AMENDED RECORD OF DECISION

Essex; Hope Site
City of Jamestown
Chautauqua County, New York
Site Number: 907015

September 2023

Prepared by the:

Division of Environmental Remediation
New York State Department of Environmental Conservation

DECLARATION STATEMENT – AMENDED RECORD OF DECISION

Essex; Hope Site
City of Jamestown, Chautauqua County
Site No. 907015
September 2023

Statement of Purpose and Basis

The Amended Record of Decision (ROD) presents the selected remedy for the Essex; Hope Site, a Class 4 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York 6 NYCRR Part 375, and is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300), as amended.

This decision is based on the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the site and the public's input on the Proposed Amendment to the ROD presented by NYSDEC. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the Amended ROD.

Description of Selected Remedy

The elements of the amended remedy are as follows:

The elements of the amended remedy listed below are identified as *unchanged, modified or new* when compared to the March 1994 remedy. Figure 2 displays the general location of the remedial elements:

1. Remedial Design (*new*)

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

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which

would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial design program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA), SiteWise^{TM} (available in the Sustainable Remediation Forum [SURF] library) or similar Department accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

Additionally, the remedial design program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the amended remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

2. In-situ Thermal Treatment *(new)*

ISTT will be implemented to destroy VOCs in a 21,600 square-foot area located in the NPLS area and below Plant 5, as shown on Figure 2. The estimated vertical extent of the ISTT area is 10 to 40 fbgs.

Electrical resistance heating (ERH) will be utilized to perform the treatment. An electrical current will be produced in the treatment area between electrodes installed underground. Heat will be generated as movement of the current meets resistance from the soil, which will volatilize the VOCs present in soil and groundwater in the treatment area.

The volatized vapors produced by the thermal treatment will be collected by multi-phase extraction wells and will be routed through an above ground treatment system. Groundwater separated from extracted vapors will be treated in a series of steps including an air stripper. Air stripper off gasses will combine with the extracted vapor stream and subsequently treated via vapor-phase granular activated carbon (VGAC). The treated effluent will then be emitted to the atmosphere.

5. In-situ Chemical Oxidation *(new)*

In-situ chemical oxidation (ISCO) will be implemented to treat petroleum related VOCs in the groundwater, as shown in Figure 2. A chemical oxidant will be injected into the subsurface to destroy the contaminants in an approximately 11,500 square-foot area located in the southern portion of the site where petroleum-related compounds were elevated in the groundwater via injection wells screened from 8 to 16 feet.

6. Monitor Natural Attenuation *(modified)*

Groundwater contamination remaining after remedial elements 2 and 3 will be addressed with monitored natural attenuation (MNA). Groundwater will be monitored for site related contamination and also for MNA indicators which will provide an understanding of the (biological activity) breaking down any remaining contamination. It is anticipated that chlorinated VOCs and petroleum related contaminants will decrease in a reasonable period of time on the magnitude of several years compared to the timeframe of the original remedy, greater than 50 years. Groundwater monitoring will be performed at existing wells and new wells installed within OU-01 and at existing wells within the downgradient plume (OU-03). These wells will be sampled at a semiannual frequency for the first 2 years and then at an annual frequency for at least 3 additional years after thermal implementation. Reports of the attenuation will be provided, and active remediation will be required if it appears that natural processes alone will not address the contamination.

7. Cover System (*modified)*

A site cover currently exists in areas not occupied by buildings and will be maintained to allow for industrial use of the site. Any site redevelopment will maintain the existing site cover. The site cover may include paved surface parking areas or sidewalks. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6NYCRR part 375-6.7(d).

8. Financial Assurance *(new)*

Unless implementation of the remedy for the site is completed (excluding Site Management) within 60 months of the date of issuance of the final Amended Record of Decision (ROD), The Dow Chemical Company shall post financial assurance using one or more of the financial instruments in 6 NYCRR 373-2.8 in the amount of the cost projection for the remainder of the remedy selected in the Amended ROD. Financial assurance must include all remedial activities for the site that have not been implemented.

9. Declaration of Covenants and Restrictions (*unchanged*)

Imposition of an institutional control in the form of a Declaration of Covenants and Restrictions for the controlled property was recorded with the County of Chautauqua on

March 14, 2014; recording number 201406103201. The Declaration of Covenants and Restrictions requires:

- The property may only be used for industrial use;
- The use of groundwater underlying the property is prohibited without necessary water quality treatment;
- There shall be no construction, use, or occupancy of the property that results in the disturbance or excavation of the property that threatens the integrity of the Engineering Controls (ECs) or that results in unacceptable human exposure to contaminated soils;
- The owner of the property shall not disturb, remove, or otherwise interfere with the installation, use, operation, and maintenance of the ECs;
- The owner of the property or Responsible Party (RP) shall provide a periodic certification, prepared and submitted by a professional engineer or environmental professional, which will certify that the ICs and ECs put into place are unchanged from the previous certification, comply with the Site Management Plan (SMP), and have not been impaired;
- The owner of the property or RP shall continue in force and effect any ICs and ECs required for the remedy and maintain such controls, unless the owner first obtains permission to discontinue such controls from the Department, in compliance with the SMP, subject to modifications as approved by the Department;
- A Declaration of Covenants and Restrictions that shall run with the land and shall be binding upon all future owners of the property, and shall provide that the owner and its successors and assigns consent to enforcement by the Department of the prohibitions and restrictions that the Order on Consent requires to be recorded; and
- Any deed of conveyance of the property, or any portion thereof, shall recite that said conveyance is subject to the Declaration of Covenants and Restrictions.

