERING, INC.]
122667	01/30/2001	PHASE III PRE-DESIGN INVESTIGATION FOR A REMEDY DECISION UPDATE FOR THE OLEAN WELL FIELD SITE	149	[REPORT]	R2-0001544	R2-0001692	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]	[,]	[ENVIRONEERING, INC.]
200471	07/05/2001	CORRESPONDENCE REGARDING PHASE IV PRE-DESIGN INVESTIGATION WORK PLAN - REMEDY DECISION UPDATE FOR THE OU2 OLEAN WELL FIELD SITE	10	[LETTER]	R2-0001693	R2-0001702	[WALTERS, MICHAEL]	[EPA, REGION 2]	[WHITE, TIMOTHY H]	[ENVIRONEERING, INC.]
122668	03/05/2002	CORRESPONDENCE REGARDING PHASE IV DATA SUMMARY FOR THE OLEAN WELL FIELD SITE	1	[LETTER]	R2-0001703	R2-0001703	[WALTERS, MICHAEL]	[EPA, REGION 2]	[WHITE, TIMOTHY H]	[ENVIRONEERING, INC.]
122669	03/05/2002	PHASE IV DATA SUMMARY FOR THE OLEAN WELL FIELD SITE	104	[REPORT]	R2-0001704	R2-0001807	[]	[]	[,]	[ENVIRONEERING, INC.]
200472	03/12/2002	US EPA REQUESTING ALCOA TO SUBMIT A COMPREHENSIVE TECHNICAL REPORT FOR THE POST-ROD PHASES I-IV FOR OU2 FOR THE OLEAN WELL FIELD SITE	4	[LETTER]	R2-0001808	R2-0001811	[PREZBINDOWSKI, ROBERT]	[ALCOA REMEDIATION]	[LAPADULA, JOHN]	[EPA, REGION 2]
122670	05/01/2002	POST ROD SUMMARY REPORT FOR THE OLEAN WELL FIELD SITE	234	[REPORT]	R2-0001812	R2-0002045	[,]	[ALCOA REMEDIATION]	[,]	[ENVIRONEERING, INC.]
200473	02/11/2003	INVOCATION OF ADDITIONAL WORK PROVISIONS OF CONSENT DECREE: TECHNICAL REVIEW OF POST ROD SUMMARY REPORT AND REQUEST FOR DRAFT WORK PLAN TO PERFORM FURTHER RESPONSE ACTIONS FOR THE OLEAN WELL FIELD SITE	8	[LETTER]	R2-0002046	R2-0002053	[PREZBINDOWSKI, ROBERT , STITT, JAMES E]	[ALCAS CUTLERY CORP, ALCOA REMEDIATION]	[LAPADULA, JOHN]	[EPA, REGION 2]
200477	07/29/2005	ADDITIONAL INVESTIGATION (AI) REPORT FOR THE ALCAS/CUTCO CUTLERY FACILITY CORPORATION FOR OU2 FOR THE OLEAN WELL FIELD SITE	512	[REPORT]	R2-0002054	R2-0002565	[,]	[ALCOA, INC.]	[,]	[ENI ENGINEERING, LLC]
122675	03/30/2007	ADDITIONAL INVESTIGATION ("AI") REPORT FOR THE OLEAN WELL FIELD SITE	525	[REPORT]	R2-0002566	R2-0003090	[,]	[ALCOA, INC.]	[,]	[ENI ENGINEERING, LLC]

ADMINISTRATIVE RECORD INDEX OF DOCUMENTS

FINAL

07/22/2014

REGION ID: 02

Site Name: OLEAN WELL FIELD
CERCLIS ID: NYD980528657
OUID: 02 / 03
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Action: OU2 ROD MODIFICATION FOR ALCAS FACILITY & OU3 ROD FOR PARCEL B

DocID:	Doc Date:	Title:	Image Count:	Doc Type:	Beginning Bates:	Ending Bates:	Addressee Name:	Addressee Organization:	Author Name:	Author Organization:
200474	09/05/2008	US EPA'S REVIEW OF UPDATED SITE EVALUATION AND CONCEPTUAL MODEL REPORT FOR ALCAS PROPERTY FOR OU2 FOR THE OLEAN WELL FIELD SITE	5	[LETTER]	R2-0003091	R2-0003095	[PREZBINDOWSKI, ROBERT]	[ALCOA REMEDIATION]	[LYNCH, KEVIN]	[EPA, REGION 2]
200476	11/10/2008	UPDATED SITE EVALUATION AND CONCEPTUAL MODEL REPORT FOR ALCAS PROPERTY FOR OU2 FOR THE OLEAN WELL FIELD SITE	48	[REPORT]	R2-0003096	R2-0003143	[,]	[US ENVIRONMENTAL PROTECTION AGENCY REGION 2]	[,]	[ENI ENGINEERING, LLC]
200475	02/27/2009	FOCUSED FEASIBILITY STUDY - PART 1: DEVELOPMENT AND SCREENING OF REMEDIAL TECHNOLOGIES FOR THE OLEAN WELL FIELD SITE	97	[REPORT]	R2-0003144	R2-0003240	[,]	[ALCOA, INC.]	[,]	[ENI ENGINEERING, LLC]
708043	09/01/2011	PILOT AND BENCH STUDY REMEDIAL ACTION PLAN FOR THE ALCAS CUTLERY CORPORATION FACILITY FOR THE OLEAN WELL FIELD SITE	99	[PLAN]	R2-0003241	R2-0003339	[PREZBINDOWSKI, ROBERT]	[ALCOA REMEDIATION]	[,]	[CDM SMITH INCORPORATED]
708042	03/22/2012	REVISED IN-SITU CHEMICAL OXIDATION PILOT STUDY WORK PLAN FOR THE ALCAS CUTLERY CORPORATION FACILITY FOR THE OLEAN WELL FIELD SITE	56	[PLAN]	R2-0003340	R2-0003395	[PREZBINDOWSKI, ROBERT]	[ALCOA REMEDIATION]	[SORENSON, KENT S]	[CDM SMITH INCORPORATED]
255828	07/17/2014	REVIEW OF OU2 BASELINE RISK ASSESSMENT FOR OU2 ROD AMENDMENT AND OU3 ROD FOR THE OLEAN WELL FIELD SITE	3	[REPORT]	R2-0003396	R2-0003398	[]	[]	[MANNINO, PIETRO]	[EPA, REGION 2]
707892	07/17/2014	FINAL FOCUSED FEASIBILITY STUDY FOR THE ALCAS STUDY AREA INCLUDING THE ALCAS FACILITY AND PARCEL B PROPERTIES FOR THE OLEAN WELL FIELD SITE	480	[REPORT]	R2-0003399	R2-0003878	[]	[]	[]	[]
707893	07/22/2014	PROPOSED PLAN FOR THE ALCAS SOURCE AREA FOR THE OLEAN WELL FIELD SITE	20	[PLAN]	R2-0003879	R2-0003898	[]	[]	[,]	[US ENVIRONMENTAL PROTECTION AGENCY]

APPENDIX IV

NEW YORK STATE CONCURRENCE LETTER

New York State Department of Environmental Conservation
Division of Environmental Remediation
Office of the Director, 12th Floor
625 Broadway, Albany, New York 12233-7011
Phone: (518) 402-9706 • **Fax:** (518) 402-9020
Website: www.dec.ny.gov

Joe Martens
Commissioner

September 29, 2014

Mr. Walter Mugdan
Director
Emergency and Remedial Response Division
United States Environmental Protection
Agency, Region 2
290 Broadway
New York, New York 10007-1866

RE: Olean Wellfield Site, Alcas Property, ID No. 905002
September 2014 Superfund Record of Decision - Alcas Property

Dear Mr. Mugdan:

The New York State Department of Environmental Conservation (NYSDEC) and the New York State Department of Health (NYSDOH) have reviewed the amended Record of Decision for OU2 and the Record of Decision for OU3 dated September 2014 prepared by the United States Environmental Protection Agency (EPA) for the Alcas Property located within the Olean Wellfileld site. The Alcas source area located at the facility building is referred to as OU2 which has soil and groundwater contamination. The parcel B area located to the south of the Alcas building is referred to as OU3 which has groundwater contamination. The main components of the EPA's selected amended remedy for OU2 and the selected remedy for OU3 includes the following:

1) The amended remedy for OU2 is the implementation of ISCO along the exterior of the southern portion of the main building to treat soil and groundwater contamination at the Alcas Facility;

2) The amended remedy for OU2 also includes the excavation of remaining contaminated soils beneath and adjacent to the main building at the Alcas Facility, as necessary, that are determined to be impacting the ability to achieve the groundwater RAOs, subsequent to treatment with ISCO;

3) The selected remedy for OU3 is the implementation of EAB to promote reductive dechlorination of contamination through a series of injection wells to degrade organic contaminants at Parcel B which is located immediately south of the Alcas building;

The following are the common elements for amended OU2 and OU3:

4) Institutional controls for soil and groundwater use restrictions until RAOs are achieved to ensure the remedy remains protective.

5) Implementation of a long-term groundwater monitoring program to track and monitor changes in the groundwater contamination at the Alcas Source Area to ensure the RAOs are attained. The groundwater sampling would also monitor degradation by-products generated by the treatment processes to ensure that drinking water quality standards are met at the nearby municipal water supply well 18M.

6) Development of a Site Management Plan (SMP) to provide for the proper management of the site remedy post-construction.

We understand that because of limited access to the operating facility it is not practical to perform excavation to remove the contaminated soils from underneath the existing operating facility. Existing operations at the Alcas Facility would be negatively impacted by the excavation alternative as certain areas of the building critical to the manufacturing process would need to be fully or partially demolished. However, if future operations change, or if a portion of the building overlying the contamination is no longer in use or demolished, excavation would be more readily implementable and would be considered at that time, if necessary.

With this understanding, we concur with the selected amended remedy for OU2 and the selected remedy for OU3. If you have any questions or need additional information, please contact Mr. Vivek Nattanmai at (518) 402-9814 or email at vivek.nattanmai@dec.ny.gov

Sincerely,

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

ec: P. Mannino, USEPA
M. Walters, USEPA
M. Cruden, NYSDEC
Dr. Anders, NYSDOH
E. Wohlers, Cattaraugus County DOH
J. White, NYSDEC
M. Doster, NYSDEC, Region 9
V. Nattanmai, NYSDEC

APPENDIX V

RESPONSIVENESS SUMMARY

APPENDIX V

RESPONSIVENESS SUMMARY

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INTRODUCTION

A responsiveness summary is required by the regulations promulgated under the Superfund statute. It provides a summary of comments and concerns received during the public comment period, as well as the responses of the U.S. Environmental Protection Agency (EPA) to those comments and concerns. All comments received were considered by the EPA in its final decision regarding the selection of the third operable unit (OU3) remedy and the second operable unit (OU2) amended remedy for the Alcas Source Area at the Olean Well Field Superfund Site (Site).

SUMMARY OF COMMUNITY RELATIONS ACTIVITIES

The Proposed Plan for the OU2 amended remedy for the Alcas Facility and the OU3 remedy for the area identified as Parcel B (collectively, the Alcas Source Area), attached hereto as Attachment 1, was released to the public on July 23, 2013, along with the Focused Feasibility (FFS) Report, dated July 2014, as well as other documents contained in the Administrative Record. The EPA's preferred remedy and the basis for that preference were identified in the Proposed Plan.

These documents, including the Proposed Plan, and others, were made available to the public in information repositories maintained at the EPA Superfund Records Center in the Region 2 offices at 290 Broadway, 18th Floor, New York, New York and the Olean Public Library, located at Second Street and Lauren Streets, Olean, New York.

A notice that announced the commencement of the public comment period, the public meeting date, a description of the preferred remedies, the EPA contact information, and the availability of the above-referenced documents, attached hereto as Attachment 2, was published in *The Olean Times Herald*, a local newspaper, on July 23, 2014. The public comment period ended on August 22, 2014.

The EPA held a public meeting on August 5, 2014 at 7:00 P.M. at the Jamestown Community College Cutco Theatre, 260 North Union Street, Olean, New York, to discuss the findings of the FFS Report and to answer questions from the public about the remedial alternatives and the proposed remedy. Copies of the public meeting sign-in sheets and a transcript of the meeting are attached hereto as Attachments 4 and 5, respectively. Responses to the comments and questions received at the public meeting, along with other written comments received during the public comment period, are included in this Responsiveness Summary.

SUMMARY OF COMMENTS AND EPA RESPONSES

One written comment was received during the public comment period which was submitted at the venue of the public meeting. A copy of the comment is provided in Attachment 5 of this Responsiveness Summary. A summary of this written comment and the comments provided at the public meeting on August 5, 2014, as well as the EPA's responses to those comments, are provided below.

Comment # 1: The proposed remedial action process for the Alcas Source Area, as outlined, will require 20 to 30 years to attain federal and state environmental cleanup standards. The potentially responsible parties (PRPs) have paid the capital cost for the installation of the air strippers on the municipal wells (under OU1) and the City of Olean has assumed the operation and maintenance costs for the operation of this system since 1990. The City of Olean wants the PRPs to begin paying the operation and maintenance costs for the municipal water supply wells until the remedial action at the Alcas source is completed.

Response Comment # 1: The comment relates to responsibility for operation and maintenance (O&M) of the air strippers which were installed pursuant to the OU1 ROD at the Site. While the comment does not directly address the actions to be taken under this OU2 ROD Amendment and OU3 ROD, it does concern timeframes to achieve groundwater cleanup levels at the Alcas Source Area and therefore O&M of the air strippers is relevant. The remedial actions to be taken under this ROD and ROD Amendment are intended to speed up the timeframe to achieve the remedial action objectives and thus shorten the time that the air strippers will need to operate. Specifically, the commenter asks that the PRPs pay for the O&M of the municipal water supply wells until the Alcas Source Area remedies are complete. It should be noted that although the PRPs are required to perform O&M for OU1 under an administrative order issued by EPA to the PRPs on February 7, 1986, on November 10, 1988, the City of Olean entered into an agreement with the PRPs, which EPA was not a party to, transferring responsibility for O&M of the air strippers to the City. Since that time, the City has been performing the O&M. Since EPA was not a party to this agreement, and EPA never relieved the PRPs of their obligation to perform O&M for OU1, the PRPs are still responsible to EPA for such O&M.

Comment # 2: A resident noted the occasional seepage of water through the basement foundation of his house. The resident was concerned about the potential for the water to be contaminated and wanted to know the necessary steps to get his house tested.

Response to Comment # 2: Based on data collected from monitoring wells located near this residence, it does not appear that shallow groundwater that would have the potential to enter the residence has been impacted by the Site. EPA also investigates the soil vapor intrusion pathway at homes and buildings situated at Superfund sites when the potential for vapor intrusion exists. In April 2009, EPA initiated a vapor intrusion sampling program at homes and buildings within close proximity to the Alcas Source Area. EPA intends to perform another round of vapor intrusion sampling between November 2014 and April 2015 and will include the commenter’s home in the sampling event at that time, assuming access is permitted by the homeowner.

Comment # 3: The same commenter asked how frequently EPA assesses environmental conditions at the Site.

Response to Comment # 3: The selected remedies include provisions for the periodic monitoring of Site conditions. In addition, in accordance with the Superfund law, reviews will be conducted no less often than once every five years after the completion of construction to ensure that the remedy is, or will be, protective of human health and environment.

Comment # 4: The same commenter asked whether a tannery which operated on the south-side of the current Alcas Facility main building in the 1940s and 1950s could still be a significant source of groundwater contamination at the Site.

Response to Comment # 4: EPA is aware of the old tannery operation that once existed at the Alcas Facility. During a building expansion in 2011, soil samples collected and analyzed from the southwest side of the Alcas Facility showed elevated levels of chromium in the subsoils (as high as 87.6 ppm at a depth of four feet in one sample). Chromium is a by-product of the tanning process. However, the presence of chromium in the subsoil resulting from past tannery operations appears localized to the southwest side of the main building and is not a contaminant of concern in the groundwater and soil at the Alcas Source Area.

Comment # 5: The same commenter expressed concern about odors emanating from the Alcas Facility.

Response to Comment # 5: Interior air monitoring conducted at the Alcas Facility main building from December 2004 through December 2006 have not revealed contaminants of concern above Federal or State air quality standards. EPA and NYSDEC personnel have conducted site visits at the Alcas Facility on several occasions, including as recently as August 5, 2014, the day of the public meeting, and did not experience odors in the interior or within the general vicinity of the manufacturing building.

Comment # 6: The same commenter inquired about a tank and its possible contents once located on Parcel B.

Response to Comment # 6: According to a May 2005 Phase I assessment conducted in association with the purchase of the property, a propane cylindrical steel container mounted horizontally on a four-footed metal support was previously located on Parcel B. The unit was removed from Parcel B several years before Alcoa purchased the property in 2011. Studies indicate that the groundwater contamination at Parcel B does not result from past usage of this propane tank.

Comment # 7: A commenter questioned the safety of the drinking water supplied by the City of Olean municipal wells (18M and 37/38M), in light of the contamination to the underlying City Aquifer.

Response to Comment # 7: A sampling protocol is in place to demonstrate that the water supply meets Federal and State drinking water standards. The air strippers attached to the municipal wells have been in operation since 1990 and sampling indicates that the system effectively removes Site contaminants from the groundwater pumped from the City Aquifer to meet these standards prior to public distribution.

Comment # 8: The same commenter stated that the groundwater contamination in East Olean (Town of Olean) would not affect Olean's (City of Olean's) drinking water supply which he believed was from a separate source.

Response to Comment # 8: The municipal water supply wells 18M and 37/38M, located in the City of Olean, extract and distribute approximately two million gallons of water per day from the underlying City Aquifer to area residences in both the City and Town of Olean (West and East Olean), New York. Therefore, the contamination at the Olean Well Field Superfund Site is impacting both the City and Town of Olean water supply. The air strippers on the municipal wells remove contaminants from the groundwater prior to distribution to the public.

ATTACHMENT 1

Proposed Plan

Superfund Proposed Plan

Olean Well Field Superfund Site
Alcas Source Area
Cattaraugus County, New York

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan proposes changes to the portion of the remedy selected in a September 1996 Record of Decision (ROD) for Operable Unit 2 (OU2) at the Olean Well Field Superfund Site related to the Alcas Cutlery Corporation (Alcas) source area. The OU2 ROD addressed the sources of volatile organic compound (VOC) contamination to groundwater at four source areas: Alcas, Loohn's Dry Cleaners and Launderers (Loohns), McGraw-Edison Company (McGraw) and AVX Corporation (AVX). This modification is necessary because additional evaluations performed by Alcas and Alcoa, Inc., potentially responsible parties (PRPs) at the Site, after the issuance of the OU2 ROD, revealed that a major component of the OU2 selected remedy, vacuum enhanced recovery (VER) of VOCs, would not be successful and was, therefore, not protective of human health and the environment. In accordance with Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA, also known as Superfund) 42 U.S.C. §9617(a), and Section 300.435(c)(2)(ii) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), if after the selection of a remedy in a ROD, a component is fundamentally altered, the Environmental Protection Agency (EPA) must propose an amendment to the ROD. EPA's proposed changes to the ROD must be made available for public comment in a Proposed Plan.

For purposes of this Proposed Plan, the Alcas Source Area includes the real property at which Alcas formerly conducted manufacturing operations, located at 1116 East State Street, which is currently occupied by the Cutco Corporation (this facility is hereafter referred to as the Alcas Facility). The Alcas Source Area also includes several parcels of land to the south of the Alcas Facility identified on the City of Olean tax map as Block 2, Lots 23, 24 and a portion of Lot 44 that are impacted by contaminated groundwater (these parcels are hereafter referred to as Parcel B).

This Proposed Plan also identifies the preferred remedial alternative with the rationale for this preference for a newly discovered area of groundwater contamination at Parcel B. EPA considers this Operable Unit 3 (OU3) at the Site.

MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:
July 23, 2014 – August 22, 2014
EPA will accept written comments on the Proposed Plan during the public comment period.

PUBLIC MEETING: August 5, 2014 at 7:00PM
EPA will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Focused Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held at the Jamestown Community College, Cattaraugus County Campus, Cutco Theater, 260 North Union Street, Olean, New York.

This Proposed Plan was developed by EPA, the lead agency for the Site, in consultation with the New York State Department of Environmental Conservation (NYSDEC). EPA is issuing this Proposed Plan as part of its public participation responsibilities under Section 117(a) of CERCLA, as amended, and Sections 300.430(f) and 300.435(c) of the NCP. The alternatives summarized herein and field investigations that were conducted at the Alcas Source Area are described in the Focused Feasibility Study (FFS) Report, dated July 2014, as well as other documents contained in the Administrative Record for the OU2 ROD and the Administrative Record for the OU2 ROD Amendment and OU3 ROD. EPA encourages the public to review these documents to gain a more comprehensive understanding of the Site and the Superfund activities that have been conducted.

This Proposed Plan is being provided as a supplement to the above-noted documents to inform the public of EPA's preferred remedy and to solicit public comments pertaining to the remedial alternatives evaluated. The selected remedy components set forth in the OU2 ROD for Loohns, McGraw and AVX source areas in the ROD for OU2 are not being modified in this document. However, EPA anticipates that a modification to the AVX property component of the OU2 ROD will be necessary and a subsequent Proposed Plan and ROD Amendment will be issued to address the modification.

EPA proposes to change the remedy for the Alcas Facility from VER to a combination of *in-situ* chemical oxidation (ISCO), excavation of contaminated soil that are determined to be impacting the ability to achieve the groundwater RAOs subsequent to treatment with ISCO and after a determination is made by EPA that it is not inappropriate to access the material based upon factors including the use of the building, and institutional controls. In addition, EPA proposes enhanced anaerobic biodegradation (EAB) and institutional controls as the preferred alternative for Parcel B.

COMMUNITY ROLE IN SELECTION PROCESS

EPA relies on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, the FFS Report and this Proposed Plan have been made available to the public for a public comment period which begins on July 23, 2014 and concludes on August 22, 2014.

Changes to the preferred remedial alternative discussed in this document, or a change from the preferred modified remedial alternative to another remedial alternative, may be made if public comments or additional data indicate that such a change will result in a more appropriate remedial action. The final decision regarding the selected remedy for the Alcas Source Area will be made after EPA has taken into consideration all public comments. EPA is soliciting public comment on all of the alternatives considered in this Proposed Plan and in the detailed analysis section of the July 2014 FFS Report because EPA may select a remedy other than the preferred modified remedy.

A public meeting will be held during the public comment period at the Jamestown Community College, Cattaraugus County Campus, Cutco Theater on August 5, 2014 at 7:00 p.m. to present the conclusions of the studies performed at the Alcas Source Area, to elaborate further on the reasons for recommending the preferred alternative, and to receive public comments.

Comments received at the public meeting, as well as written comments submitted during the public comment period, will be documented in the Responsiveness Summary Section of the ROD and ROD Amendment, the document which formalizes the selection of the remedy.

Written comments on the Proposed Plan should be addressed to:

Michael A. Walters
Remedial Project Manager
Western New York Remediation Section
U.S. Environmental Protection Agency
290 Broadway, 20th Floor
New York, New York 10007-1866
telephone: (212) 637-4279
e-mail: walters.michael@epa.gov

INFORMATION REPOSITORIES

Copies of the Proposed Plan and supporting documentation are available at the following information repositories:

Olean Public Library, located at Second and Laurens Streets
Olean, New York
(716) 372-0200

Hours: Monday – Thursday, 9:00 AM – 9:00 PM
Friday and Saturday, 9:00 AM – 5:00 PM

EPA – Region 2
Superfund Records Center
290 Broadway, 18th Floor
New York, NY 10007-1866
(212) 637-4308
Hours: Monday – Friday: 9:00 AM – 5:00 PM

SCOPE AND ROLE OF ACTION

Site remediation activities are sometimes segregated into different phases or operable units (OUs) so that remediation of different environmental media or areas of a site can proceed separately. EPA has designated three OUs for the Olean Well Field Site. OU1 addresses the drinking water supply for the City and Town of Olean. On September 24, 1985, EPA signed a ROD for OU1, which called for, among other things, the treatment of the municipal supply well water and the extension of the public water supply to residents utilizing private wells. This Proposed Plan does not propose to modify the selected remedy for OU1. As discussed above, OU2 addresses the sources of VOC contamination to groundwater. On September 30, 1996, EPA signed a ROD for OU2, which targeted four source areas for remediation. OU3 has been developed to address groundwater contamination at Parcel B. This Proposed Plan modifies the selected remedy for the Alcas Facility component of the OU2 ROD which addresses soil and groundwater contamination impacting the underlying aquifers and identifies the preferred remedy to address groundwater contamination at Parcel B. The primary objectives of this action are to minimize, contain and/or eliminate the migration of contaminants in soil and groundwater contamination and to minimize any potential future health and environmental impacts at the Alcas Source Area. EPA anticipates that a subsequent Proposed Plan and ROD Amendment will modify the selected remedy for the AVX property component of the OU2 ROD.

SITE BACKGROUND

Site Description

The Site is located in the eastern portion of the City of Olean and west and northwest of the towns of Olean and Portville in Cattaraugus County, New York. The Site is characterized by contaminated groundwater underlying the City of Olean, the Town of Olean and the Town of Portville, and by contaminated soil at certain locations in the City and Town of Olean. The Site is approximately 65 miles southeast of Buffalo, New York, and seven miles north of the New York/Pennsylvania border. The Allegheny River, a principal tributary of the Ohio River, and two of its tributaries, the Olean and Haskell Creeks, flow west-northwest through the southern portion of the Site.

A Site location map is provided as Figure 1.

Site Geology and Hydrogeology

The Olean Well Field is underlain by approximately 300 feet of unconsolidated glacial deposits. Previous groundwater investigations in the Olean Well Field have shown that the upper 100 feet of glacial deposits can be divided into five lithologic units based on color, texture, grain size and mode of deposition. These lithologic units have been grouped in topographically descending order into four hydrogeologic units referred to as the upper aquifer, upper aquitard, lower aquifer, and lower aquitard.

The upper aquifer is comprised of glaciofluvial coarse sands and sandy gravels, recent fluvial deposits of fine sands, and silts with some clay. The upper aquifer is not continuous at the Olean Well Field Site. The thickest portion of the upper aquifer (approximately 41 feet) is found along the Allegheny River. The upper aquifer thins to the north, pinching out just south of the AVX property. The upper aquifer is recharged by the infiltration of precipitation. Groundwater in the upper aquifer is generally encountered at a depth of approximately 12 to 15 feet below land surface and flow is toward the Allegheny River.

The upper aquitard is located above the lower aquifer. This unit is a low-permeability lodgement till composed of greater than 50 percent silt and clay. The thickness of the upper aquitard at the Olean Well Field Site ranges from as little as six feet in the south to over 30 feet in the north. In the northern portion of the Site this unit is present at the surface and consists of surficial till.

The lower aquifer, also referred to as the City Aquifer, consists of glacial outwash deposits of sand, silt, and gravel. The thickness of the lower aquifer is approximately 70 feet in the northern portion of the Site and thins to approximately 30 feet south of the Allegheny River to the south. The lower aquifer is the main source of drinking water for the City and Town of Olean. In addition several industrial facilities in the area utilize wells completed in the lower aquifer for manufacturing activities. The regional groundwater flow within the City Aquifer is generally in a west-southwest direction but within the vicinity of the Alcas property, a localized eastward flow occurs due to the pumping influence of a nearby municipal supply well (18M).

Recharge to the lower aquifer is via leakage from the upper aquifer (or till where the upper aquifer is not present) through the upper aquitard. The magnitude of leakage over the Olean Well Field Site is variable and is dependent on the thickness and permeability of the till (upper aquitard) and relative groundwater level differences between the upper aquifer (or till) and lower aquifer.

The lower aquitard has been described as silt, clay, and fine to very fine sand deposited in a preglacial environment.

Site History

Three municipal water supply wells (18M, 37M and 38M) at the Site (see Figure 1) were constructed and completed in the late 1970s to provide water for the City of Olean, New York. The supply wells draw water from the City Aquifer. Prior to the construction of these municipal wells, city water was supplied by a surface-water treatment facility which drew water from the Olean Creek. In 1981, these supply wells were found to contain trichloroethene (TCE) and other chlorinated organic solvents at concentrations exceeding federal maximum contaminant levels (MCLs) and drinking water standards set by the New York States Department of Health (NYSDOH). As a result, these wells were closed and the surface water treatment facility operations were reactivated to provide water to residents.

EPA subsequently evaluated the Site for inclusion on the National Priorities List (NPL) of known or threatened releases of hazardous substances. As a result of this evaluation, the Site was included on the National Interim Priorities List, by publication in the Federal Register on October 23, 1981, and was included on the first NPL on September 9, 1983.

Between 1981 and 1985, several separate federal-, state- and PRP-led investigations were conducted to identify the sources of contamination to the municipal wells and evaluate the nature and extent of groundwater contamination at the Site.

Following the discovery by the Cattaraugus County Department of Health and the NYSDOH that a number of private wells in the City and Town of Olean, all of which received groundwater from the upper aquifer, were also contaminated with TCE, EPA performed an initial removal action in January 1982. This action involved the installation of carbon adsorption filters on 16 contaminated private wells in the City and Town of Olean and periodic monitoring of those wells. In June 1984, EPA conducted a second removal action which included the replacement of one of the carbon filters installed as part of the initial removal action, installation of carbon units on ten additional contaminated private wells, and monitoring. In March 1985, EPA conducted a third removal action which consisted of the installation of carbon filter systems on two additional homes.

The results of these investigations were documented in the ROD for OU1 issued by EPA on September 24, 1985. The ROD for OU1 called for the following: 1) installation of an air stripper to treat the contaminated groundwater from municipal water supply wells 18M, 37M and 38M; 2) extension of the City of Olean's public water supply line into the Town of Olean to connect approximately 93 residences served by private wells; 3) inspection of an industrial sewer; 4) recommendations for institutional controls to restrict the withdrawal of contaminated groundwater; 5) institution of a Site Monitoring Plan; and, 6) performance of a supplemental RI/FS to evaluate source control measures at all facilities that were contributing to the groundwater contamination.

On February 7, 1986, EPA issued an administrative Order under Section 106(a) of CERCLA, 42 U.S.C. §9606, (OU1 UAO) to AVX, McGraw-Edison Company, Cooper Industries, Inc. (parent corporation of McGraw-Edison Company), Alcas, Aluminum Company of America (which at the time owned a percentage share of Alcas), and W.R. Case and Sons Cutlery Co. (Case) (which at the time owned the remaining percentage share of Alcas), requiring them to implement the remedial action selected in the OU1 ROD.

All of the PRPs, with the exception of Case, performed the actions pursuant to the OU1 UAO. Case subsequently filed for bankruptcy. The trustee in bankruptcy for the bankruptcy estate of Case entered into a consent decree with the United States which required the bankruptcy estate to pay a portion of EPA's past costs and a penalty for Case's failure to comply with the OU1 UAO.

Pursuant to the OU1 UAO, the extension of the City of Olean's water line was completed in 1988. In 1989, the private well users were connected to the water line extension. Although residents impacted by the Site were offered connection to the public water supply pursuant to the OU1 ROD, to date, some residents continue to use private wells as a source of potable water. Also in 1989, the industrial sewer at the McGrawproperty was inspected and repaired. In February 1990, construction of the air strippers was completed and the municipal well water supply service was reactivated. The current total pumping rate for the municipal wells is approximately 3 million gallons per day. Since the system began operating, treated water from the air strippers has met state and federal drinking water standards.

On November 13, 1989, EPA issued an additional administrative order to Alcas. The order required Alcas to excavate approximately 10 cubic yards of contaminated soil from an area at the Alcas Facility where TCE had previously been used as a weed killer. This work was completed in 1989.

On June 25, 1991, an administrative order on consent was entered into between EPA and AVX, McGraw-Edison, Cooper Industries, Alcas and Alcoa, Inc., (formerly known as Aluminum Company of America) for performance of a supplemental RI/FS. The supplemental RI/FS was a mixed work project. Pursuant to this administrative order, the PRPs were required to investigate their respective properties. In addition, EPA conducted studies on 10 additional properties. The results from the investigations conducted by EPA were provided to the PRPs for incorporation into the supplemental RI/FS. In addition to the AVX, Alcas and McGraw-Edison properties, the supplemental RI/FS identified the Loohn's Dry Cleaners and Launderers property as an additional source area.

Groundwater level data and potentiometric surface maps indicate that lines of equal elevation for the upper aquifer generally parallel the Allegheny River. This indicates that groundwater flow is towards the river from both sides of the river valley. Natural flow conditions in the lower or City Aquifer within the vicinity of the Site have been altered by the pumping of the municipal wells, in operation since 1985, and an AVX production well, in operation since 1959.

Based on the results of the supplemental RI/FS, EPA issued a ROD for OU2 on September 30, 1996. The major components of the selected remedy for OU2 for the Alcas property included the following:

- Vacuum Enhanced Recovery (VER) of VOCs from contaminated soil;
- Upgradient and downgradient groundwater monitoring; and
- Implementation of groundwater use restrictions.

The major components of the selected remedy for the Loohns property included the following:

- VER or Soil Vapor Extraction with air sparging (SVE/AS). If design studies indicated VER and SVE/AS were impracticable due to the influence of the Allegheny River, the source area would be excavated;
- Upgradient and downgradient groundwater monitoring;
- Implementation of groundwater treatment if VER and SVE/AS or excavation do not adequately improve the quality of the City Aquifer, and if the Loohn's property continued to affect the groundwater entering the municipal wells; and
- Implementation of groundwater use restrictions.

The major components of the selected remedy for the McGraw property included the following:

- Groundwater treatment;
- Upgradient and downgradient groundwater monitoring; and
- Implementation of groundwater use restrictions.

The major components of the selected remedy for the AVX property included the following:

- Excavation and removal of contaminated soil;
- Off-Site low temperature desorption of soil contaminants, if necessary;
- Upgradient and downgradient groundwater monitoring;
- Implementation of groundwater treatment, if excavation and removal of the contaminated soil did not adequately improve the quality of the City Aquifer and if the property continued to affect the groundwater entering the municipal wells; and
- Implementation of groundwater use restrictions.

Implementation of the OU2 ROD

On March 17, 1998, three consent decrees were entered by the United States District Court for the Western District of New York. The Consent Decrees required McGraw Edison and Cooper Industries, Alcas and Alcoa, and AVX to perform the remedial design and remedial actions for their respective properties as specified in the OU2 ROD.

McGraw-Edison - Cooper Industries:

Construction of a groundwater pump and treatment system for the contaminated upper groundwater aquifer at the McGraw property was initiated in 1999. In July 2001, operation of the groundwater treatment system commenced. The treatment system consists of two extraction wells with an average combined pumping rate of 20 gallons per minute (gpm) from the impacted upper groundwater bearing zone, a shallow tray air-stripper to remove VOCs from the extracted groundwater and a reinjection well to return treated water to the lower or City Aquifer.

Loohn's Dry Cleaners and Launderers:

In the absence of a viable PRP, EPA funded the implementation of the components of the selected remedy at the Loohns property. A remedial design study was completed in 1998 by EPA and based on this study, EPA elected to implement the soil excavation option of the selected OU2 remedy in lieu of VER or SVE/AS.