10. Site Management Plan (*modified*)

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

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

Institutional Controls: The Declaration of Covenants and Restrictions discussed in remedial element 9.

Engineering Controls: The cover system discussed in remedial element 7.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the Declaration of Covenants and Restrictions including any land use and groundwater use restrictions;

- a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Remedial Element 7 will be placed in any areas where the upper one foot of exposed surface soil exceeds the applicable soil cleanup objectives (SCOs);
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
   - monitoring of groundwater and soil vapor (if needed) to assess the performance and effectiveness of the remedy;
   - a schedule of monitoring and frequency of submittals to the Department; and
   - monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.

New York State Department of Health Acceptance

The NYSDOH concurs that the amendment to the remedy for this site is protective of human health.

Declaration

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

9/27/2023
Date

Andrew Guglielmi
Digitally signed by Andrew Guglielmi
Date: 2023.09.27 17:52:14 -04'00'

Andrew Guglielmi, Director
Division of Environmental Remediation

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AMENDED RECORD OF DECISION
ESSEX; HOPE SITE – OPERABLE UNIT (OU-01)

City of Jamestown / Chautauqua County / Registry No. 907015 September 2023

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

SECTION 1: PURPOSE AND SUMMARY OF THE AMENDED RECORD OF DECISION

The New York State Department of Environmental Conservation (Department), in consultation with the New York State Department of Health (NYSDOH), have amended the March 1994 Record of Decision (ROD) for the above referenced site. The disposal of hazardous wastes at this site, as more fully described in the original ROD document and Section 6 of this document, has caused the contamination of various environmental media. The amendment is intended to attain the remedial action objectives identified for this site for the protection of public health and the environment. This Amended ROD identifies new information which has led to an alternative to the previously selected remedy and discusses the reasons for the preferred remedy.

The Department has issued this document in accordance with the requirements of New York State Environmental Conservation Law and Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375 Environmental Remediation Programs. This document is a summary of the information that can be found in the site-related reports and documents in the document repository identified below.

On March 11,1994, the Department signed a Record of Decision which selected a remedy to clean up the Essex; Hope Site. At that time, the focus of the remedy was primarily on source area soil removal, groundwater recovery and treatment, and the use of air sparging along with vapor phase vacuum extraction of the unsaturated soils. Several supplemental environmental investigations and remedial measures have been completed since the execution of the 1994 ROD. Minor modifications already made to the selected remedy include the shutdown of the air sparging and soil vapor extraction systems due to decreased removal rates. The original groundwater recovery system has also been modified as extraction wells have been added to or removed from the system. Additional remedial measures not defined in the 1994 ROD have also been implemented at the site. These include, two pilot studies utilizing zero valent iron (ZVI) and biochemical oxidation injections, the removal of five underground storage tanks (USTs), the use of chemical oxidation via injections, and the removal of three drywells.

Since the issuance of the 1994 ROD, there have been multiple investigations that have improved the understanding of the local geology and contaminant extent both on- and off-site. A Focused Feasibility Study (FFS) was completed in April 2023 to evaluate additional remedial alternatives which could be used on-site to achieve standards, criteria, and guidance (SCG) goals in a shorter period of time than the existing remedy.

The amendment to the original site remedy is limited to on-site contamination and includes: 1) shutdown of the existing groundwater extraction and treatment system; 2) implementation of in-situ thermal treatment (ISTT) of the chlorinated volatile organic compounds (VOCs) source area; 3) in-situ chemical oxidation (ISCO) of the petroleum impacted area; 4) groundwater monitoring,

and 5) provisions for the evaluation of soil vapor intrusion into the existing building if the building use changes or future on-site buildings. Off-site areas impacted by site contamination are being investigated separately, and will be addressed under a separate ROD (as needed).

SECTION 2: CITIZEN PARTICIPATION

The Department seeks input from the community on all remedies. A public comment period was held from August 16, 2023 to September 15, 2023, during which the public was encouraged to submit comments on the remedy. No comments on the remedy were received during the comment period. Site-related reports and documents were made available for review by the public at the following document repositories:

James Prendergast Library
509 Cherry Street
Jamestown, NY 14701
Phone: (716) 484-7135
Email: info@prendergastlibrary.org
Hours of Operation: Monday through Friday 9am to 7pm and Saturday 10am to 4pm

Access project documents through the DECinfo Locator and at the following location:
https://www.dec.ny.gov/data/DecDocs/907015/

A public meeting was also conducted on September 7, 2023. At the meeting, the findings of the remedial investigation (RI) and the feasibility study (FS) were presented along with a summary of the selected remedy.