In 2000, EPA initiated the soil excavation activities and approximately 3,000 cubic yards of soil contaminated with tetrachloroethene (PCE) and other VOCs were excavated and disposed of off-Site. After soil excavation activities commenced, additional data collected at the property revealed that the quantity of soil requiring excavation significantly exceeded the estimated design quantity. As a result, an additional 4,000 cubic yards of contaminated soils, was excavated and, along with the debris from the demolished remains of an old building on the property, disposed of off-Site.

Sampling of the groundwater monitoring wells at the Loohns property have continued to reveal elevated concentrations of VOCs in groundwater. During the most recent sampling conducted in April 2012, TCE and PCE were detected at concentrations of 320 parts per billion (ppb) and 2,600 ppb, respectively. EPA is in the process of determining whether further investigation at the Loohns property is warranted.

AVX:

AVX initiated the excavation of contaminated soil at its property in July 2000. Approximately 5,055 tons of contaminated soil was excavated to a depth of approximately 10 feet below grade surface and transported off-Site for disposal before work was halted. AVX could not complete the excavation of contaminated soils because the contaminated soils were beneath the southeast corner of the manufacturing building, which was fully occupied with AVX's manufacturing operations, and further excavation had the potential to impact the structural integrity of the occupied building. As a result, the excavation area was backfilled pending further study. As mentioned previously, EPA anticipates that a Proposed Plan for Remedy Modification will be issued for the AVX property.

Alcas:
In 1999, the PRPs associated with the Alcas property initiated a series of property-specific pre-design investigations that involved further characterization studies necessary to design the VER component of the selected remedy. Based upon the initial results of these studies, the PRPs determined that geological conditions in the till unit are heterogeneous and also that the source of groundwater contamination was not from the shallow soil at the rear of the property as identified in the OU2 ROD, but rather the data suggested that the main source of contamination resided beneath the main manufacturing building. Based on this new information, Alcas conducted further investigations in 2001 to support their belief that a residual DNAPL source is located at the property under the main manufacturing building. In September 2001, Alcas installed and sampled 17 microwells to define the direction of groundwater flow, to verify that affected groundwater is migrating from under the main manufacturing building, and to delineate the downgradient extent of shallow groundwater contamination. The investigation showed that elevated concentrations of TCE (16,000 to 310,000 ppb) were detected in groundwater samples collected in the upper aquifer along the southern boundary of the main building at the Alcas Facility. The presence of TCE in groundwater at these concentrations is typically recognized by EPA as an indicator of the presence of residual dense non-aqueous phase liquid (DNAPL).[1] DNAPL in soil becomes a slowly dissolving source of groundwater contamination, prolonging groundwater restoration.

Based on this data, in February 2003, EPA informed Alcas that further Site investigation and characterization studies were warranted. The studies were needed to delineate the extent of the groundwater contamination in the upper aquifer beyond the southern boundary of the Alcas property (Parcel B) and to confirm the presence of a residual DNAPL source beneath the main manufacturing building at the Alcas Facility.

UNKNOWN CONDITIONS OR NEW INFORMATION RELATED TO ALCAS SOURCE AREA

As part of the additional investigation, in July 2004 soil and groundwater samples were collected from beneath and to the southwest of the main building and from the underlying City Aquifer to further determine the nature and extent of the VOC contamination in soil, shallow till and groundwater bearing zones at and downgradient of the Alcas property.

Soil/DNAPL Assessment Summary

Varying concentrations of VOCs were detected in the soil samples collected from the borings installed within the main manufacturing building. Results from the investigation showed concentrations of TCE as high as 280 parts per million (ppm), confirming the presence of residual DNAPL, in the soil/till zone at an approximate depth of nine feet below the foundation of the main building. This concentration represents the highest concentration of TCE detected in soil at the Alcas property.

These findings show the presence of "principal threat" wastes at the Alcas Facility. Principal threat wastes are considered source materials, i.e., materials that include or contain hazardous substances, pollutants or contaminants, such as DNAPL in soil, that are acting as a reservoir for migration of contamination to groundwater. Principal threat wastes are those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur.

Groundwater Assessment Summary

The pre-design investigation groundwater sampling results for the upper aquifer revealed TCE concentrations ranging from nondetect to 310,000 ppb for the wells around the southeast corner of the main manufacturing building at the Alcas Facility. This indicates that a DNAPL source exists at or upgradient of this location, placing the likely source of DNAPL under the building. Generally, groundwater concentrations in the upper aquifer decrease from the building toward the river, which is the direction of groundwater flow.

Groundwater sampling results from five monitoring wells installed in the upper portion of the City Aquifer at the Alcas property revealed a maximum TCE concentration of 1,300 ppb at a depth of approximately 30 feet below the ground surface. Five additional monitoring wells were also installed at the Alcas Facility to further assess groundwater quality in the lower portion of the City Aquifer. TCE was detected at a maximum concentration of 10 ppb near the bottom of the City Aquifer at an

[1] A dense non-aqueous phase liquid or DNAPL is a liquid that is both denser than water and is immiscible in or has a very low solubility in water.

WHAT IS RISK AND HOW IS IT CALCULATED?

Human Health Risk Assessment: A Superfund baseline human health risk assessment is an analysis of the potential adverse health effects caused by hazardous substance releases from a site in the absence of any actions to control or mitigate these under current- and future-land uses. A four-step process is utilized for assessing site-related human health risks for reasonable maximum exposure scenarios.

Hazard Identification: In this step, the chemicals of potential concern (COPCs) at the site in various media (*i.e.*, soil, groundwater, surface water, and air) are identified based on such factors as toxicity, frequency of occurrence, and fate and transport of the contaminants in the environment, concentrations of the contaminants in specific media, mobility, persistence, and bioaccumulation.

Exposure Assessment: In this step, the different exposure pathways through which people might be exposed to the contaminants in air, water, soil, etc. identified in the previous step are evaluated. Examples of exposure pathways include incidental ingestion of and dermal contact with contaminated soil and ingestion of and dermal contact with contaminated groundwater. Factors relating to the exposure assessment include, but are not limited to, the concentrations in specific media that people might be exposed to and the frequency and duration of that exposure. Using these factors, a "reasonable maximum exposure" scenario, which portrays the highest level of human exposure that could reasonably be expected to occur, is calculated.

Toxicity Assessment: In this step, the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure and severity of adverse effects are determined. Potential health effects are chemical-specific and may include the risk of developing cancer over a lifetime or other noncancer health hazards, such as changes in the normal functions of organs within the body (*e.g.*, changes in the effectiveness of the immune system). Some chemicals are capable of causing both cancer and noncancer health hazards.

Risk Characterization: This step summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative assessment of site risks for all COPCs. Exposures are evaluated based on the potential risk of developing cancer and the potential for noncancer health hazards. The likelihood of an individual developing cancer is expressed as a probability. For example, a 10^{-4} cancer risk means a "one-in-ten-thousand excess cancer risk"; or one additional cancer may be seen in a population of 10,000 people as a result of exposure to site contaminants under the conditions identified in the Exposure Assessment. Current Superfund regulations for exposures identify the range for determining whether remedial action is necessary as an individual excess lifetime cancer risk of 10^{-4} to 10^{-6}, corresponding to a one-in-ten-thousand to a one-in-a-million excess cancer risk. For noncancer health effects, a "hazard index" (HI) is calculated. The key concept for a non-cancer HI is that a "threshold" (measured as an HI of less than or equal to 1) exists below which noncancer health hazards are not expected to occur. The goal of protection is 10^{-6} for cancer risk and an HI of 1 for a noncancer health hazard. Chemicals that exceed a 10^{-4} cancer risk or an HI of 1 are typically those that will require remedial action at the site and are referred to as Chemicals of Concern or COCs in the final remedial decision or Record of Decision.

approximate depth of 90 feet, exceeding the MCL of 5 ppb, which is the selected cleanup level in the OU2 ROD.

The results of these additional investigations confirmed the presence of a residual DNAPL source beneath the main manufacturing building at the Alcas Facility.

Furthermore, the additional investigations revealed that groundwater contamination in the upper aquifer extends beyond the Alcas Facility limits. Groundwater sampling results from groundwater monitoring wells installed downgradient of the Alcas Facility revealed a maximum TCE and cis-1,2-dichloroethene (cis-1,2 DCE) concentration of 2,800 ppb and 1,000 ppb, respectively, at a depth of approximately 30 feet below the ground surface. Alcoa has since purchased the property south of the Alcas Facility overlying the contaminated groundwater plume (Parcel B).

RISK SUMMARY

A baseline risk assessment was conducted as part of the OU2 ROD to estimate the risks associated with current and future site conditions. The baseline risk assessment estimated the human health and ecological risk which could result from the contamination at the Site if no remedial actions were taken.

Human Health Risk Assessment

Based on the data collected to date, the results of the baseline risk assessment contained in the OU2 ROD have not substantially changed. The baseline risk assessment evaluated the health effects which would result from exposure to groundwater contamination through three pathways, namely, ingestion, dermal contact and inhalation of volatilized contaminants during showering. Risks due to contaminants in the surface and subsurface soil were calculated for exposure as a result of ingestion or inhalation of contaminants by construction workers. A residential exposure scenario for soil was not calculated because all of the properties studied during OU2 RI/FS are zoned for and operated as either industrial or commercial uses, and it is expected that such use would continue in the future. Investigations conducted at the Alcas Source Area subsequent to the OU2 ROD revealed higher concentrations of TCE in soils beneath the main building. These investigations revealed a maximum concentration of TCE of 280 ppm at a depth of nine to ten feet below the concrete slab floor of the main building, compared to a maximum TCE concentration of 12 ppm detected in soil prior to the issuance of the OU2 ROD. As part of the remedy modification process, EPA has conducted a qualitative analysis of the data to estimate the risks associated with the elevated TCE concentrations detected in soils at the Alcas Facility subsequent to the issuance of the OU2 ROD. Based on this analysis, EPA has determined that the higher concentrations of TCE in soils at depth beneath the main building would result in a cancer risk and noncarcinogenic Hazard Index (HI) that are higher, within an order of magnitude, for the exposure groups evaluated in the baseline human health risk assessment for the OU2 ROD. Although the calculated risk and hazards for exposure to subsurface soil below the building are higher, the contamination is at depth (i.e., 10 feet deep or greater); therefore, exposure to the contamination is unlikely based on current and anticipated Site use. Given this, the results of the risk assessment contained in the OU2 ROD are still applicable for the remedy modification process.

Investigations conducted at residential properties near the Alcas Facility subsequent to the OU2 ROD did not reveal Site-related contamination in soils. Risk due to dermal contact with soils was assessed qualitatively due to the absence of dermal absorption factors for all Site-related contaminants except cadmium.

The results of the baseline risk assessment performed for OU2 indicated that ingestion of and dermal contact with untreated groundwater at the Site poses unacceptable risks to human health. Although the baseline risk assessment evaluated all Site-related contaminants, the estimated total risks are primarily due to TCE and trichloroethane (TCA). Cancer risks due to ingestion of groundwater were determined to be approximately one-in-one-hundred for adults and young children (1.5×10^{-2} and 1.3×10^{-2}, respectively) and six-in-one-thousand (5.9×10^{-3}) for older children. The noncarcinogenic HI for these exposure groups were 3.4 for adults, 14.7 for young children and 6.7 for older children. Cancer risks due to dermal contact with groundwater contaminants were determined to be 2.4×10^{-3} for adults, 9.2×10^{-4} for young children and 6.7×10^{-4} for older children. The HI for each group was less than one.

Cancer and noncancer risks due to inhalation of contaminants from untreated groundwater during showering were within EPA's acceptable risk range. Cancer risks for adults were determined to be 6.4×10^{-5} for adults and 6.0×10^{-5} young children, and 2.7×10^{-5} for older children. The HI for each group was less than one.

Risks were also calculated for ingestion and inhalation of surface and subsurface soil contaminants by construction workers. Cancer risks were found to be acceptable for the Alcas Facility. Noncancer risks were also found to be acceptable at the Alcas Facility. The cumulative upper-bound cancer risks for exposure through ingestion, dermal contact, and inhalation to untreated groundwater at the Site are 1.7×10^{-2} for adults, 1.4×10^{-2} for young children and 6.6×10^{-3} for older children, which are greater than the acceptable risk range of 10^{-4} to 10^{-6}. The estimated total risks are primarily due to TCE, which contributed significantly to the carcinogenic risk calculations and was attributable to releases of the contaminant into the ground at the Alcas Facility and eventually into the groundwater.

EPA has conducted a qualitative analysis of the data to estimate the risks associated with the elevated TCE concentrations detected in groundwater at Parcel B subsequent to the issuance of the OU2 ROD. The data collected from the investigations of groundwater at Parcel B found that maximum TCE concentrations in groundwater at Parcel B (130,000 ppb) were similar to the groundwater concentrations found at the Alcas Facility (110,000 ppb) when the OU2 ROD was issued, which indicates that the risks and hazards for exposure to groundwater at Parcel B would be similar to those calculated for the Alcas Facility in the OU2 ROD.

Ecological Risk Assessment

The Alcas Facility, is developed with lawns, plantings, and one or more buildings with asphalt entry ways and parking areas. There are no significant habitats present at the Alcas Facility which could potentially support indigenous wildlife receptor species. An ecological risk assessment was not conducted as part of the OU2 RI/FS for the Alcas Facility.

Vapor Intrusion

EPA investigates the soil vapor intrusion pathway at homes and buildings situated at Superfund sites when the potential for vapor intrusion exists. VOC vapors released from contaminated groundwater and/or soil have the potential to move through the soil and seep through cracks in basements, foundations, sewer lines and other openings.

In April 2009, EPA initially conducted vapor intrusion sampling at 36 residences and commercial buildings near each of the four source areas at the Site. Although EPA initially targeted additional properties near each of the source areas for vapor intrusion sampling based on their proximity to the underlying groundwater contamination, permission to perform the sampling was not received from all of the property owners. Where permission was granted, EPA drilled through the subslabs in the basements and installed ports in order to sample the soil vapor under the buildings. Sampling devices called Summa canisters were attached to these ports to collect air at a slow flow rate over a 24-hour period. Summa canisters were also placed in indoor areas in each structure, and outside several residences to determine if there were any outdoor sources that may impact indoor air. The Summa canisters were then collected and sent to a laboratory for analyses.

The analytical results of the April 2009 vapor intrusion sampling indicated that nine homes and one commercial building had concentrations of VOCs at or above EPA Region 2 screening levels in subslab vapor gases. However, all locations tested showed no concentrations of vapor intrusion gases in the indoor air of these locations above EPA health-based levels.

In 2010 and 2011, EPA retested seven homes and one commercial establishment for the presence of vapor intrusion gases in both the subslab and indoor air. The data gathered revealed a declining trend in concentrations of vapor gases in the subslab of retested homes. One building located near the McGraw-Edison - Cooper Industries property showed TCE concentrations in the subslab vapor gas at 350 micrograms per cubic meter (ug/m^3) in 2009, 250 ug/m^3 in 2010, and nondetect in 2011. This building was retested in 2012 and 2014 and showed concentrations of TCE in the subslab gas at 512 ug/m^3 and 443 ug/m^3, respectively. However, no vapor intrusion constituents above health-based levels were detected in the indoor air. Based on the presence of elevated concentrations of TCE in the subslab gas, EPA intends to continue performing vapor intrusion monitoring.

In April 2011, EPA performed an additional study in an area southwest of the Alcas Facility, and soil and groundwater samples were collected along Billington and Taggerty Avenues to, among other things, determine whether this area could be potentially impacted by vapor intrusion. The results did not reveal Site-related contamination in the soil samples; TCE was present in the groundwater at low levels (maximum concentration of 3.52 ppb).

Based on EPA's investigation, the vapor-intrusion pathway was determined not to constitute a significant risk to human health or the environment.

Summary of Human Health and Ecological Risks

The results of the investigations and the human health risk assessments indicate that the OU2 and OU3 contaminated groundwater presents an unacceptable exposure risk. The ecological evaluation indicates that the Alcas Facility does not pose any unacceptable risks to aquatic or terrestrial ecological receptors.

Discovery of the higher soil concentrations below the building at the Alcas Facility, while not impacting the potential risk and hazards due to depth, serve as source material for continued groundwater contamination and, therefore, it is necessary to address the soil contamination in relation to the groundwater remedy.

It is EPA's current judgment that the Preferred Alternatives identified in this Proposed Plan are necessary to protect public health or welfare or the environment from actual or threatened releases of hazardous substances into the environment.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives (RAOs) are specific goals to protect human health and the environment. These objectives are based on available information and standards, such as applicable or relevant and appropriate requirements (ARARs), to-be-considered guidance, and site-specific risk-based levels.

The RAOs for Alcas in the OU2 ROD were developed for two contaminated media – groundwater and soil. The RAOs are designed to restore the upper and lower aquifers to their beneficial use as a source of drinking water. Groundwater objectives included the removal and/or control of the sources of contamination to the groundwater and the removal of sources of contamination already in the groundwater. Soil objectives included the elimination of leaching of contaminants of concern from the soil at each of the source areas into the groundwater.

The groundwater RAOs for the Alcas Source Area (Alcas Facility and Parcel B) remain consistent with the OU2 ROD. They include:

- Restore the City Aquifer beneath the Alcas Source Area to its beneficial use as a source of drinking water by reducing contaminant levels to the more stringent of federal MCLs or New York State standards;
- Minimize, contain and/or eliminate sources of VOC contaminants already in the shallow groundwater at the Alcas Source Area; and
- Minimize and/or eliminate the potential for future human exposure to site contaminants via contact with contaminated groundwater.

The groundwater remediation goals established for the both the OU2 ROD Amendment and the OU3 ROD are identified in Table 1.