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

SECTION 3: SITE DESCRIPTION AND HISTORY

Location:
The approximately 4.7-acre Essex; Hope Site is located in an industrial area at 120 Hopkins Avenue and 147 Blackstone Avenue in the City of Jamestown, Chautauqua County. The site is comprised of six tax parcels. The site is bound by Hopkins Avenue to the north, Blackstone Avenue to the south, Angove Avenue to the west, and an industrial building to the east.

Site Features:
The site consists of multiple manufacturing buildings and paved parking areas. The site is not currently occupied and is primarily used for storage. Most of the site investigations have been focused on the two parcels located on the east side of the site. Of the two eastern most parcels,

the northern parcel contains a parking lot and a building known as Plant 5. The parcel to the south contains a quonset hut, the former aboveground storage tank (AST)/underground storage tank (UST) area, and the former UST area.

On-site, manufacturing buildings operated by Hope's Windows, Inc are located on the parcel to the northwest. The remaining site parcels consists of several old manufacturing and storage buildings and paved areas.

Current Zoning and Land Use(s):
The site is currently zoned industrial. The predominant land use surrounding site includes industrial operations. The nearest residential home is located 250-feet to the northwest while the nearest downgradient residential structure is located 500-feet to the northeast. The Chadakoin River is located downgradient and is approximately 515-feet from the northeast corner of the site. The Chadakoin River is classified as a class "C" waterbody. A class "C" waterbody is defined as a *"Waters shall be suitable for fish, shellfish and wildlife propagation and survival. The water quality shall be suitable for primary and secondary contact recreation, although other factors may limit the use for these purposes."*

Past Use of the Site:
Essex Specialty Products owned and operated the site from 1982 until 1989, at which time the facilities were sold to Lily Industrial Coatings. Prior to this period the facility had been owned and operated by Essex Chemical Company, Tremco, Inc., Rubbermaid, Inc., Jamestown Finishing Products, Inc., and Jamestown Wood Finishing Company which all produced various paints, varnishes, and other industrial coatings since the early 1900's. Hope Windows, Inc., currently known as Hope's Architectural Products, Inc., also owned a portion of the property (known as Plant #5 building) which was sold to Essex in the mid-1980's. Operations on-site led to the release of various solvents and chemicals, including: toluene, xylenes, trichloroethene, polychlorinated biphenyls (PCBs), and vinyl chloride.

Operable Units: The site is divided into three operable units (OUs). An operable unit represents a portion of a remedial program for a site that for technical or administrative reasons can be addressed separately to investigate, eliminate or mitigate a release, threat of a release, or exposure pathway resulting from the site contamination.

Operable Unit 01 (OU-01) corresponds to the on-site remedial program. This portion of the Essex; Hope Site is located at 120 Hopkins Avenue and 147 Blackstone Avenue and is comprised of six tax parcels totaling 4.7-acres.

Operable Unit 02 (OU-02) corresponds to the residential vapor mitigation system formally installed at 159 Hopkins Avenue. The residential structure has since been demolished and the vapor mitigation system is no longer active.

Operable Unit 03 (OU-03) corresponds to the off-site area located northeast and downgradient of OU-01. The extent of OU-03 has not been defined as further investigation is required. OU-03 will be addressed under a separate ROD.

Site Geology and Hydrology:
The site lies within the Chadakoin River valley. A surficial geology map for the Jamestown area indicates near-surface deposits consist of lacustrine sands at the Site, with mixed deposits mapped just south of the site. The mixed deposits are described as primarily glacial till, interspersed with sand and gravel and lacustrine silts and clays.

On-site, the subsurface geological and hydrogeological features have been characterized into four units. A shallow sand and gravel layer is the first unit below ground surface, and generally ranges from 10-to-15 feet thick. This unit is referred to as the shallow water bearing zone (WBZ). A shallow silty clay layer is generally encountered around 15 feet below ground surface (fbgs). The shallow silty clay deposits are generally 5 to 10 feet thick, but the thickness and depth can vary considerably. In some area the shallow silty clay unit is absent or less than 2 feet thick, most notably near the North Parking Lot Sump (NPLS) source area. The shallow silty clay serves as a leaky aquitard separating the shallow and deep aquifers. A deep sandy silt is generally encountered around 20 fbgs and ranges from 13 to 31.5 feet thick. This unit is generally more clay-rich at shallow depths and siltier at depth. This unit is referred to as the deep WBZ. A second silty clay unit has been identified below the deep WBZ and has been determined to be another confining layer. This deep silty clay unit is typically encountered between 37 and 47 fbgs. Underlying the deep silty clay unit is a deeper sand and gravel WBZ, which has only been investigated to a limited extent.

Depth to groundwater in the shallow WBZ is approximately 7-11 fbgs. Groundwater flow in shallow and deep WBZ is to the north or northeast, toward the Chadakoin River. In locations where the overlying shallow silty clay layer is thin or absent, it is likely there is a hydraulic connection between the shallow and deep WBZs. The flow direction of the groundwater in lower WBZ located in the deep sand and gravel unit has not been determined.

SECTION 4: LAND USE AND PHYSICAL SETTING

The Department may consider the current, intended, and reasonably anticipated future land use of the site and its surroundings when evaluating a remedy for soil remediation. The Essex; Hope site is currently zoned for industrial use, and is located in an area of industrial use. The following Institutional Controls (ICs) are currently in place:

- There shall be no construction, use or occupancy of the Property that results in the disturbance or excavation of the Property which threatens the integrity of the engineering controls or which results in unacceptable human exposure to contaminated soils;
- The owner of the property shall not disturb, remove, or otherwise interfere with the installation, use, operation, and maintenance of engineering controls required for the Remedy, which are described in the Site Management Plan (SMP), unless in each instance the owner first obtains a written waiver of such prohibition from the Department or Relevant Agency;
- The owner of the property shall prohibit the Property from ever being used for purposes other than for its current use as industrial without the express written waiver of such prohibition by the Department or Relevant Agency;
- The use of groundwater underlying the property is prohibited without necessary water quality treatment as determined by the NYSDOH or the Chautauqua County Department of Health to render it safe for use as drinking water or for industrial purposes, and the user must first notify and obtain written approval to do so from the Department;

- The owner of the property shall provide a periodic certification, prepared and submitted by a professional engineer or environmental professional acceptable to the Department or Relevant Agency, which will certify that the institutional and engineering controls put in place are unchanged from the previous certification, comply with the SMP, and have not been impaired;
- The owner of the property shall continue in full force and effect any institutional and engineering controls required for the Remedy and maintain such controls, unless the owner first obtains permission to discontinue such controls from the Department or Relevant Agency, in compliance with the approved SMP, which is incorporated and made enforceable hereto, subject to modifications as approved by the Department or Relevant Agency;
- The Declaration of Covenants is and shall be deemed a covenant that shall run with the land and shall be binding upon all future owners of the property, and shall provide that the owner and its successors and assigns consent to enforcement by the Department or Relevant Agency of the prohibitions and restrictions that the Order on Consent requires to be recorded, and hereby covenant not to contest the authority of the Department or Relevant Agency to seek enforcement; and
- Any deed of conveyance of the Property, or any portion thereof, shall recite, unless the Department or Relevant Agency has consented to the termination of such covenants and restrictions, that said conveyance is subject to this Declaration of Covenants and Restrictions.

SECTION 5: ENFORCEMENT STATUS

The RP is one who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

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

- The Dow Chemical Company (formally known as Essex Specialty Products, Inc).

The Department has signed multiple Orders on Consent for the Essex; Hope Site relating to the investigation and remediation of the site. Most recently, the Department signed an Order on Consent on September 11, 2023 with The Dow Chemical Company. This Order includes the implementation of the work related to OU-01 described in this Amended ROD, further investigation of the deeper sand and gravel WBZ, and the continued investigation of the off-site areas to define the extent of OU-03.

SECTION 6: SITE CONTAMINATION

6.1: Summary of Environmental Assessment

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

Nature and Extent of Contamination:

Based on the investigations conducted to date, the primary contaminants of concern include chlorinated volatile organic compounds (VOCs), including trichloroethene (TCE), cis-1,2-dichloroethene (1,2-DCE), and vinyl chloride (VC) in soil and groundwater. Petroleum related compounds including 1,2,4-trimethylbenezne, 1,3,5-trimethylbenezne, cumene, toluene, ethylbenzene, and xylenes have been detected in the groundwater on the southern portion of the site. Nonaqueous phase liquid (NAPL), consisting of a waste oil containing TCE and cis-1,2-DCE, is present in a portion of the deep WBZ under the Plant 5 building.

The nature and extent of contamination discussed in this section focuses on the most recent investigations completed since 2016. The investigations completed include two data gap investigations (2016 and 2017), a supplemental investigation (2019), and two pre-design investigations (2022). During these investigations, subsurface soil and groundwater were analyzed for volatile organic compounds (VOCs). Based on past investigations, semi-volatile organic compounds (SVOCs), metals, pesticides, herbicides, PCBs, and per- and polyfluoroalkyl substances are not contaminants of concern at this site.

For OU-01: On-Site Areas

Subsurface Soil

Recent soil investigations have evaluated four subsurface soil layers. These units consist of a shallow sand/gravel unit, a shallow silty clay, a deep sandy silt, and a deep silty clay. Sub-surface soil samples have been collected from various depth intervals and analyzed for VOCs.

Concentrations of TCE have been found on-site up to 1,200 parts per million (ppm) (20 to 21 fbgs) significantly exceeding the soil cleanup objectives for the protection of groundwater (0.47 ppm). Elevated levels of TCE were identified in the three upper most layers with the most significant impacts identified in the shallow silty clay and deep sandy silt layers. The highest concentrations are located within the NPLS area and below the Plant 5 building. NAPL has been identified in three soil borings/monitoring wells below the Plant 5 Building and south of the Plant 5 Building. During the 2016 and 2017 Data Gap Investigations, VOC soil concentrations were compared to a site-specific soil saturation value (Csat). Comparison of the VOC concentrations with the Csat values indicate residual NAPL may be present under the Plant 5 Building.