Table 1: Remediation Goals for Groundwater

Chemicals of Potential Concern (COPCs)	NYS Groundwater Quality Standards (ppb)	NYS Drinking Water Quality Standards (ppb)	National Primary Drinking Water Standards (ppb)
cis- 1,2-DCE	5	5	70
trans-1,2-DCE	5	5	100
TCE	5	5	5
PCE	5	5	5
Vinyl Chloride	2	2	2
Xylene	5	5	10,000

The soil RAOs for the Alcas Facility for this ROD Amendment include:

- Minimize, contain and/or eliminate VOC contaminants from soils at the Alcas Facility that are leaching into the groundwater; and
- Minimize and/or eliminate the potential for human exposure to Site contaminants via contact with contaminated soil.

To satisfy these RAOs, soil remediation goals for addressing the Alcas Facility soil contamination are identified in Table 2.

Table 2: Remediation Goals for Soil

Chemicals of Potential Concern (COPCs)	Soil Remediation Goals (ppm)
cis- 1,2-DCE	0.25
trans-1,2-DCE	0.19
Vinyl Chloride	0.02
TCE	0.47
PCE	1.3
Xylene	1.6

SUMMARY OF REMEDIAL ALTERNATIVES

CERCLA §121(b)(1), 42 U.S.C. §9621(b)(1), mandates that remedial actions be protective of human health and the environment, cost-effective, comply with ARARs, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. Section 121(b)(1) also establishes a preference for remedial actions which employ, as a principal element, treatment to permanently and significantly reduce the volume, toxicity, or mobility of the hazardous substances, pollutants and contaminants at a site. CERCLA §121(d), 42 U.S.C. §9621(d), further specifies that a remedial action must attain a level or standard of control of the hazardous substances, pollutants, and contaminants, which at least attains ARARs under federal and state laws, unless a waiver can be justified pursuant to CERCLA §121(d)(4), 42 U.S.C. §9621(d)(4).

The 1996 OU2 ROD evaluated five remedial alternatives to address the contamination at the Alcas Facility: 1) no action; 2) institutional controls and access control; 3) soil capping and groundwater treatment; 4) soil vapor extraction/VER and groundwater treatment; and 5) soil removal and groundwater treatment.

Pilot tests conducted at the Alcas Facility in 1994 indicated that VER could effectively desorb VOCs from the contaminated subsurface at the Alcas Facility. However, in 2000, after the 1996 OU2 ROD was issued, Alcas and Alcoa petitioned EPA for a change of the VER component of the OU2 ROD, on the basis that the technology could not feasibly or effectively remediate a suspected DNAPL mass underneath the Alcas main building. The presence of DNAPL under the main manufacturing building was not known in 1994 when the pilot study was performed or in 1996 when the OU2 ROD was issued. In addition, further investigations conducted in 2000 and 2001 revealed additional groundwater contamination in the upper aquifer on Parcel B, which was also not known when the OU2 ROD was issued.

The additional characterization of the nature and extent of contamination at the Alcas Source Area resulted in the evaluation of remedial technologies as part of an FFS to address the Alcas Facility and Parcel B.

The FFS process evaluated various technologies to remediate the contaminated soil and groundwater at the Alcas Source Area. As part of the screening process conducted for the FFS, pilot studies were conducted for some of the technologies.

Between August and October 2011, the PRPs for the Alcas Source Area conducted bench-scale treatability tests to evaluate the effectiveness of activated sodium persulfate, to reduce concentrations of TCE in soil and groundwater at the Alcas Facility. Based on the positive results of this initial bench-scale treatability study, in April 2012, the PRPs performed an additional *in-situ* treatability pilot study to further evaluate the potential for chemical oxidation using activated sodium persulfate to reduce concentrations of TCE in soils at source areas at the Alcas Facility. The data from this study indicated that activated persulfate can be effective in destroying TCE at the Alcas Facility.

In November 2011, the PRPs also initiated an *in-situ* EAB pilot study to evaluate the effectiveness of bioremediation with bioaugmentation in groundwater at Parcel B. The pilot study revealed the successful distribution of the injected compounds within the aquifer and the maintenance of strong reducing conditions following injection.

The FFS Report evaluated ten remedial alternatives for the Alcas Facility and five remedial alternatives for Parcel B. EPA has further screened out several active remedial alternatives from the FFS Report including a limited excavation of impacted soils, groundwater extraction and treatment, monitored natural attenuation, zero valent iron (ZVI) treatment, permeable reactive barrier, and barrier wall containment. These alternatives are not discussed in this Proposed Plan because as individual alternatives they would not meet the RAOs for the Alcas Source Area. This Proposed Plan summarizes three alternatives from the FFS Report for consideration as a potential remedy for the contamination at the Alcas Facility and three alternatives to remediate groundwater contamination at Parcel B. This Proposed Plan summarizes No Action (Alternative 1), VER (Alternative 2) which was the remedy selected in the OU2 ROD, and *in-situ* chemical oxidation (ISCO) with activated persulfate, with and without excavation (Alternative 3a and 3b, respectively) to remediate soil and groundwater contamination beneath and adjacent to the main building at the Alcas Facility. To remediate groundwater contamination at Parcel B, this Proposed Plan evaluates No Action (Alternative 1), EAB (Alternative 4), and ISCO using ozone (Alternative 5).

Detailed descriptions of the remedial alternatives for addressing the contamination associated with the Alcas Source Area can be found in the FFS Report, which is part of the administrative record for this Proposed Amendment to the OU2 ROD and remedy for OU3, and can be found in the information repositories discussed above.

The construction time for each remedial alternative reflects only the time required to construct or implement the remedy and does not include the time required to design the remedy, negotiate the performance of the remedy with any PRPs, or procure contracts for design and construction.

Common Elements

All of the alternatives, with the exception of the no action alternative, include common components. Alternatives 2 through 5 include long-term monitoring to ensure that groundwater quality improves following implementation of the given remedy until cleanup levels are achieved. The groundwater sampling would also monitor groundwater quality including degradation by-products generated by the treatment processes to ensure that drinking water quality standards are met at the nearby municipal water supply well 18M and to address the potential migration of vapors resulting from the *in-situ* treatment of contaminants in soil and groundwater to indoor air at the Alcas Facility. Alternatives 2 through 5 also include implementation of institutional controls for soil and groundwater use restrictions until RAOs are achieved to ensure the remedy remains protective. A plan would be developed which would specify institutional controls to restrict exposure to hazardous substances until RAOs are met which are anticipated to include proprietary controls, such as deed restrictions for groundwater and soil use, existing governmental controls, such as well permit requirements, and informational devices, such as publishing advisories in local newspapers and issuing advisory letters to local governmental agencies regarding groundwater use in the impacted area. A site management plan (SMP) would be developed to provide for the proper management of the Site remedy post-construction, such as through the use of institutional controls until RAOs are met, and will also include long-term groundwater monitoring, periodic reviews and certifications. Until the RAOs are achieved, the SMP would also provide for the proper management of any contaminated unsaturated soils remaining beneath the concrete slab of the building and the evaluation of the potential for soil vapor intrusion should the building use at the Alcas Facility change or for any buildings developed on the Alcas Facility or Parcel B.

Additionally, because MCLs will take longer than five years to achieve under any of the active Alternatives, a review of conditions at the Site will be conducted no less often than once every five years until cleanup levels are achieved.

Alternative 1: No Action (Considered for Both Alcas Facility and Parcel B)

Capital Cost:	$0
Annual Operation & Maintenance (O&M) Costs:	$0
Present-Worth Cost:	$0
Construction Time:	Not Applicable

The NCP requires that a "No Action" alternative be used as a baseline for comparing other remedial alternatives. Under this alternative, there would be no remedial actions conducted at the Alcas Source Area to control or remove soil and groundwater contamination. This alternative does not include monitoring or institutional controls. Because this alternative would result in contaminants remaining above levels that allow for unrestricted use and unlimited exposure, CERCLA requires that the Site be reviewed at least once every five years. If justified by the review, additional response actions might be implemented.

Alternative 2: Vacuum Enhanced Recovery (the OU2 ROD Remedy) (Considered for Alcas Facility Only)

Capital Cost:	$338,000
Annual Operation & Maintenance (O&M) Costs:	$100,000
Present-Worth Cost:	$1,400,000
Construction Time:	6 months

VER involves the use of negative air pressure, generated by a high powered vacuum pump, which is applied to a series of recovery wells to cause the movement of soil vapor and some groundwater towards the wells for recovery. The vapor recovery causes desorption (removal of contaminants which are adsorbed onto soil particles) and volatilization of VOCs by continuously removing contaminated vapors and forcing clean air into the contaminated areas. An off-gas treatment system using granular activated carbon (GAC) would be constructed and operated on the Alcas Facility to remove contaminants from the effluent which are above federal and NYS air emissions standards. Any groundwater which is recovered with the soil vapor would also be treated with GAC prior to discharge to a publicly owned treatment works (POTW).

This was the remedy selected in the OU2 ROD and is presented here again as a basis for comparing this remedy to the other alternatives. For the purpose of developing a conceptual design and cost estimate for comparison with other technologies in the FFS, the conceptual design for VER from the OU2 ROD was modified from a one-step application to an interceptor system whereby the technology would be utilized immediately downgradient of the DNAPL source beneath the main building and operate full time. Installation of the VER wells were assumed in the conceptual design for the FFS to be limited to the area outside of the main building on the Alcas Facility to mitigate disturbance to ongoing manufacturing operations. VER wells would be installed up to a depth of approximately 27 feet below ground surface (bgs) to target the source material. An estimated remediation time frame of 30 years was used for developing costs associated with O&M activities.

Alternative 3a: *In-situ* Chemical Oxidation (ISCO) Using Persulfate (Considered for Alcas Facility Only)

Capital & Periodic Injection Cost:	$783,000
Annual Operation & Maintenance (O&M) Costs:	$82,994
Present-Worth Cost:	$1,101,000
Construction Time:	1 - 2 years

This remedial alternative would involve the injection of an alkaline-activated sodium persulfate solution through a series of injection wells located beneath the main building at the Alcas Facility and along the exterior of the southern portion of the main building to treat the contamination. *In-situ* treatment using ISCO results in the transformation of the VOC contaminants into less harmful chemical compounds. Site-specific bench-scale tests with alkaline-activated sodium persulfate were found to be successful, and this treatment chemical was assumed, for cost-estimating purposes. However, other ISCO treatment methods could also be employed as part of this remedial alternative. For the purposes of developing a conceptual design and cost estimate for comparison with other technologies, the FFS estimated that eight injection wells would be installed. Due to possible accessibility constraints for drilling equipment within the main building, the conceptual design incorporates measures to mitigate disturbance to the facility operations. Figure 2 provides the conceptual design for the injection well network. The FFS also estimated three injection events over a period of up to five years. The conceptual design and cost estimate are based on the results of pilot studies conducted at the Alcas Facility using ISCO. The actual cost of this alternative depends on numerous factors, including the number of injections and the percentage of contaminant mass remaining upon completion of each injection event. This alternative would require additional sampling during the pre-remedial design phase to determine whether an upgradient source of groundwater contamination is present in the northern portion of the Alcas Facility or off-property. Based on the results of this additional pre-design investigation, the conceptual design may require some modification to address any source identified. This alternative assumes that any upgradient source impacting the Alcas Facility would be identified and effectively remediated or controlled.

This alternative would include long-term monitoring of the VOC contamination transformation resulting from the ISCO injections and the attenuation processes to ensure that the groundwater quality improves until the cleanup levels identified in Table 1 are achieved. Additional injections beyond the initial rounds outlined in the conceptual design may be required to achieve and maintain the remedial action. An estimated remediation time frame of 20 years was used for developing costs associated with O&M activities, including well maintenance and groundwater monitoring of the attenuation processes.

Alternative 3b: *In-situ* Chemical Oxidation (ISCO) Using Persulfate with Excavation (Considered for Alcas Facility Only)

Excavation Capital Cost:	$190,000
ISCO Capital & Periodic Injection Cost:	$783,000
Total Capital Cost:	$973,000
Annual Operation & Maintenance	

(O&M) ISCO Costs: $82,994
Total Present-Worth Cost: $1,291,000
Excavation Construction Time: 3 - 6 months
ISCO Construction Time: 1 – 2 years

This alternative is comprised of the remedial measures included in Alternative 3a, and adds excavation of what is estimated to be approximately 70 cubic yards of soils if, subsequent to treatment with ISCO, soils remain beneath or adjacent to the main building at the Alcas facility at concentrations that are impacting the ability to achieve the groundwater RAOs using ISCO alone, and if and when a determination is made that it is not inappropriate to access the material based upon factors including the use of the building. Excavation would remove remaining contaminated soils serving as a source material to the groundwater contamination of the upper aquifer.

Alternative 4: Enhanced *In-situ* Anaerobic Bioremediation (Considered for Parcel B Only)

Capital and Periodic Injection Cost: $642,000
Annual Operation & Maintenance
(O&M) Costs: $101,000
Present Worth: $1,103,000
Construction Time: 1 – 2 years

Enhanced Anaerobic Bioremediation (EAB) would involve the injection of amendments into the groundwater at the impacted depths using an injection well network. Once delivered, these chemicals promote reductive dechlorination, a process used to describe the degradation of VOCs, by microorganisms in the subsurface. Lactate, emulsified vegetable oil (EVO), and whey are examples of carbon sources used to augment and promote the biodegradation of chlorinated solvents by naturally occurring microorganisms called dehalococcoides. Under this alternative, bioaugmentation would likely be necessary to supplement the existing bacterial community at and around Parcel B. For the purposes of developing a conceptual design and cost estimate for comparison with other technologies, the FFS estimated the installation of 13 temporary injection points at Parcel B to depths between 10 and 40 feet bgs. Figure 2 provides the conceptual design for the injection well network. The FFS also estimated three injection events over a period of up to five years. The conceptual design and cost estimate are based on the results of a pilot study conducted at Parcel B using EAB.

Additional injections beyond the initial rounds outlined in the conceptual design may be required to achieve and maintain the remedial action. An estimated remediation time frame of 30 years was used for developing costs associated with O&M activities, including well maintenance and groundwater monitoring of attenuation processes.

EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES

Overall Protectiveness of Human Health and the Environment evaluates whether and how an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.

Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that pertain to the site, or whether a waiver is justified.

Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.

Reduction of Toxicity, Mobility, or Volume (TMV) of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.

Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, the community, and the environment during implementation.

Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.

Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.

State/Support Agency Acceptance considers whether the State agrees with the EPA's analyses and recommendations, as described in the RI/FS and Proposed Plan.

Community Acceptance considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

Alternative 5: *In-situ* Chemical Oxidation (ISCO) Using Ozone (Considered for Parcel B Only)

Capital & Periodic Injection Cost: $823,000
Annual Operation & Maintenance
(O&M) Costs: $81,444
Present Worth: $1,010,000
Construction Time: 1 – 2 years

This remedial alternative would involve the injection of ozone gas through a series of injection wells to degrade organic contaminants in the groundwater. *In-situ* chemical oxidation results in the transformation through chemical reactions of the VOC contaminants into less harmful chemical compounds. For the purposes of developing a conceptual design and cost estimate for comparison with other technologies, the FFS estimated 170 injection wells would be installed to a depth of 20 feet bgs to treat the dissolved phase plume at Parcel B. The FFS also estimated five to 10 injection events over a period of up to five years. The actual cost of this alternative depends on numerous factors, including the number of injections and the percentage of contaminant mass remaining upon completion of each injection event.

Additional injections beyond the initial rounds outlined in the conceptual design may be required to achieve and maintain the remedial action. An estimated remediation time frame of twenty years was used for developing costs associated with O&M activities, including well maintenance and groundwater monitoring of attenuation processes.

EVALUATION OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, namely, overall protection of human health and the environment, compliance with ARARs, long-term effectiveness and permanence, reduction of toxicity, mobility, or volume through treatment, short-term effectiveness, implementability, cost, and state and community acceptance. Refer to the table on the previous page for a description of these evaluation criteria.

Overall Protection of Human Health and the Environment

Alcas Facility:
Since no action would be implemented, Alternative 1 would not meet RAOs, would not provide control of exposure to contaminated soils, would not reduce risk to human health or the environment, and would not restore the groundwater. Alternative 2 would not be effective in reducing VOC contamination because of the heterogeneous soil conditions and the presence of DNAPL under the building and, therefore, would not be protective of human health and the environment. Alternatives 3a (ISCO using persulfate) and 3b (ISCO using persulfate with excavation) would provide similar protection of human health and the environment at the Alcas Facility. Protectiveness under Alternatives 3a and 3b require a combination of actively reducing contaminant concentrations and limiting exposure to residual contaminants through institutional controls until RAOs are met.

Parcel B:
Alternative 1 (No Action) would not meet RAOs and would not provide protection of human health and the environment, since contamination would remain in groundwater, and no mechanism would be implemented to prevent exposure to contaminated groundwater or restore groundwater. Alternative 4 (EAB) and Alternative 5 (ISCO using ozone) are both active remedies that would restore groundwater quality within a reasonable timeframe. Protectiveness under Alternatives 4 and 5 requires a combination of actively reducing contaminant concentrations and limiting exposure to residual contaminants through institutional controls until RAOs are met.

Because Alternative 1 (No Action) would not be protective of human health and the environment, it was not carried forward for further evaluation.

Compliance with ARARs

EPA and NYSDOH have promulgated health-based protective MCLs (40 CFR Part 141, and 10 NYCRR § 5-1.51 Chapter 1), which are enforceable standards for various drinking water contaminants (chemical-specific ARARs). The federal MCLs and State standards for the Alcas Source Area are identified on Table 1. If more than one such requirement applies to a contaminant, compliance with the more stringent ARAR is required.

The aquifers are classified as Class GA (6 NYCRR 701.18), meaning that they are designated as a potable water supply. Because area groundwater is a source of drinking water, the MCLs are applicable or relevant and appropriate standards.