Groundwater

Groundwater samples have been collected from three overburden water bearing zones (WBZ). The WBZs include the shallow, deep, and lower unit. All samples were analyzed for VOCs.

In the shallow WBZ, both chlorinated VOCs and petroleum related impacts have been identified. In the shallow WBZ, chlorinated VOC impacts have been found in the vicinity of the NPLS and below the Plant 5 building where 1,2-DCE has been detected up to 1,900 parts per billion (ppb), TCE up to 3,200 ppb, and VC up to 510 ppb. South of Plant 5, petroleum related compounds detected in the shallow WBZ include 1,2,4-trimethylbenezne up to 3,400 ppb, 1,3,5-trimethylbenzene up to 660 ppb, cumene up to 130 ppb, toluene up to 250 ppb, ethylbenzene up to 7,300 ppb, and xylenes up to 26,000 ppb.

In the deep WBZ, significant CVOC impacts have been identified in the NPLS area and below

the Plant 5 building where NAPL has been observed. where cis-1,2-DCE has been detected up to 290,000 ppb, TCE up to 160,000 ppb, and VC up to 40,000 ppb.

Only one well has been installed within the lower WBZ below the NPLS area. Cis-1,2-DCE up to 25 ppb and TCE up to 350 ppb have been detected sporadically in this well.

Soil Vapor

A vapor intrusion (VI) investigation was conducted in 2016 at the Plant 5 building and the adjacent West Building. The VI investigation was conducted to determine if indoor or subsurface sources were contributing to elevated concentrations of VOCs in indoor air and to assess the potential for VOCs linked to groundwater and soil at the Site to migrate into the building. This investigation was inconclusive due to the continued use of VOCs within the investigated buildings The on-site buildings are not currently occupied. Any change to building occupancy or the development of a new structure will warrant further investigation of VI.

6.2: Interim Remedial Measures

An Interim Remedial Measure (IRM) is conducted when a source of contamination or exposure pathway can effectively be addressed before issuance of the ROD. An IRM was conducted at the site in May 1992, prior to the issuance of the 1994 ROD.

The IRM was conducted in an area containing stained soils to address the presence of bis (2-ethylhexyl) adipate and phthalate residues. The contamination was the result of the spillage of manufacturing chemicals stored in an above ground storage facility. The IRM consisted of the excavation, characterization, transportation, and off-site disposal of approximately 500 cubic yards of soil containing various SVOCs. With the exception of a small area below a foundation, all soil exceeding 10 ppm total SVOCs was removed from the site.

6.3: Summary of Human Exposure Pathways

The site is unoccupied and located in an industrialized area with no residential structures adjacent to or near the site. Since the site is covered by asphalt and concrete, people will not come into contact with contaminated soil or groundwater unless they dig below the surface. Contaminated groundwater at the site is not used for drinking or other purposes and the site is served by a public water supply that obtains water from a different source not affected by this contamination. Volatile organic compounds in soil vapor (air spaces within the soil) may move into buildings and affect the indoor air quality. This process, which is similar to the movement of radon gas from the subsurface into the indoor air of buildings, is referred to as soil vapor intrusion. Because the site is unoccupied, the inhalation of site-related contaminants due to soil vapor intrusion does not represent a current concern. The potential for soil vapor intrusion to occur on-site will be evaluated should the site building be re-occupied and/or if new construction occurs. Environmental sampling indicates soil vapor intrusion is a concern for off-site buildings.

SECTION 7: SUMMARY OF ORIGINAL REMEDY AND AMENDED REMEDY

7.1 Original Remedy

The March 1994 ROD detailed the following components of the selected remedy:

- Excavation and off-site disposal of a layer of highly contaminated subsurface soil containing PCBs and TCE in the area of the NPLS;
- Use of air sparging technology in the area of the NPLS to enhance the reduction of contaminants in the groundwater;
- Collection and treatment of contaminated groundwater both on-site and off-site through the use of a pump and treat system;
- In-situ vacuum extraction of contaminated subsurface soils above the water table in the areas of the former above ground storage tanks and the underground storage tanks;
- Installation of an asphalt cap in areas of contamination to enhance surface water run-off and inhibit the infiltration of precipitation; and
- Implementation of a long-term monitoring program to determine the effectiveness of the remedial efforts.

7.2 Elements of the Remedy Already Performed

Former site operations have resulted in impacts to soil and groundwater. In response to the 1994 ROD, several remedial actions have been conducted at the site since the early 1990s. Previous remedial actions include impacted source removal, air sparing, soil vapor extraction, and chemical injections. Ongoing remedial actions include the operation of a groundwater pump-and-treat system, maintaining an asphalt cap that limits exposure to impacts in soil and limits leaching to groundwater, and annual groundwater monitoring.

7.3 New Information

Since the early 1990s, there have been several site investigations and remedial actions performed at the site. Remedial actions completed to date have resulted in an overall reduction of chlorinated VOCs and petroleum-related compounds in the soil and groundwater. Despite the overall reduction, elevated concentrations of site-related contaminants still remain. The most recent investigations have identified additional information on the nature and extent of site contaminants. Based on the extent of contaminant, it is not possible to achieve the site RAOs in the foreseeable future with the existing remedy. The FFS evaluated additional remedial actions that could be implemented to achieve RAOs in a more acceptable timeframe while ensuring continued protection of human health and the environment.

7.4 Changes to the Original Remedy

A summary of the changes to the original ROD as described in this document are shown in the Table on the following page:

SUMMARY OF REMEDIAL CHANGES
Essex; Hope Site (No. site #907015) Amended Record of Decision Amendment

Media:	1994 ROD	Amended ROD
Groundwater	(1) Collection and treatment of contaminated groundwater both on-site and off-site through the use of a pump and treat system; (2) Use of air sparging technology in the area of the north parking lot sump to enhance the reduction of contaminants in the groundwater; (3) Monitor natural attenuation (NA) via long term monitoring; (4) Declaration of Covenants and Restrictions restricting groundwater use underlying the property without treatment.	(1) Implementation of in-situ thermal treatment with vapor extraction/treatment in the area of the NPLS and below the Plant 5 building; (2) Groundwater injection of chemical oxidants in the petroleum impacted areas (2) Groundwater monitoring to assess the effectiveness of the remedy and natural attenuation (NA) via long term monitoring; (3) Declaration of Covenants and Restrictions restricting groundwater use underlying the property without treatment.
Soil	(1) Excavation and off-site disposal of a layer of highly contaminated subsurface soil containing PCBs and TCE in the area of the NPLS; (2) Use of soil vapor extraction in the area of the NPLS to enhance the reduction of contaminants in the groundwater; (3) Use of an asphalt cover system to enhance surface water run-off and inhibit the infiltration of precipitation; (4) Declaration of Covenants and Restrictions to limit use of property to industrial use to restrict exposure unless otherwise approved by the Department; (5) Use of a Site Management Plan (SMP) to maintain IC/ECs at the site.	(1) Implementation of in-situ thermal treatment with vapor extraction/treatment in the area of the NPLS and below the Plant 5 building; (2) Use of an asphalt cover system to enhance surface water run-off and inhibit the infiltration of precipitation; (3) Declaration of Covenants and Restrictions to limit use of property to industrial use to restrict exposure unless otherwise approved by the Department; (4) Use of a Site Management Plan (SMP) to maintain IC/ECs at the site
Soil Vapor/Indoor Air	No remedial component for soil vapor/indoor air.	(1) An evaluation of soil vapor intrusion into existing and future on-site structures will be required following any change in building use, occupancy or the construction of a new structure.

SECTION 8: EVALUATION OF REMEDIAL CHANGES

8.1 Remedial Goals

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR 375-1.8(f). These goals are established under the guideline of meeting all standard, criteria, and guidance (SCGs) and protecting human health and the environment.

8.1.1 1994 ROD Remedial Goals

The goals for the cleanup of the site were established in the original ROD. The goals selected for this site are:

- Eliminate the potential for direct human or animal contact with the contaminated soils on-site.
- Mitigate the impacts of contaminated groundwater to the environment.
- Mitigate, to the extent practicable, migration of contaminants from on-site source areas to groundwater.
- Provide for attainment of SCGs (Table 1) for groundwater and soil quality.

Table 1: Remedial Action Objectives - 1994 ROD

Parameter	Standards, Criteria, and Guidance
Groundwater [1] (ppb) [2]	
Trans-1,2-Dichloroethylene	5
Trichloroethene	5
Vinyl Chloride	5
Ethylbenzene	5
Toluene	5
Xylene	5
Polychlorinated Biphenyls	0.1
Soil (ppm) [3]	
Individual Volatile Organic Compounds	1
Total Volatile Organic Compounds	10
Individual Semi-volatile Organic Compounds	50
Total Semi-volatile Organic Compounds	500
Polychlorinated Biphenyls	10

(1) Other compounds, not listed, would have RAOs in compliance with NYSDEC Ambient Groundwater Quality Standards.

(2) ppb: part per billion

(3) ppm: part per million

8.1.2 Revised Remedial Goals

Since the issuance of the 1994 ROD, the Department has developed standard remedial action objectives (RAOs) to be used at remedial sites. The applicable RAOs for the site are:

Groundwater

RAOs for Public Health Protection

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

RAOs for Environmental Protection

- Restore groundwater aquifer to pre-disposal/pre-release conditions, to the extent practicable.
- Remove the source of groundwater contamination.

Soil

RAOs for Public Health Protection

- Prevent ingestion/direct contact with contaminated soil.
- Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil.

RAOs for Environmental Protection

- Prevent migration of contaminants that would result in groundwater contamination.