EPA has identified New York State's 6 NYCRR Part 375-6.3(b) for unrestricted use as an ARAR, a "to-be-considered", or other guidance to address contaminated soil at the Alcas Facility. Refer to Table 2 for the remediation goals for soils.

Alcas Facility:
Alternative 2 would not comply with chemical-specific ARARs since VER would not be effective in reducing VOC contamination in inaccessible areas beneath the main building. Alternative 3b is expected to reach ARARs at the same time as Alternative 3a unless there is soil excavation, in which case Alternative 3b would be expected to reach ARARs sooner. However, excavation would be conducted after implementation of ISCO with persulfate if a determination is made by EPA that it is not inappropriate to access the material based upon factors including the use of the building.

Alternative 3a (ISCO using persulfate) is expected to achieve groundwater RAOs within 20 years. Alternative 3b

(ISCO using persulfate with excavation) has the potential to achieve the groundwater RAOs more quickly than Alternative 3a but raises implementability issues. Alternative 2 (VER) is not expected to achieve groundwater RAOs in a reasonable timeframe.

RCRA is a federal law that mandates procedures for managing, treating, transporting, storing, and disposing of hazardous wastes. Relevant portions of RCRA would be met by both Alternative 3a and Alternative 3b. Alternative 3a and 3b would also comply with other location- and action-specific ARARs.

Parcel B:
Alternative 5 (ISCO with ozone) is expected to achieve groundwater ARARs within 20 years and Alternative 4 (EAB) is expected to achieve groundwater ARARs within 30 years. However, there is some additional uncertainty associated with the time frame under Alternative 5 since an *in-situ* pilot study using ISCO with ozone was not conducted.

Alternatives 4 and 5 would also comply with location- and action-specific ARARs.

Long-Term Effectiveness and Permanence

Alcas Facility:
Alternative 2 (VER) would likely result in residual contamination mass remaining at the Alcas Facility resulting in continued releases of hazardous substances to the groundwater. Therefore, it would be the least effective and permanent of the active remedial alternatives considered.

ISCO has been demonstrated to be effective and reliable at numerous sites for treatment of VOCs in groundwater. Alternative 3a is expected to provide a high degree of long-term effectiveness and permanence since the pilot studies conducted at the Alcas Facility in 2011 and 2012 demonstrated that the oxidant can oxidize residual nonaqueous TCE, reducing contaminant mass in the shallow groundwater, which would reduce the flow into the City Aquifer. Alternative 3b could potentially provide the highest degree of long-term effectiveness and permanence since additional excavation activities could be performed in the future, if a determination is made by EPA that it is not inappropriate to access the material based upon factors including the use of the building.

Parcel B:
EAB (Alternative 4) and ISCO with ozone (Alternative 5) have been demonstrated to be effective and reliable at numerous sites for treatment of VOCs in groundwater. The pilot study conducted at Parcel B in 2011 demonstrated that reductive dechlorination under Alternative 4 (EAB) could be achieved through the injection of an electron donor allowing for the degradation of chlorinated ethenes. Based on the results of the *in-situ* pilot study, bioaugmentation would likely be necessary in order to supplement the existing bacterial community to achieve complete reductive dechlorination of the contaminants. The bench scale treatability study performed to evaluate ISCO with ozone (Alternative 5) also demonstrated the ability to oxidize VOC contamination, though difficult to manage the significant quantities of gas generated during the oxidation process.

Reduction of Toxicity, Mobility or Volume

Alcas Facility:
Alternative 2 (VER) would likely only partially remove the contamination in the dense clay/till subsurface. Alternatives 3a and 3b would both provide a large reduction of contamination volume and toxicity, and thus mobility. The reduction of contaminant toxicity, mobility, and volume under Alternatives 3a and 3b includes the DNAPL, which has been identified as principal threat waste. Alternative 3b could potentially provide the greatest reduction in the volume of the soil contamination, if excavation is performed, through removal and disposal at an approved off-site facility of some of the contaminated soils. The pilot study conducted in 2012 demonstrated as much as a 50 percent reduction in TCE concentrations for each round of injection within the treatment area using ISCO with persulfate.

Parcel B:
Alternative 4 (EAB) would provide a greater reduction of contamination volume and toxicity, and thus mobility as compared to Alternative 5 (ISCO using ozone). The November 2011 pilot study demonstrated that reductive dechlorination occurred with a reduction in TCE concentration of approximately 95 percent and a reduction in total chloroethenes of approximately 85 percent. During the EAB under Alternative 4, TCE could be transformed into the more toxic vinyl chloride in the subsurface, prior to the degradation to the less toxic ethane. This transformation would need to be monitored and managed to prevent exposure via drinking contaminated water or inhalation through the vapor intrusion pathway.

Short-Term Effectiveness

Alcas Facility:
Alternatives 2, 3a, and 3b may have potential short-term impacts to remediation workers, the public, and the environment during implementation. Remedy-related construction (e.g., well installation) under Alternatives 2, 3a, and 3b would involve disruptions to the manufacturing operations at the facility, however the well installation and injection activities can be sequenced in a manner that allow

for minimal disruption to manufacturing activities at the Alcas Facility. Additionally, injection lines to a majority of the wells inside the building can be trenched in place to allow for injection to occur without disruption to facility operations.

Drilling activities, including the installation of injection and monitoring wells, for Alternatives 2, 3a, and 3b could produce contaminated liquids that present some risk to remediation workers at the Site. The injection of oxidants under Alternatives 3a and 3b would also generate some waste that would be managed through the implementation of engineering controls, personnel protective equipment and safe work practices. The pilot study revealed a temporary increase in dissolved metals concentration following oxidant injection, but the effects were short-lived and the metals are likely to attenuate following depletion of the oxidant. However, a monitoring program would be implemented to monitor chemical by-products, such as sulfates, to prevent exposure via drinking contaminated water. Removal of contaminated soil under Alternative 3b presents a higher short-term risk because of the greater potential for exposure associated with excavation and transportation of contaminated soil. However, measures would be implemented to mitigate potential impacts to workers and the community through the use of personnel protective equipment and standard health and safety practices. Under Alternative 3b, appropriate transportation safety measures would be required during the shipping of the contaminated soil to the off-site disposal facility.

For cost-estimating and planning purposes, a 30-year implementation timeframe was used for Alternative 2. The time required for implementation of Alternative 3a and 3b are estimated to be three to five years.

Parcel B:
Alternatives 4 (EAB) and 5 (ISCO using ozone) may have potential short-term impacts to remediation workers, the public, and the environment during implementation. Drilling activities, including the installation of monitoring and injection wells, could produce contaminated liquids that present some risk to remediation workers at the Site. However, measures would be implemented to mitigate exposure risks through the use of personnel protective equipment and standard health and safety practices. Alternative 5 is expected to have more short-term impacts compared to Alternative 4 because the quantity of ozone required to remove the dissolved phase contaminants under Alternative 5 could strip VOCs from the groundwater causing the gases to volatilize into the unsaturated soils. The off-gas generated during the stripping process would present a potential risk to the workers, via inhalation of the gas, and the environment, via the spread of contaminants from the groundwater to unsaturated soils. Data would be collected to monitor the off-gas generated and procedures would be implemented to mitigate potential impacts to workers. During the EAB under Alternative 4, TCE and cis-1,2 DCE could be transformed into the more toxic vinyl chloride under anaerobic conditions in the subsurface, prior to degradation to the less toxic ethane. This transformation would need to be monitored to prevent exposure via drinking contaminated water or inhalation through the vapor intrusion pathway. No difficulties are foreseen with the required quantity of the injection material needed for Alternative 4 (EAB), as it is nonhazardous.

The time required for implementation of Alternatives 4 and 5 is estimated to be three to five years.

Implementability

Alcas Facility:
The presence of DNAPL beneath the main building at the Alcas Facility poses significant challenges because of the existing manufacturing operations at the facility. Alternative 2 cannot be implemented due to the presence of DNAPL under the building and the heterogeneous nature of the soil at the Alcas Facility, Alternative 3a is a well-established technology and would be designed to address the DNAPL source under the building. The effectiveness of Alternative 3a would be controlled by the ability to distribute the oxidant in the subsurface under the main manufacturing building. However, through injection of sufficient oxidant volumes at appropriately spaced locations, it is expected that adequate distribution of the chemical oxidant can be achieved. Alternative 3b uses the same technology as Alternative 3a (ISCO using persulfate), however, it also includes excavation if necessary. Excavation has implementation challenges due to the limited accessibility underneath the existing operating facility. Excavation activities determined to be necessary to achieve the groundwater RAOs under Alternative 3b would require a significant amount of coordination given the existing manufacturing operations at the Alcas Facility. Existing operations at the Alcas Facility would be negatively impacted by the excavation alternative, as certain areas of the building critical to the manufacturing process might need to be partially demolished. However, if future operations change such that the portion of the building overlying the contamination is no longer in use, impacts resulting from excavation may not be as significant. If the building is otherwise demolished, excavation would likewise be more readily implementable and be more important as unsaturated soils may be more amenable to leaching if the slab is compromised.

Alternatives 2, 3a, and 3b would require routine groundwater quality, performance, and administrative monitoring, including CERCLA five-year reviews.

Alternatives 3a and 3b also require periodic injection of the solution and well maintenance for the life of each remedy. These activities are all easily implemented.

Parcel B:

Alternatives 4 and 5 are both implementable alternatives. However, the injection of ozone gas under Alternative 5 (ISCO using ozone) may be somewhat more difficult than Alternative 4 (EAB) because of the highly heterogeneous soils that may prevent uniform distribution of the ozone gas. Ozone gas that does not come in contact with contamination is expected to react rapidly, thus hindering the ability of the ozone to travel laterally and creating a limited radius of influence. The pilot test determined that approximately five to 10 ozone applications would be required to completely oxidize high concentrations of dissolved phase TCE. The proximity of public drinking water supply well 18M to the treatment area also increases the design challenges with ISCO using ozone. However, the proper placement of injection wells and management of ozone gas quantities is not expected to impact the public supply wells. No difficulties are foreseen with the required quantity of the injection material needed for Alternative 4 (EAB), as it is nonhazardous.

Cost

The estimated capital costs, operation, maintenance and monitoring (O&M) costs, and present-worth costs for the Alternatives discussed in this Proposed Plan are presented below. Further detail may be found in the FFS Report. The cost estimates are based on the best available information. The alternatives for the Alcas Facility assume that any upgradient sources impacting the Alcas Facility would be identified and effectively remediated or controlled. In that event any change to the conceptual design at the Alcas Facility would be expected to result in a cost estimate that is within the range of plus 50 percent to minus 30 percent of the actual project cost, employed in Superfund cleanups.

Alternative	Capital & Periodic Cost	Annual O&M Cost	Present Worth Cost
Alcas Facility			
1 No Action	$0	$0	$0
2 VER	$338,000	$100,000	$1,400,000
3a ISCO	$783,000	$82,994	$1,101,000
3b ISCO with excavation	$973,000	$82,994	$1,291,000
Parcel B			
1 No Action	$0	$0	$0
4 EAB	$642,000	$101,000	$1,103,000
5 ISCO with ozone	$823,000	$81,444	$1,010,000

State/Support Agency Acceptance

NYSDEC concurs with the preferred alternatives for the Alcas Source Area.

Community Acceptance

Community acceptance of the preferred alternatives will be evaluated after the public comment period ends and will be described in a combined OU2 ROD Amendment for the Alcas Facility and an OU3 ROD for Parcel B.

THE PREFERRED REMEDY

Based upon an evaluation of the remedial alternatives, EPA, in consultation with NYSDEC, proposes Alternative 3b, *In-situ* Chemical Oxidation (ISCO) using persulfate and excavation at the Alcas Facility, in conjunction with Alternative 4, Enhanced *In-situ* Anaerobic Bioremediation (EAB) at Parcel B.

These preferred alternatives have the following key components:

- ISCO involving injection of an alkaline-activated sodium persulfate solution through a series of injection wells located beneath the main building at the Alcas Facility and along the exterior of the southern portion of the main building to treat soil and groundwater contamination at the Alcas Facility.
- Excavation of remaining contaminated soils beneath and adjacent to the main building at the Alcas Facility that are determined to be impacting the ability to achieve the groundwater RAOs, subsequent to treatment with ISCO and after a determination is made by EPA that it is not inappropriate to access the material based upon factors including the use of the building.
- EAB to promote reductive dechlorination of contamination through a series of injection wells to degrade organic contaminants at Parcel B.
- Institutional controls for soil and groundwater use restrictions until RAOs are achieved to ensure the remedy remains protective. A plan would be developed which would specify institutional controls to restrict exposure to hazardous substances until RAOs are met which are anticipated to include proprietary controls, such as deed restrictions for groundwater and soil use, existing governmental controls, such as well permit requirements, and informational devices, such as publishing advisories in local newspapers and issuing advisory letters to local governmental agencies regarding groundwater use in the impacted area.

- Implementation of a long-term groundwater monitoring program to track and monitor changes in the groundwater contamination at the Alcas Source Area to ensure the RAOs are attained. The sampling program would also monitor groundwater quality including degradation by-products generated by the treatment processes to ensure that drinking water quality standards are met at the nearby municipal water supply well 18M and to address the potential migration of vapors resulting from the *in-situ* treatment of contaminants in soil and groundwater to indoor air at the Alcas Facility. The results from the long-term monitoring program would be used to evaluate the migration and changes in VOC contaminants over time.
- Development of a site management plan (SMP) to provide for the proper management of the Site remedy post-construction, including through the use of institutional controls until RAOs are met, and will also include long-term groundwater monitoring, periodic reviews and certifications. The SMP would also provide for the proper management of any contaminated unsaturated soils remaining beneath the concrete slab of the building and the evaluation of the potential for soil vapor intrusion should the building use at the Alcas Facility change or for any buildings developed on the Alcas Facility or Parcel B.

The environmental benefits of the preferred remedial alternative may be enhanced by employing design technologies and practices that are sustainable in accordance with EPA Region 2's Clean and Green Energy Policy.[2]

The total estimated present-worth cost for the selected remedy is $2,394,000. Further detail of the cost is presented in Appendix A of the FFS Report. This is an engineering cost estimate that is expected to be within the range of plus 50 percent to minus 30 percent of the actual project cost (based on year 2014 dollars).

While the combination of these two alternatives would ultimately result in reduction of contaminant levels in groundwater such that levels would allow for unlimited use and unrestricted exposure, it is anticipated that it would take longer than five years to achieve these levels. As a result, in accordance with CERCLA, the Site is to be reviewed at least once every five years until cleanup levels are achieved and unrestricted use is permissible.

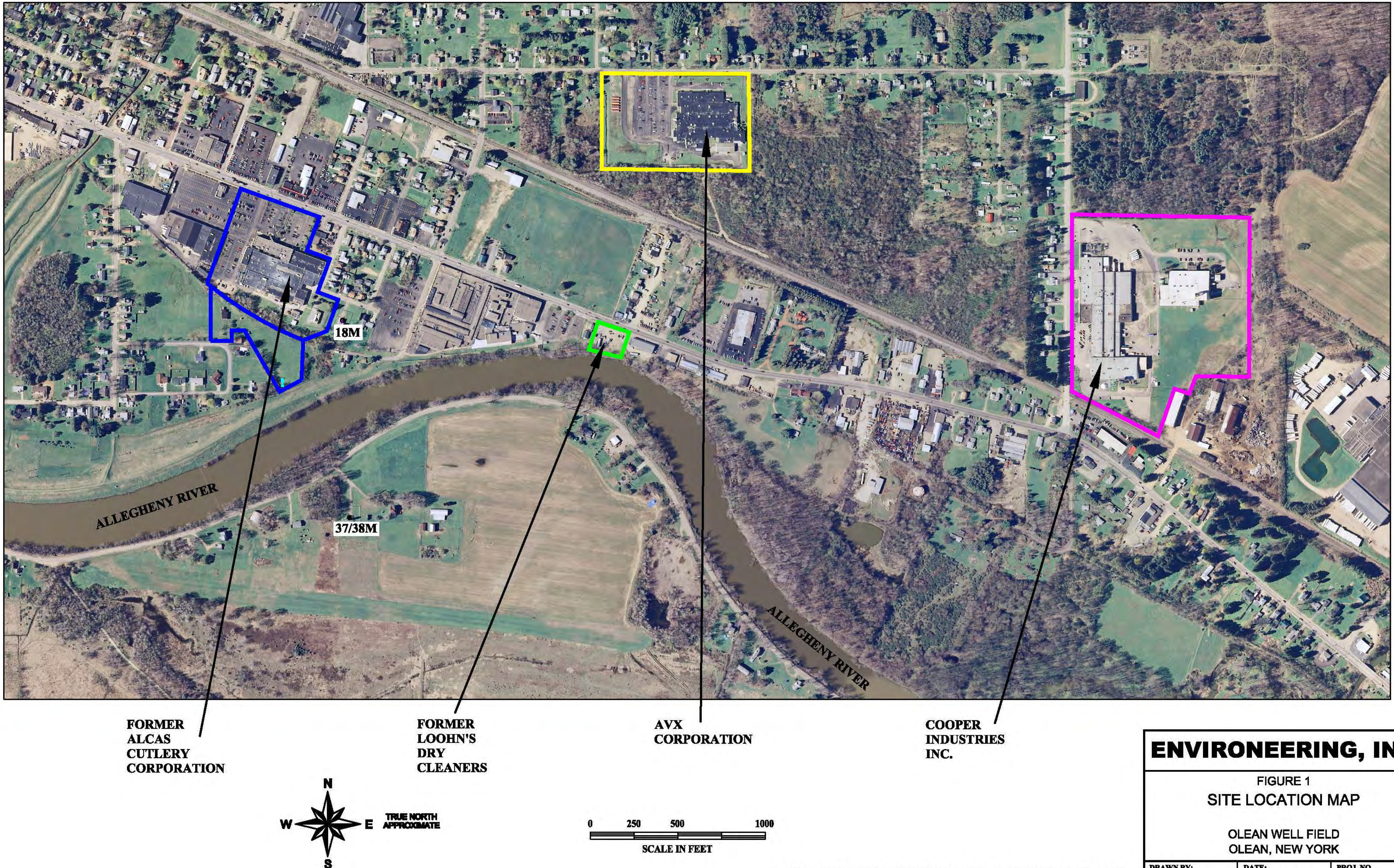
Basis for the Remedy Preference

Additional investigations conducted subsequent to the OU2 ROD revealed conditions that were not known at the time of the issuance of the OU2 ROD. The additional investigations revealed a DNAPL mass underneath the Alcas Facility main building and geological conditions in the till unit, which could not feasibly nor effectively be remediated using VER, the remedy selected in the OU2 ROD, making VER inappropriate. In addition, these additional investigations revealed groundwater contamination in the upper aquifer on Parcel B, which was also not known in when the OU2 ROD was issued.