Soil Vapor

RAOs for Public Health Protection

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

8.2 Evaluation Criteria

The criteria used to compare the remedial alternatives are defined in the regulation that directs the remediation of inactive hazardous waste sites in New York State (6 NYCRR Part 375). For each criterion, a brief description is provided. A detailed discussion of the evaluation criteria and comparative analysis is contained in the Focused Feasibility Study.

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

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

The original remedy detailed in the 1994 ROD satisfies this criterion by removing some of the source material and capturing/treating the groundwater plume. The amended remedy is also protective of human health and the environment by using thermal and chemical technologies to remove or destroy the source of contamination. The removal of the source material is also

expected to enhance the natural attenuation of contamination in the downgradient plume. Both alternatives rely on institutional and engineering controls to minimize the risk of exposure to residual contamination following implementation of the remedy and long-term monitoring to ensure the remedy was effective.

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

The original and amended remedy both comply with the soil and groundwater SCGs for the site to the extent practicable. However, the amended remedy is expected to achieve a higher level of on-site cleanup by destroying the on-site source material. The destruction of source materials is preferred over alternatives that only contain or treat contamination emanating from the source material. Therefore, while both remedies comply with the SCGs, the amended remedy is anticipated to better achieve the SCGs.

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

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

The amended remedy has the potential for increased short-term adverse impacts to the public during construction of the ISTT remediation system, most notably while the existing groundwater extraction system is shutdown, potentially resulting in downgradient migration of COCs during this brief period. Any additional migration during the shutdown is expected to be minimal and into areas already impacted by site COCs. During the heating phase of the ISTT, limited hydraulic capture will be restored. The amended remedy will require a short duration of well drilling and injection program followed by a monitoring period. Additional injections events may be necessary but those would also be short in duration and less intrusive than the initial drilling activities. Additional short-term impacts are associated with storage, handling, and deployment of chemical oxidants, including potential daylighting of injected oxidants at the ground surface or accidental spills of the oxidant. The potential exists that ISCO treatment would require multiple rounds of injections (on the order of 2 to 3 injections over 2 to 4 years). However, for all alternatives, most short-term impacts (except for increased traffic) can be mitigated by implementing appropriate engineering, monitoring, and administrative controls. Potential exposures to workers could occur during drilling and installation but will be managed by a health and safety plan and a community air monitoring program (CAMP) will be implemented. The additional potential short-term impacts posed by the amended remedy are considered minor compared to the enhanced level of cleanup these actions will result in.

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

institutional controls intended to limit the risk, and 3) the reliability of these controls.

The amended remedy is expected to be more effective and permanent in the long-term. Both the ISTT and ISCO treatments are expected to significantly and permanently reduce the contaminant mass remaining on-site. Any contaminant mass remaining after the remedy is expected to naturally attenuate and exposures to this remaining contamination will be prevented by the institutional controls required. The existing Declaration of Convents, implementation of a revised SMP, and long-term monitoring will ensure that the remedy remains effective in protecting human health and the environment.

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

The amended remedy provides a higher degree of reduction of contaminant toxicity, mobility, and volume as compared to the original remedy. The amended remedy will result in permanent destruction of contaminant source material, which reduces both the toxicity and volume of contamination. ISTT will reduce the mass of chlorinated VOCs in soil, and to a lesser extent groundwater, while the ISCO injections will permanently reduce the mass of petroleum-related compounds in the areas south of Plant 5. Both treatment technologies destroy the contamination by transforming it to less toxic species. The reduction of contaminant toxicity and volume may also limit the long-term mobility due to a reduction in contaminant flux to the downgradient plume.

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

As detailed in Section 7.2, all elements of the original remedy have been implemented. Potential technical difficulties with the amended remedy include the installation of the thermal remedial equipment, required modifications to provide sufficient electrical supply, equipment to address power demands, and additional permitting requirements. The injection of chemical oxidants within the West Building will also require building access and underground injection control permitting associated with placing injection points or wells. These implementability challenges are common for these remedial technologies and can be easily addressed during the design process.

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

The amended remedy significantly more expensive that the original remedy. However, the additional expense is justified by the short period of time required to reduce contaminant mass and the higher level of cleanup anticipated to be achieved by the amended remedy. Therefore, while more expensive than the original remedy, the amended remedy is still considered cost-effective.

8. Community Acceptance. Concerns of the community regarding the changes have been evaluated. A responsiveness summary has been prepared to describe public comments received and the manner in which the Department has address the concerns raised.

SECTION 9: AMENDED REMEDY

The Department has amended the ROD for the Essex; Hope Site. The changes to the selected remedy are summarized in Section 7.3 above.

The estimated present worth cost to carry out the amended remedy is $6,700,000. The estimated present worth to complete the original remedy was $2,958,070 ($6,096,257 adjusted to reflect 2023-dollar value) including an annual operation and maintenance cost of $133,172 ($274,080 adjust to reflect 2023-dollar value).