Pilot studies conducted at the Alcas Facility have demonstrated the effectiveness of treating the DNAPL mass underneath the main building by injecting ISCO with activated persulfate to treat the contaminated soil and groundwater at the Alcas Facility. In addition, pilot studies conducted on Parcel B have also demonstrated the effectiveness of treating contaminated groundwater in the upper aquifer using EAB without impacting the nearby public drinking water supply wells.

EPA and NYSDEC believe that Alternative 3b (*In-situ* Chemical Oxidation (ISCO) Using Persulfate with Excavation at the Alcas Facility) and Alternative 4 (Enhanced *In-situ* Anaerobic Bioremediation at Parcel B) would be protective of human health and the environment by effectively achieving the RAOs, reducing the toxicity and volume of contaminated groundwater and soil at the Alcas Facility and groundwater at Parcel B through treatment, while providing the best balance of tradeoffs among the alternatives with respect to the evaluation criteria.

[2] http://epa.gov/region2/superfund/green_remediation.



NOTE: BOUNDARIES APPROXIMATED FROM DATA PROVIDED BY USEPA.

ENVIRONEERING, INC.		
FIGURE 1 SITE LOCATION MAP OLEAN WELL FIELD OLEAN, NEW YORK		
DRAWN BY: MWW	DATE: 03/12/2014	PROJ. NO. 137-196

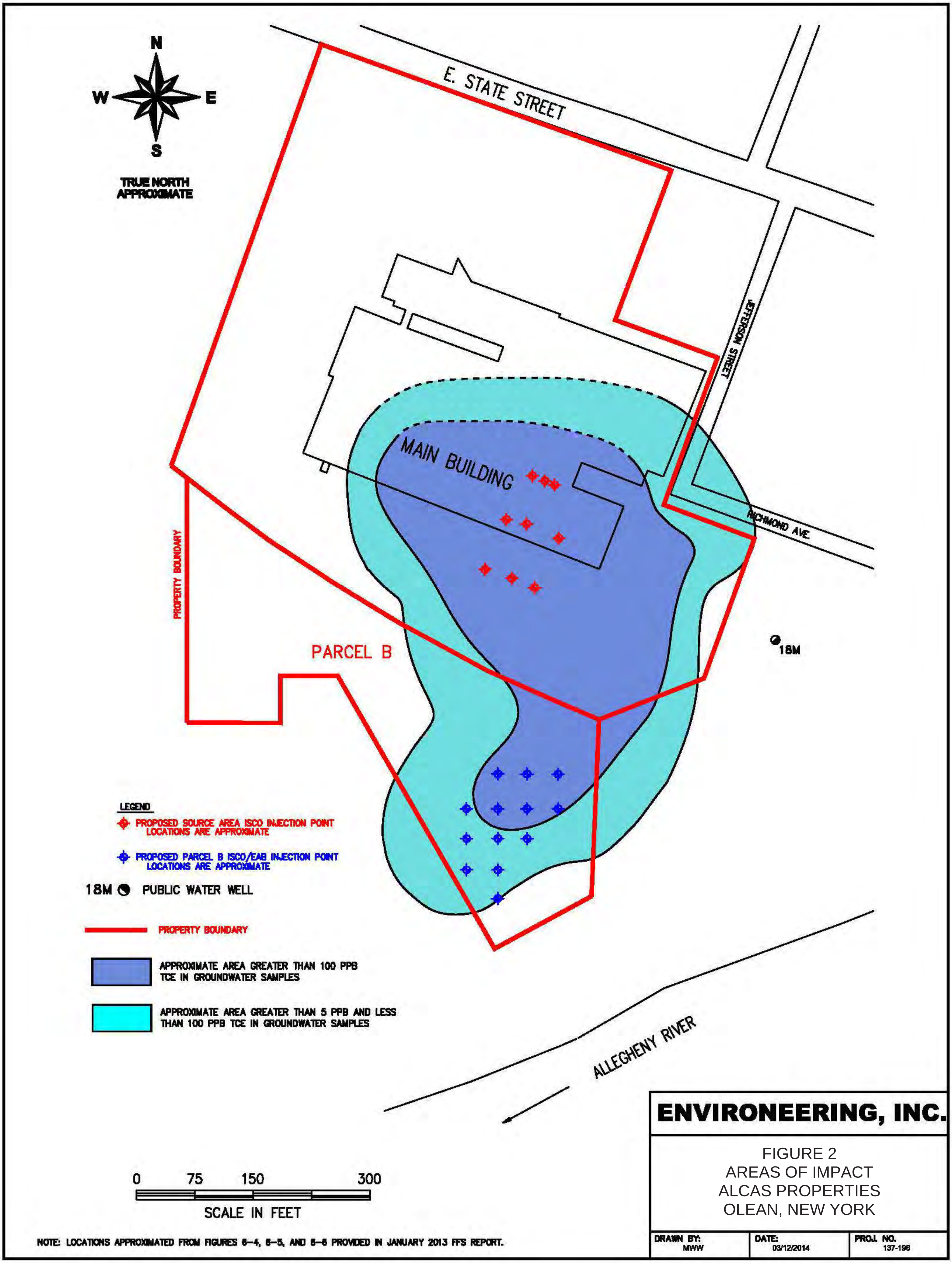


FIGURE 2
AREAS OF IMPACT
ALCAS PROPERTIES
OLEAN, NEW YORK

ATTACHMENT 2

Public Notice – Commencement of Public Comment Period

Today's Specials

► **TODAY'S HISTORY:** In 1962, the Telstar 1 satellite transmitted the first live, trans-Atlantic TV broadcast, featuring CBS news anchor Walter Cronkite.

In 1967, the 12th Street Riots began in Detroit, ending five days later and resulting in 43 people dead, hundreds injured and more than 1,400 buildings burned to the ground.

► **TODAY'S QUOTE:** "From 30 feet away she looked like a lot of class. From 10 feet away she looked like something made up to be seen from 30 feet away." — Raymond Chandler, "The High Window"

► **TODAY'S FACT:** Comet Hale-Bopp, discovered on this day in 1995, was visible to the naked eye for a record 18 months, from May 1996 to December 1997. The previous record holder, the Great Comet of 1811, was visible for about nine months.

► **TODAY'S NUMBER:** 27 — Grammy Awards won by bluegrass musician Alison Krauss during her career — including six awards for a 2007 collaboration with Robert Plant — more than any other female artist.

Today's Fribble

Pastry pranks: Cars smeared with baked goods

HILLSBORO, Ore. (AP) — There's mischief afoot in one suburban Portland neighborhood, but police say it doesn't involve the typical spray paint or broken windows. No, we're talking pastry here — maple bars smeared on cars, doughnuts left atop windshield wipers, pastries littering a yard.

One woman told officers she's seen more than a dozen incidents of food smeared on cars. Not just pastry, but yogurt, cakes and eggs. She alerted police July 11.

The next day, another woman told police her vehicle had been hit six times — twice with a maple bar, once with a cinnamon doughnut, once with pink yogurt, once with "bread soaked in a white slimy liquid" and once with red potato salad.

The crime wave in a northeast Hillsboro neighborhood has been going on for six weeks, The Oregonian reported Monday.

Police think the victims of the night-time vandalism are chosen at random and kids are likely behind it.

Lt. Mike Rouches says officers are investigating and extra patrols have been added.

Still, he adds, "In my 25 years in police services, I have never investigated or seen a criminal mischief involving pastries."

Lottery Numbers

New York

Daily No. (midday)	4-9-0 (13)
Win Four (midday)	8-0-6-6 (20)
Daily No. (evening)	6-6-5 (17)
Win Four (evening)	2-8-8-2 (20)
Take 5	12-18-24-31-37
Pick 10	2-4-5-16-18-19-20-22-23-27-28-33-42-54-56-60-61-69-78-80

Pennsylvania

Daily No. (midday)	8-1-1
Big Four (midday)	0-0-7-9
Quinto (midday)	9-1-6-7-2
Daily No. (evening)	8-6-2
Big Four (evening)	4-5-0-7
Quinto (evening)	3-4-7-7-1
Cash Five	17-18-36-38-41
Treasure Hunt	1-5-8-9-28

Multistate

Mega Millions	14-18-22-31-47 (Mega Ball: 15, Megaplier: 3)

PLAZA

Continued from page A-1

This will probably cost more than $500,000. Next, he wants to upgrade the facade of the building to make it more attractive.

The location of the site on Route 417, off Exit 24 of Interstate 86 in the town of Allegany, is a "gateway to St. Bonaventure University" in Allegany, as well as Olean, he said.

James Boser, a member of the IDA from Allegany and also minority leader of the Cattaraugus County Legislature, said the building is an eyesore.

"When it started, it was 100 percent occupied," he said. "Once it started going downhill, it was gone. If we can have Kody bring it back, fantastic."

Sprague Development Corp. has a contract to buy the property from owner Donald Benson for $340,000. There are certain conditions in the contract that need to be met before the sale can close, Mr. Sprague said.

Allegany Town Supervisor John Hare attended the meeting to support the project.

"I think it's a terrific project," he said.

Since a waterline was extended to the site several years ago, town officials have been working on funding for a sewer line.

Lack of sewer and water "has hindered development at the site," Mr. Sprague said.

After tackling the roof — hopefully before snow flies — Mr. Sprague would fix the parking lot, which is now choked with weeds.

"It's a great project to get a 20-year closed building back in operation," said IDA Executive Director Corey Wiktor.

This is why the IDA initiated the adaptive reuse policy, to get vacant buildings back on the tax rolls he said.

"This is a great opportunity for Cattaraugus County," said Crystal Abers, a member of the IDA and also director of the county's Department of Economic Development, Planning and Tourism. "We have started these wheels in motion."

Its location near Interstate 86 could make it a good site for a destination-based retail business.

Mr. Sprague said once the new facade and the floors were completed, it would be ready to show to businesses. The build-out would be in phases as needed for tenants.

Sprague Development Corp. is seeking $200,000 in sales-tax exemptions and an exemption of the $20,000 mortgage recording fee. The amount of exemption in property taxes was not specified. The owner currently pays $6,500 in property taxes on the 21-acre site.

Mr. Sprague said he had not yet begun to contact national or regional retailers to see if they would be interested in the new project.

On behalf of the IDA, Mr. Wiktor presented Mr. Sprague with a certificate acknowledging Washington Square, an Ellicottville project Sprague Development completed a few years ago, also under the adaptive reuse policy, as a finalist in the Buffalo First Brick by Brick Award. The company renovated the old Louisville Slugger Bat factory in the village with a bowling alley and restaurant as the anchor. This project created 55 new jobs.

(Contact reporter Rick Miller at rmiller@oleantimesherald.com. Follow him on Twitter, @RMillerOTH)

BALLOON

Continued from page A-1

reach 100,000 feet and land near Bliss, according to atmospheric projections. Instead, the students' 30-year-old military surplus balloon ascended about 13,000 feet and landed 70 feet up in a tree off Dutch Hill Road in Ischua.

"We're still trying to determine what happened," Mr. Freeman said. "Something with the balloon went wrong. The whole balloon is intact, just deflated, so we don't know if there's a small tear or something else that brought it down."

As of Tuesday afternoon, Mr. Freeman said, the group was still attempting to retrieve the balloon and its payload, consisting of a camera, a global positioning system and various atmospheric gauges. Had the test launch reached its desired altitude, the on-board camera would have seen the curvature of the Earth.

Also with a ham radio on board, the balloon did make contact with a station north of Toronto, Ontario.

"We're still considering it a success — not the success we wanted — but still a success," Mr. Freeman said. "Overall, it was a good launch and a good chase."

But if student project manager Saad Mirza has his way, the world record will be in reach. Mr. Mirza has helped to organize the project for roughly six months.

He said he's been in contact with professional balloonist Steve Randall in the United Kingdom for advice on details from gas choice to altitude calculators. Mike Hojnowski, an information technology professional at Cornell University, has also contributed his expertise.

The first launch employed helium courtesy of Airgas Inc. of Olean.

"But using hydrogen might give us a fairly good chance," Mr. Mirza said shortly after Saturday's test launch.

The second launch is tentatively scheduled for August, and the hopeful record-breaker will be sometime this fall. By the final flight, Mr. Mirza explained that using hydrogen and streamlining the payload to less than 100 grams could potentially add thousands of feet to the ultimate altitude.

The third launch will utilize a new Totex TA4000 meteorological balloon, Mr. Mirza added.

Mr. Freeman commended Mr. Mirza's leadership efforts.

"He lives, breathes and sleeps this project. This is all he's been doing for like six months," the Earth science teacher said. "Everything was his plan. He got together with the team for the design. We all worked on it. Some of the stuff he starts pulling out, he's even teaching me things. He has always done the research."

Olean City School District Superintendent Dr. Colleen Taggerty was admittedly giddy with childlike anticipation while awaiting the test launch late Saturday morning.

She applauded each student for their enthusiasm and contributions.

Dr. Taggerty said she personally supervised a handful of the group's work sessions.

"Our young people, they're an inspiration to me, truly," she said. "Every time they had a problem, they stopped, they regrouped and they problem-solved. They just never gave up."

Because a $2,500 donation for the project from the Olean City School District Foundation is virtually certain to run dry en route to the final launch, Dr. Taggerty said she would offer financial assistance, if necessary.

"That's been my role, volunteering and offering financial support if they needed it," she said. "It's been awesome."

(Contact reporter Kelsey M. Boudin at kboudin@oleantimesherald.com. Follow him on Twitter, @KelseyMBoudin)

POLICE

Continued from page A-1

protection."

Under civil service law, a police chief must have taken and passed a civil service promotion test, finishing as one of the top three scorers. In addition, qualified candidates must have served in law enforcement for either two years as a captain, four years as a lieutenant, six years as a sergeant, or any combination of the three positions.

The mayor added he's also offered the five officers he's talked to the opportunity to serve as the department's interim chief until a full-time hire is made.

"They had a lot of questions about how that would work," he said. "I've told the guys that I've talked to about becoming interim chief that they still would have union protection as well as a work agreement with the city if they choose to become interim chief."

The mayor has also started accepting applications from those outside the department. In total, he's received two resumes.

At the Olean Common Council's last meeting — July 7 — the mayor did present city lawmakers with a candidate to serve as interim police chief. After meeting behind closed doors, the council did not move to approve the mayor's candidate. Several council members took issue with the mayor's recommendation for the post, as they had not met with the candidate. After the former chief retired days later, the department's four captains started overseeing its daily operations.

"Everything is running very smoothly for now," Mayor Aiello said. "But like I said, I don't want to let this go much longer."

The mayor also addressed rumors are circulating the he has assumed the role of police chief.

"I've heard that one ... all I can say is that I'm not; I'm just making sure the bills are getting paid," Mayor Aiello said.

Though dissatisfied with not having a new police chief in place before former Chief Schnell retired, council President Ann McLaughlin, D-Ward 2, stressed to the Times Herald public safety has not been jeopardized.

"I have been meeting with the mayor and talking with him a lot about this ... we had hoped to have someone in that position sooner, but we do want to make sure we get the right person for the job" Mrs. McLaughlin said. "At this point we have the guys in the department who are really stepping up to make sure the that department is running."

(Contact reporter Christopher Michel at cmichel@oleantimesherald.com. Follow him on Twitter, @OTHChris)

DAL-TILE

Continued from page A-1

prospective companies that could benefit from stable energy costs. A company would have the provide its electric bills for the past year for analysis to see if it would benefit.

Mr. Wiktor said one possibility might be to provide power to a corporate park near Dresser-Rand in Olean. There are also several Homer Street companies in Olean that might benefit from an independent power provider.

Mr. Bay said ENTECCO would split profits from the venture with the IDA if it decided to participate in the joint venture.

Mr. Wiktor said the IDA has generally been conservative when faced with joint ventures.

(Contact reporter Rick Miller at rmiller@oleantimesherald.com. Follow him on Twitter, @RMillerOTH)

ATTACHMENT 3

Public Meeting Sign-In Sheets

Olean Well Field Superfund site
Alcas Source Area

PUBLIC MEETING
7:00pm on Tues., August 5 2014

SIGN IN HERE

Cutco Theater
260 North Union Street
Olean, NY

First Name	Last Name	Suffix
RANDY	Price	

☐ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit
	1101 Dean St	
	City / **State** / **Zip code**	
	Olean / NY / 14760	

Organization	Email Address
	@

First Name	Last Name	Suffix
GEORGE	FILLGROVE	

☐ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit
	700 W STATE ST	
	City / **State** / **Zip code**	
	OLEAN, NY 14760 / /	

Organization	Email Address
NYS SENATE	fillgrov@nysenate.gov

First Name	Last Name	Suffix
THOMAS	Windus	

☐ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit
	101 E. STATE STREET	
	City / **State** / **Zip code**	
	Olean / NY / 14760	

Organization	Email Address
City of Olean	twindus @ cityofolean...

First Name	Last Name	Suffix
Kelsey	[illegible]	

☐ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit
	City / **State** / **Zip code**	

Organization	Email Address
Times Herald	@

First Name	Last Name	Suffix

☐ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit
	City / **State** / **Zip code**	

Organization	Email Address
	@

Olean Well Field Superfund site
Alcas Source Area

PUBLIC MEETING
7:00pm on Tues., August 5 2014

SIGN IN HERE

Cutco Theater
260 North Union Street
Olean, NY

First Name	Last Name	Suffix
Scott	Paolotto	

DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit	City	State	Zip code
☐	318 N 18 TE		Olean N.Y. 14760	NY	14760

Organization	Email Address
	@

First Name	Last Name	Suffix
Christopher	Crawford	Ph.D.

DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit	City	State	Zip code
☒	1 Leo Moss Dr.		Olean	NY	14760

Organization	Email Address
CCHD - EH	cgcrawford @ cattco.org

First Name	Last Name	Suffix
Eric	Wohlers	P.E.

DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit	City	State	Zip code
☒	1 Leo Moss Dr.		Olean	NY	14706

Organization	Email Address
Catt. Co. Health Dept	ewwohlers @ cattco.org

First Name	Last Name	Suffix
Jennifer Yalande		MS

DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit	City	State	Zip code
☐	132 N. Union St	325	Olean	NY	14760

Organization	Email Address
	[illegible] @hotmail.com

First Name	Last Name	Suffix
	[illegible]	

DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit	City	State	Zip code
☐	[illegible]		[illegible]	NY	14770

Organization	Email Address
	@

Olean Well Field Superfund site
Alcas Source Area

SIGN IN HERE

PUBLIC MEETING

7:00pm on Tues., August 5 2014

Cutco Theater
260 North Union Street
Olean, NY

First Name	Last Name	Suffix
Ralph	Van Houten	

DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit
☐	NYSDOH	

City	State	Zip code

Organization	Email Address
	ralph.vanhouten @health.ny.gov

First Name	Last Name	Suffix

DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit
☐	Covert	

City	State	Zip code
Olean	NY	[illegible]

Organization	Email Address
HUMAN PARTY	@

First Name	Last Name	Suffix
MAURICE	MOORE	

DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit
☐	NYSDEC	

City	State	Zip code
270 Michigan Ave	NY	14127

Organization	Email Address
	maurice.moore @dec.ny.gov

First Name	Last Name	Suffix
Tim	White	

DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit
☐		

City	State	Zip code

Organization	Email Address
	@

First Name	Last Name	Suffix
	[illegible]	

DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit
☐	[illegible] Street	

City	State	Zip code
Olean NY. 14760		

Organization	Email Address
	@

Olean
~~Rockaway Borough~~ Well Field Superfund site

MEETING

7:00pm, Mon., ~~April 16 2012~~ Aug. 5 2014

SIGN IN HERE

~~Rockaway Borough Comm.~~ Center
~~21-25 Union Street~~
~~Rockaway Borough~~, NJ

Public Library
134 N. Union St.
Olean, NY

First Name	Last Name	Suffix
Andrew	Cooper	

☒ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit
	712 Division St.	

City	State	Zip code
Olean	NY	14760

Organization	Email Address
AVX	Andrew.Cooper @ AVX.Com

First Name	Last Name	Suffix

☐ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit

City	State	Zip code

Organization	Email Address
	@

First Name	Last Name	Suffix

☐ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit

City	State	Zip code

Organization	Email Address
	@

First Name	Last Name	Suffix

☐ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit

City	State	Zip code

Organization	Email Address
	@

First Name	Last Name	Suffix

☐ DO NOT ADD TO MAILING LIST	Address: Number and Street	Apartment/Unit

City	State	Zip code

Organization	Email Address
	@

ATTACHMENT 4

Public Meeting Transcript

OLEAN WELL FIELD SUPERFUND SITE

ALCAS SOURCE AREA

PUBLIC MEETING

Taken at 160 North Union Street, Olean, New York on August 5, 2014 at 7:00 p.m. ending at 7:57 p.m. before Angelle C. Phillips, Notary Public.

APPEARANCES: **MICHAEL BASILE,**
Community Involvement Coordinator

MICHAEL WALTERS,
Remedial Project Manager

MR. BASILE: Good evening. My name is Mike Basile, I'm the community involvement coordinator and public affairs officer with the United Stated Environmental Protection Agency and I'd like to welcome you to the Olean Well Field Superfund Site, the Alcas Cutlery corporation source area public meeting.

I've been with EPA for 26 years and we have an office up in Buffalo, New York, a field office and I have 42 superfund sites as a community involvement coordinator much like the Olean Well Field. This evening we are going to have some presentation, I'm going to make some introductions, I will facilitate the meeting and hopefully we can answer all of your questions and get you out in a short period of time besides providing you with a great deal of information.

I'm going to introduce a few people in the audience with our agency and other agencies that are actively involved with the Olean Well Field over the years. And, of course, they will be here to answer any questions that you may have under the Q and A portion of the agenda.

I simply ask if you hold all of your questions until all the speakers, we have one speaker, our remedial project manager will be making a presentation this evening. When he's done, I'll simply ask that you use this microphone right here on the aisle. And we do have a stenographer that is taking minutes of the activities this evening and if you're going to be asking a question, I ask at that time that you use that microphone and spell your name and give her your address for the record.

Individuals that have come up from our regional office, we at EPA have the responsibility in this region, which is region 2, we cover New York, New Jersey, and the Virgin Islands and Puerto Rico and the majority of all of our folks this evening have come up from New York City, other than me who works in a field office in Buffalo. And at this time I'd like to introduce Pete Mannino, he's an EPA section chief, Pete's right down in front here. Sharon Kivowitz our EPA attorney, Sharon right here in the blue. Charles Nace, our risk assessor. And another remedial project manager, Lorenzo Thantu, Lorenzo right here.

And folks from other agencies, from the New York State Department of Environmental Conservation Region 9 out of Buffalo, Maurice Moore in the nice green shirt there. From the New York State Department of Health, behind Maurice, is Ralph VanHoukn. Sitting next to Maurice from the Cattaraugus County Health Department, Eric Wohlers, Eric. And our stenographer this evening is Angelle and she'll be the one taking all the minutes for this evening's meeting. We have a representative here from -- his name is George Fillgrove from Senator Cathy Young's office, George is right down front.

We are presenting our proposed reelection plan for the Olean Well Field the Alcas Source

Area this evening. And we began a 30-day public comment period and that is why we have a stenographer, I want you to know that our public comment period runs through Friday August the 22nd and in your handout we have our remedial project manager's name and address.

In the event you leave this evening or this coming weekend you think of a question or you want to make a comment after our presentation and you forgot, you want your comments to go to EPA, just take the handout we provided you and as long as you get it to us by Friday, August the 22nd, which is our 30-day public comment period.

We're going to present tonight to you a variety of different alternatives and a suggested alternative, and I use the word suggested because we want your public input into our plan that both the State of New York and our federal agency EPA are presenting to you this evening. And we want to know if you agree or disagree. And, again, if you have friends that did not make the meeting this evening, they're more than welcome to send their comments in.

What we will do after the close of business on August the 22, we will take all of the public comments, not only that the stenographer will provide us with this evening, but any other public comments that come in via the mail or via e-mail, and we will place those comments in what we call a responsive summary. That responsive summary will really reflect your public comments from both the public and elected officials and then ultimately our plan is to issue a record of decision, assign a record of decision. We hope to do that before 30, September, the end of our fiscal year.

We also have a responsibility to you here in Olean to establish a repository of all documents surrounding the superfund site, the Olean Well Field, and we have established and used the Olean Public Library here in Olean as a repository. So you can go into the library and ask the resource person and you will have access to all sampling activity, documents, community involvement plan, remedial investigation feasibility study of writing different documents, as well as this proposed plan on the table this evening, it's already in the public library here in Olean.

At this time, I'd like to call upon Michael Walters, EPA's remedial project manager, for an overview, Michael.

MR. WALTERS: Thanks. Good evening everyone, my name is Mike Walters and I will be giving you a description of the remedy that we propose for the Alcas Source Area at Olean Well Field Site.

Now, just a bit of background to explain what our program is about. Back in 1980 the Comprehensive Environmental Response, Compensation, and Liability Act was passed by congress, it's called superfund. An act passed by congress at that time empowering EPA to cleanup contaminated sites nationwide.

Under the superfund program, federal funds are allocated to clean up toxic waste of contamination. The National Priorities List, which is the inventor of superfund site nationwide enables EPA to initiate and oversee the cleanup of the site. The Olean Well Field was added to this list back in October of 1981, what we have here basically is the Olean Well Field Site.

What really defines the Olean Well Field Site is the oil wells at 18M and 37 and 38M which took about 2 million gallons of water a day to the Greater Olean area. The focus of today's discussion will be on Alcas.

In 1981 the City of Olean municipal wells 18M and 37M were closed after the discovery of toxic chemicals in the water. The toxic chemicals were also discovered in nearby private, residential wells. EPA, in conduction with the NYSDEC and DOH, developed plans to provide safe drinking water supply options to the affected community.

At that time, bottled water was given to the affected systems. Also, the Olean -- the

Olean surface water treatment plant was reactivated and also some residential wells in the area were attached with carbide treatment units.

In 1985 EPA signed a Record of Decision, or a ROD that selected their remedy to address the municipal water supply system and extend the waterline. At that time that was to extend the waterline from the City of Olean into the town.

I show you this cross section of the geology at the Olean area, which will be also significant as we proceed. The top one shows the upper aquitard, which is basically clean, very dense, the upper zone. Here you have a upper water-bearing zone nested within the upper aquitard, which is right in front. And below we have the city aquifer, the upper, the original site of 2 million gallons to the Greater Olean area.

In September of 1996 the EPA issued a second Record of Decision or ROD that identified the AVX, Alcas, McGraw-Edison, and

Loohn's Dry Cleaner facility as source areas impacting the groundwater quality at the Olean Well Field Site. The 1996 ROD required cleanup actions at all identified source areas, which to date are still in progress.

We are here today to discuss the Alcas Source Area. But just back to the previous slide, we did install a groundwater treatment system that's been here since 2002. And at AVX we did remove our -- some material in 2000, but we have work that is ongoing. And at Loohn's removed about 7,000 cubic yards of contaminated soil and we have the water supply system in place there. This is the focus of today's discussion.

We have the Alcas facility, which is this general area here, and to the south we have what we call parcel B, which is basically some adjoining properties, private properties, one private property which Alcas did acquire, and I'll explain to you the significance of that shortly.

In 1996 -- sorry, 1996 the ROD selected

vacuum enhanced recovery, or VER, as the final remedy to cleanup soil contamination at the Alcas facility. However, in January of 2000 Alcoa and Alcas, the parties responsible for the cleanup, petitioned EPA for a change of the site remedy, which they contented would be ineffective. And the grounds for this were that VER would not be able to dissolve under the move the contamination because it was embedded in a much higher subsurface than we had previously known.

And also there was evidence to suggest that there was DNAPL at the Alcas site, which would sort of increase the ineffectiveness of VER. So additional investigations and studies were conducted between 1999 and 2012 culminating in the completion of a focused feasibility study report.

Now, I'll briefly explain to you our remedial action objectives, which are specific goals to protect human health and the environment. RAOs are generally derived from federal and state environmental standards, regulations and advisories.

The RAOs for the Alcas Source Area were developed for two contaminated media, soil and groundwater. The soil remedial action objectives are designed to minimize or eliminate soil contamination impacts to groundwater. Groundwater RAOs are designed to restore the city aquifer beneath the Alcas Source Area to its beneficial use as a source of drinking water.

I know that we might ask why are we doing that since we are, you know, strictly from the municipal well, but the obligation is to also protect the environment and so that's why we, by law, are required to take action to clean up the city aquifer, despite the treatment system on the wells.

This table basically shows the remediation goals for soil numbers and what we basically have is the levels if we are to take action, you know, to eliminate or minimize soil impact to groundwater than these numbers we would have to use as a guide to clean -- to clean the contaminated soil in order to meet the RAOs. So for cis- 1,2-DCE we would have a clean up number of .25 pounds per billion and trans- 1,2-DCE 0.19 and so forth.

We also have remediation goals for the groundwater. For instance, for cis- 1,2-DCE we would try to meet the state standard of 5 pounds per billion, and so forth as for TCE the same number.

Now, when we -- when we move towards what has been a solution or we develop what's called remedial alternatives from which we choose from, and one of the things we do is we have to examine the no further -- no action alternative as a baseline for comparison to the other alternatives. In this particular case, if there was no action results in 0 present worth cost, capital cost 0, and all the way down.

The other alternatives for the Alcas facility, and I'll explain the significance of the term as we sit here. We note that the original remedy, which was of course VER, and we try to adjust the cost based upon, you know, the current, you know, dollar value back in 1996. This number having a present worth cost of 1.4 million, it was almost 800 million. But what this number really involved would be putting a soil -- a -- a well right adjacent to the east side of the Alcas building. And what it would basically do, it would create vacuum pressure, we could just basically create -- dislodge contaminant vapor, and in some cases it would also pull up contaminated groundwater, which would have toxic components in them and they would each go their separate ways and be treated -- they would go to an air treatment system and the clean air would go to the aquifer and the treated groundwater would go to a purity lobby.

The other remedial alternatives for the Alcas facility first includes alternative 3(a), which is in-situ chemical oxidation with activated persulfate. This is basically a -- an oxidation reaction which we use to create -- in the subsurface and to have the different compounds. The capital cost for this remedy is roughly 800,000 with the annual operation and maintenance cost of 82,000. Present worth cost of 1.1 million.

Now, I would like to discuss I mention parcel B in discussion right now with what we define as the Alcas facility is this area above this land here. And the -- the V-E-R revenue focus on this area here and then later studies inform that the contamination was under the building itself. This is a basic schematics, across -- diagonal it shows you what an air treatment system looks like here and the persulfate is injected into the ground and it is distributed all the way down to about 25 feet where its reactive with toxic chemicals and break them down into compounds.

We did draw some conclusions of ISCO from the pilot test that was done back in 2012. ISCO with activated persulfate is an effective and efficient method to destroy TCE, which is a contaminant compound, in the subsurface at the Alcas facility.

We do have a situation where metals can be precipitated from this reaction, but it was closely monitored and it was shown that all of these by-products from the application of ISCO, i.e. chromium, sodium, arsenic, bromate, sulfates. We did see temporary increases moving up, say, 10 feet of each injection well, more importantly these levels dissipated after about five weeks. After five weeks of the injection itself and then after 10 weeks it totally disappeared.

They apparently did also -- we did look at some -- some groundwater levels and we did use data from the actual wells that were used in the initial test area and we also used water to simulate all the wells around the area and it basically showed that the chances of this affecting the municipal well is 0, it just will not happen. This in conjunction with the attenuation process can restore the ground water quality at Alcas facility.

We also did look at a main component of

the ISCO with activated persulfate alternative, but in this case we added an excavation option. The way this excavation option works basically is that we will implement -- we would implement ISCO, but, you know, if there is a situation where, you know, it is, you know, opportunistic, you know, to implement with excavation should -- should technical know how increase, it can be done effectively and without harm to the existing business or when the business is sold in the future, then that would be executed without us having to go for a long bureaucratic selection process.

Now, I'm going to move on to alternatives which we looked at for the adjoining property to the south, which we designate as parcel B. And, of course, by our parcel regulations we have to also analyze a no action alternative for parcel B, those numbers are 0. And then we looked at for parcel B enhanced by remediation.

Now, in simple terms what that basically is is we use microorganisms to really digest and destroy toxic compounds in the groundwater at parcel B. So now the focus of this alternative is this here, which we call parcel B.

Now, what this is basically involving is we would set up those injection points in parcel B where we would add the microbes around it with some oil to feed them. Each injection going to go down below 40 feet and it will be delivering amendments, which is the microbes and the physical oil at increments of 5 feet to 10 feet down to 22 feet or so.

And we will expect this technology to be effective if one amendment injection -- put one -- sorry, two or three years. So once we manage the amendment, the microbes would digest and destroy toxic compounds in the groundwater in parcel B for up to three years per injection.

This slide is just to give you a deeper view of what happens. This would be an injection point and we would administer the amendments down until where the groundwater is and then you have an anaerobic zone, you know, being developed by the microbes in which the toxic compounds are being destroyed.

EAB is an efficient, safe and effective method to remove toxic substances from the upper water-bearing zone or the shallow groundwater aquifer. Bioaugmentation, which is addition of microbes, increases EAB efficiency and is environmental safe. Each EAB injection event or dosage will maintain toxic reducing condition in the upper water-bearing zone for a duration of two years or maybe even three. EAB in conjunction with attenuation process can restore the groundwater quality at parcel B to federal and state MCLs.

We also did look at an alternatives with ISCO but this time with ozone. The same thing you would inject the ozone down into the groundwater capacity through those 13 injection points as well. And that has a capital cost of $850,000 and the present worth cost just over 1 million. And, of course, the injection point of ISCO with ozone is, you know, the same as, you know, the injection -- I'm sorry, I apologize for that, we would have 170 points, injection points for the ISCO at parcel B, which would be a depth of 20 to 25 feet beneath the surface.

Other alternatives with the exception of the no-action alternatives, and that is for parcel B and for the Alcas facility, contained common elements that include the primary remedial action focus is entirely within the area of the soil and/or groundwater contamination at the Alcas facility, which would include the Alcas facility and parcel B south. Now, for the long-term program to ensure no impacts to the groundwater quality at nearby municipal wells 18M we can identify restorations of the aquifers, both shallow and deep.

Institutional controls, restriction of groundwater and land use until the soil and groundwater Remedial Action Objectives are achieved. We also have the attenuation processes. Monitoring the effects of active remediation on attenuation. And we look at the soil and groundwater treatment, remedial alternatives are all designed to reduce contamination in these remedials.

The most important criteria that we look at in this examination rapid process is, of course, how good is this alternative in terms of overall protection of human health and the environment, it is the number 1 criteria. We also look at compliance with applicable or relevant and appropriate requirements, ARARs.

ARARs is basically like federal and state laws, guidance and so forth that pertain to standards develop or enforced to protect human health and the environment. We look at the alternatives and try to determine its long-term effectiveness and permanence, can it stand the test of time and remain doing what it is designed to do.

We look at reduction of toxicity, mobility, and volume, we would do that. And short-term effectiveness. Implementability, I mean, do we have the technical know how to put this together so that it can work as designed. And, of course, cost, state acceptance, and, of course, community acceptance.

Now, for the preferred remedial alternative or alternatives. Alternative 3(b) and alternative 4, which are recommended to you. EPA in conjunction with the NYSDEC recommends alternative 3(b) (in-situ chemical oxidation using persulfate with excavation at Alcas facility) and alternative 4 (enhanced, consist of an anaerobic bioremediation at parcel B).

These alternatives would be protective of human health and the environment by effectively achieving the RAOs, reducing the toxicity and volume of contaminants in groundwater and soils at the Alcas Source Area. The cost of preferred alternative we also have the final figures here, alternative 3(b) capital cost of 973,000, and O&M of 83,000, present worth cost of 1.3 million.

Alternative 4 capital cost $642,000, present worth cost of just over 1.1 million.

And we have for you places where you can go to review the administrative records, which are available at the Olean Public Library located at Second and Laurens Street in Olean. And, also, at the EPA Superfund Centers at 290 Broadway in New York.

For general inquiries Michael Basile, please contact Michael Basile, EPA Community Involvement Coordinator at 716-551-4410 or the Community Involvement Hotline at (800)346-5009. And for additional information, the web site is listed below.

Written comments and additional information, please address written comments no later than Friday, August 22nd, 2014 to me, Michael Walters, US EPA, Region 2, 290 Broadway, 20th Floor, New York, New York 10007. Thank you for coming out. Thanks.

MR. BASILE: Thank you, Michael, thanks very much. We'd like to open up the question and answer period. I know it's an awful lot to digest, but we have a responsibility to the public to present a presentation as Michael did.

Again, I ask for the record, that if you have a question, that you're going to have to take the time to come down here and use the microphone and state and spell your name and give your address, and between Michael, Peter Mannino and our entire crew, we'll attempt to answer your questions. First question.

R A N D Y   P R I C E,

1101 Dean Street, Olean, New York 14760

RANDY PRICE: And my question is, he showed the map with the dog eared plume on it, I'm 25 feet from the wells, I've got what you would consider a loose poured foundation from the old days, I can't put in a floor drain and every once in a while I'll get groundwater seepage. I will get chemicals in my house, the walls will be shiny, the floor will be shiny, is there anything I can do about it?

Get it tested?

From what I read online, you guys do this like every five years, three to five years, is that when the aquifer cycles through, from what I read on the EPA web site.

MR. MANNINO: Couple of points there, so we do five-years reviews.

RANDY PRICE: Right.

MR. MANNINO: So every five years we look at the data at the site, ensure that our goals are being met and that the overall objectives will be met, that's one piece of it. With respect to your specific property, the -- and the plume, so that plume is based on actual data points which shows that that's the extent of the plume. So there are points that show outside of that area, there's not detectable concentrations of the contaminants.

So one of the things that we can do, in addition to groundwater contamination vapor intrusion is a potential concern for vapors from contaminants degrading over time to make their way into someone's basement, for example, and we have over the years collected data at numerous homes in the area.

RANDY PRICE: Yes, you have done core drillings in some of the basements. I know back in the '80s a lot of people were afraid because their thought process was once your ground is labeled contaminated, how are you ever going to sell your home if you have to pack up and leave? Because you're going to have to divulge that information so a lot of people would not do it. And, therefore, the house I'm in now was not done.

MR. MANNINO: So if you'd like, we can for the next cycle add your property to that list and have the vapor --

RANDY PRICE: Sure, that'd be fine.

MR. MANNINO: -- vapors tested. So -- okay. And, you know, we can probably talk more about whether or not there's any other sampling that should be done, but I'd like to take a better look at exactly where your property is in relation --

RANDY PRICE: I'm right behind -- you

can see it right on the map. We've got about 80 test wells drilled right behind the house.

MR. MANNINO: So we can have some sampling done at your property. If you'd like after this meeting, we can get some contact information from you and talk about what type of sampling that could be. At the same time, we'd like to talk to you a little bit more about the data that's already been collected.

RANDY PRICE: When you see guys out there pumping at 3 in the morning you get kind of -- so neighbors have asked them what they're up to, you know, periodically.

MR. MANNINO: At this particular site there's been a lot of data collected. We have a very good handle on the extent of the contamination and so --

RANDY PRICE: Right. What I want to ask you is about like when the upper aquifer gets full, now does that push the VOC back up through the soil and do we loose that from evaporation or does it lay dormant? Because you get a lot of standing water in that area.

MR. MANNINO: Yeah, so, I mean, typically if you have VOCs in water that's moving and a little more concentration they'll volatilize and you're not going to see any detectable concentration, depending on what the original source is.

RANDY PRICE: Right. Now -- and I don't know if it matters, and I don't know if you guys -- I'm sure you are, but on the property behind Alcas, back, I believe, in the late '40s, early '50s there was a three-story tannery that burnt, that there could be contamination there, they could have just pushed it into the ground.

The man who previously owned the land ended up having to auction it off, he had to go into a home and we also know that he had storage tanks for his fuel oil and gasoline for his bulldozers. We've never seen them pulled up, we don't know who owns the land.

We had a guy when the land got auctioned he said he was from Pittsburgh, he was a speculator, we tried to find his web site, he kept saying Alcoa, Alcoa is associated with Alcas and it's on the -- it's on the property listing, it's off the property listing, it's off, it's very vague, it's a paper trail that you just can't follow. And those are the other things we're kind of concerned about because we don't even know who owns the property anymore.

MR. MANNINO: So you touched on a couple of points. With respect to contamination on that property --

RANDY PRICE: I know you have air strippers in and one of the wells is not too far from me, too, which they just pulled I guess higher volumes of contamination out of when they did the testing.

MR. MANNINO: Okay. I'm not sure about an air stripper on the well other than the municipal --

RANDY PRICE: That's what I'm talking about, that's down behind me too, I believe.

MR. MANNINO: Right so 18M, 37M and 38M

all have air strippers and that is the water that is distributed, which meets all federal and state drinking water standards. So with respect to that tannery, I saw a report -- so what we've been talking about tonight is contamination from the Alcas facility.

RANDY PRICE: Just the facility.

MR. MANNINO: Right, so --

RANDY PRICE: The area encompasses there was many other things there, so I didn't know if that was leading to contamination, too.

MR. MANNINO: Right. So the contamination is bounded by the figure that Michael had up there earlier. And I believe the tannery is further to the west.

RANDY PRICE: Yes.

MR. MANNINO: Okay. So I have no information of whether or not there's contamination from the tannery.

RANDY PRICE: Right, I know they used chromium and a lot of chemicals.

MR. MANNINO: So I could follow-up with some of our colleagues at the state to see if any data was ever collected as part of that, but at this point I really don't have anything in my possession to say that. I can say that regarding the tanks, I --

RANDY PRICE: Nobody seems to know.

MR. MANNINO: Yeah, I saw a report where there was, I believe, one tank on the property and as part of phase 1 investigation it was removed. But I don't recall if it was a propane tank or something else.

RANDY PRICE: We know from living in the neighborhood for 50 years that, you know, it was either gas or -- I'm assuming gas, diesel for his bulldozers.

And one other concern I have, and it may be nothing just the way the wind or the air gets thick at night, but I'll go to work at 4 in the morning, you can smell a lacquer thinner, you can smell vapors in the air. Maybe they're not being exhausted into the atmosphere so much, I don't know whether it's because they're doing butcher blocks in there and they just got hoods and they're venting it out into the atmosphere and I didn't know if that would be a problem either.

MR. MANNINO: Yeah, I really don't have any information regarding the operations and any permanence that may exist for air emissions. I know there -- I'm thinking about something else, I apologize. We're not looking at the current operations that is, you know, handled under this program --

RANDY PRICE: This is just when everybody used to throw the stuff off the loading dock.

MR. MANNINO: Yeah, I mean, if you'd like afterwards I can give you some contact information about the program that handles current operations and if you'd like to give them a call and find out whether or not there was any recent inspections along those lines they may be able to help you out with that.

RANDY PRICE: All right. Thank you.

MR. MANNINO: You're welcome. Thank you.

MR. BASILE: Any other questions in the

audience? Any other questions?

S C O T T   P A O L E T T O

318 North 11th Street, Olean, New York 14760,

SCOTT PAOLETTO: My friend just asked me he wants to know a question as far as you do a study every five years, you found in this last study this has been contaminated since October 23rd of '81, it's been since October 23rd, '81, right?

MR. WALTERS: That's when we discovered --

SCOTT PAOLETTO: That's when we discovered the problem on October 23rd of 1981. I think we have a few problems with enforcement of what we're doing here, number 1. I don't think this contamination in East Olean is going to affect Olean's drinking water because we get our drinking water from a different source, I believe, correct?

MR. MANNINO: No.

SCOTT PAOLETTO: So this also affects

our drinking water in Olean?

RANDY PRICE: Yeah, we get it from Haskell Crick and the aquifer, it's two phase.

SCOTT PAOLETTO: Right, but what I'm saying is -- so the City of Olean -- actually this is a concern not just for Mr. Price over in East Olean because you get your water from Olean, too, correct? So we since October 23rd of 1981 haven't really cared much about our water supply and we don't really -- I mean, come on, it's not going to get better, correct? It's only going to get worse.

MR. WALTERS: Like I said, I was showing the slide we did sign a record of decision, we validated the revenue for the municipal wells and we attached strippers to the wells that supply water. We have changed our wells 37 and 38M and the next on 18M. And together these two air strippers have been operating since 1990 to ensure that the drinking water in the city of Olean is safe.

SCOTT PAOLETTO: Is it safe, Mr. Price?

RANDY PRICE: I drink the other stuff,

so it doesn't matter --

SCOTT PAOLETTO: You bathe with water, you feel safe about your water?

MR. MANNINO: Mike, can you put up the slide that shows the different sourced areas and the public supply wells? So when the site was discovered, EPA, with the State of New York, took measures to ensure that people in the area were drinking water that was safe. Some folks were given bottled water and other homes had temporary carbon treatment systems put on.

The EPA signed a record decision, as Michael explained, that required the installation of the air strippers on the three public supply wells. So while that transition was happening, the water source wasn't coming from those wells, there was a surface water intake to ensure the protectiveness of the people drinking the water.

Once the air strippers were put on, the supply of drinking water came from those three extraction wells. And there are two air strippers that treat that water, which as I said before, I believe to Mr. Price's question, that that drinking water meets all federal and state drinking water standards.

SCOTT PAOLETTO: Well, I drink my tap water, you know, and I've been all over the country and I thought we had some real good water here. I just got floored to find out just now that our water in Olean is affected. I thought that this just affected certain few wells outside of Olean, this affects the City of Olean's water.

RANDY PRICE: What they do is the air strippers break it down to like five parts per million or billion, whatever, that's quality water that you drink. They get it from two sources, it's pumped to our waste treatment plant, it's treated from there and then sent out to be drinking water, am I correct?

MR. MANNINO: That's correct. And I just want to reiterate that when the site was listed, when we first discovered the site, we took measures to ensure the protectiveness of the people drinking the water so that there wouldn't be any additional exposures. And so although this has been a lengthy process, you mentioned the '81 date.

SCOTT PAOLETTO: Right, right.

MR. MANNINO: Currently, there are no unacceptable exposures based on this site. What we're talking about is a plan to address the remaining source areas so that those source areas are removed and it improves the water quality further before the treatment at the air strippers. Our goal is to address the contamination at the source and not rely on wellhead treatment to address the contamination.

A. What about the City of Olean's government? How are they -- I mean, do I see anybody from the City of Olean's government? What -- I mean, I know how we drag our feet on our sewer lines, our water lines, and apparently 1981, we're also on our contaminated water.

Now, I was planning on selling our water, I guess I can't because we got to worry about this. I would think that the city government have ought to reach across and grab you guys and say we need to work out on this and figure out what's going on.

MR. MANNINO: Once again, sir, with all due respect, the drinking water is safe.

SCOTT PAOLETTO: Yeah, I know that, like I said, but who's to say as the contamination leaks down into, you know -- I mean, because all the stuff was buried over in East Olean when I was a kid and before that a lot more stuff. Who's to say that's not sometime going to leak into the wells.

MS. KIVOWITZ: Sharon Kivowitz, I'm the site attorney I'm going to jump in here. As part of that first action that EPA took to put on the air strippers, we also extended the public water supply so that people aren't drinking -- over where the contamination is, people aren't drinking water from their own private wells or they shouldn't be.

SCOTT PAOLETTO: Okay, right.

MS. KIVOWITZ: And they should not have

been allowed to dig any groundwater wells, they shouldn't have been given permits, and I would doubt that anybody has been. So nobody is drinking -- or I don't believe anybody is drinking water from private wells over where the contamination plume is.

And you're drinking your water that has been treated, but as Michael said before, our job is not only just to treat water and walk away, our job is also to try to restore that aquifer so we don't have to treat water forever and ever and ever into eternity.

SCOTT PAOLETTO: Right.

MS. KIVOWITZ: And hopefully one day be able to say that the water going into the air stripper is as clean as the water going out of the air stripper. So these plans, and this plan in particular for Alcas, the point of this plan is to try to address the Alcas facility and that other parcel, the source of high areas of contamination so that it -- so that if we can get that out -- let's say that was the only area, if we can get that out then, theoretically, what goes into that air stripper is going to be as clean as what goes out. Now, that's a very, very long process, but -- so that's the point, so nobody is drinking contaminated water.

SCOTT PAOLETTO: No, unless you're outside drinking well water.

MS. KIVOWITZ: Unless you're drinking well water from a well that's somewhere above the plume, and you shouldn't be doing that, we shouldn't have that problem. And we're monitoring --

SCOTT PAOLETTO: How much and how long do those last the -- what is this? This air -- this purifier thing, how long do they last? How much do they cost?

MR. MANNINO: The air stripper?

SCOTT PAOLETTO: Yeah.

MR. MANNINO: So the air strippers are designed based on the volume and the flow of water. I believe combined the two air strippers treat probably somewhere around 2 million gallons of water a day. They were installed in -- help me out here.

MR. WALTERS: They were originally installed in 1970, were closed in 1981, they were reactivated in 1990.

MR. MANNINO: Right, and during that time frame the air stripper has packing material inside of it that depending on water quality conditions may have to be either, you know, replaced or back washed depending on, you know --

SCOTT PAOLETTO: So that's nothing we're going to have to replace? I mean, it's a one -- down the road, if we constantly have to do this to our water, we might have to be looking into getting another one of these, right?

MR. MANNINO: The air strippers have a life span on them just like any other mechanical piece. And once again, depending on volume of water, water quality issues, most of the time unrelated to the VOCs, that determines the life span of the air stripper. So that is a potential future cost.

SCOTT PAOLETTO: Thank you for your time.

MR. MANNINO: Thank you.

MR. BASILE: Any other questions? Does anyone have another question for the public meeting? If not, once again, we want to thank you on behalf of the EPA and the agencies that are here.

We also want you to be aware of the fact that the public comment period runs until August the 22nd. If you have further comments after this evenings meetings, you can send them to Michael Walters on the sheet they have provided at his address, his office in New York City or contact me at the Buffalo field office in Buffalo, New York.

And we thank you for your time and patience coming out to this public meeting. And, again, if you do have further questions, we'll be around when the meeting is over, you can talk to us individually or talk to some of the state folks, as well. And, again, have a great remainder of your evening and summer.

Thank you very much.

(Hearing concluded at 7:57 p.m.)

*   *   *

CERTIFICATION

I, Angelle Phillips, Court Reporter and Notary Public, in and for the State of New York, do hereby certify that I attended the foregoing meeting, took stenographic notes of the same, that the foregoing, consisting of 43 pages, is a true and correct copy of same and the whole thereof.

Dated: August 5, 2014

Angelle C. Phillips

Angelle Phillips, Court Reporter

ATTACHMENT 5

Written Comments Submitted Suring Public Comment Period

Comment Sheet

Please submit comments regarding EPA's preferred remedy or documents in the administrative record in any of the following **3** ways:

1. Fill out this form and drop it into the comment box before leaving today's meeting
2. **Fold and mail this form or other written comments to: Michael Walters, Remedial Project Manager, U.S. EPA, 290 Broadway, 20th floor, New York 10007-1866**
3. **Email comments to: *walters.michael@epa.gov***

Comments must be submitted by August 22, 2014.

Name (please print) THOMAS H. WINDUS, DIRECTOR OF PUBLIC WORKS

Organization / Agency / Affiliation CITY OF OLEAN

Address 101 E. STATE STREET, OLEAN, NY 14760

Email Twindus@cityofolean.org

I would like to be added to the project's mailing list

Comments: THE PROPOSED REMEDIAL PROCESS AS OUTLINED WILL REQUIRE 20 to 30 YEARS. THE PRP'S COMBINED TO PAY FOR THE INITIAL STRIPPER TOWERS, HOWEVER THE O+M HAS BEEN UP TO THE CITY. THE CITY WOULD LIKE THE PRP'S TO PAY FOR THE O+M FOR THE REMEDIAL PERIOD.