The elements of the amended remedy listed below are identified as *unchanged, modified or new* when compared to the March 1994 remedy. Figure 2 displays the general location of the remedial elements:

1. Remedial Design (*new*)

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

- Considering the environmental impacts of treatment technologies and remedy stewardship over the long term;
- Reducing direct and indirect greenhouse gases and other emissions;
- Increasing energy efficiency and minimizing use of non-renewable energy;
- Conserving and efficiently managing resources and materials;
- Reducing waste, increasing recycling and increasing reuse of materials which would otherwise be considered a waste;
- Maximizing habitat value and creating habitat when possible;
- Fostering green and healthy communities and working landscapes which balance ecological, economic and social goals;
- Integrating the remedy with the end use where possible and encouraging green and sustainable re-development; and
- Additionally, to incorporate green remediation principles and techniques to the extent feasible in the future development at this site, any future on-site buildings shall be constructed, at a minimum, to meet the 2020 Energy Conservation Construction Code of New York (or most recent edition) to improve energy efficiency as an element of construction.

As part of the remedial design program, to evaluate the remedy with respect to green and sustainable remediation principles, an environmental footprint analysis will be completed. The environmental footprint analysis will be completed using an accepted environmental footprint analysis calculator such as SEFA (Spreadsheets for Environmental Footprint Analysis, USEPA),

SiteWise™ (available in the Sustainable Remediation Forum [SURF] library) or similar Department accepted tool. Water consumption, greenhouse gas emissions, renewable and non-renewable energy use, waste reduction and material use will be estimated, and goals for the project related to these green and sustainable remediation metrics, as well as for minimizing community impacts, protecting habitats and natural and cultural resources, and promoting environmental justice, will be incorporated into the remedial design program, as appropriate. The project design specifications will include detailed requirements to achieve the green and sustainable remediation goals. Further, progress with respect to green and sustainable remediation metrics will be tracked during implementation of the remedial action and reported in the Final Engineering Report (FER), including a comparison to the goals established during the remedial design program.

Additionally, the remedial design program will include a climate change vulnerability assessment, to evaluate the impact of climate change on the project site and the amended remedy. Potential vulnerabilities associated with extreme weather events (e.g., hurricanes, lightning, heat stress and drought), flooding, and sea level rise will be identified, and the remedial design program will incorporate measures to minimize the impact of climate change on potential identified vulnerabilities.

2. In-situ Thermal Treatment *(new)*

ISTT will be implemented to destroy VOCs in a 21,600 square-foot area located in the NPLS area and below Plant 5, as shown on Figure 2. The estimated vertical extent of the ISTT area is 10 to 40 fbgs.

Electrical resistance heating (ERH) will be utilized to perform the treatment. An electrical current will be produced in the treatment area between electrodes installed underground. Heat will be generated as movement of the current meets resistance from the soil, which will volatilize the VOCs present in soil and groundwater in the treatment area.

The volatized vapors produced by the thermal treatment will be collected by multi-phase extraction wells and will be routed through an above ground treatment system. Groundwater separated from extracted vapors will be treated in a series of steps including an air stripper. Air stripper off gasses will combine with the extracted vapor stream and subsequently treated via vapor-phase granular activated carbon (VGAC). The treated effluent will then be emitted to the atmosphere.

5. In-situ Chemical Oxidation *(new)*

In-situ chemical oxidation (ISCO) will be implemented to treat petroleum related VOCs in the groundwater, as shown in Figure 2. A chemical oxidant will be injected into the subsurface to destroy the contaminants in an approximately 11,500 square-foot area located in the southern portion of the site where petroleum-related compounds were elevated in the groundwater via injection wells screened from 8 to 16 feet.

6. Monitor Natural Attenuation *(modified)*

Groundwater contamination remaining after remedial elements 2 and 3 will be addressed with monitored natural attenuation (MNA). Groundwater will be monitored for site related contamination and also for MNA indicators which will provide an understanding of the (biological activity) breaking down any remaining contamination. It is anticipated that chlorinated VOCs and

petroleum related contaminants will decrease in a reasonable period of time on the magnitude of several years compared to the timeframe of the original remedy, greater than 50 years. Groundwater monitoring will be performed at existing wells and new wells installed within OU-01 and at existing wells within the downgradient plume (OU-03). These wells will be sampled at a semiannual frequency for the first 2 years and then at an annual frequency for at least 3 additional years after thermal implementation. Reports of the attenuation will be provided, and active remediation will be required if it appears that natural processes alone will not address the contamination.

7. Cover System (*modified)*

A site cover currently exists in areas not occupied by buildings and will be maintained to allow for industrial use of the site. Any site redevelopment will maintain the existing site cover. The site cover may include paved surface parking areas or sidewalks. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR part 375-6.7(d).

8. Financial Assurance *(new)*

Unless implementation of the remedy for the site is completed (excluding Site Management) within 60 months of the date of issuance of the final Record of Decision (ROD), The Dow Chemical Company shall post financial assurance using one or more of the financial instruments in 6 NYCRR 373-2.8 in the amount of the cost projection for the remainder of the remedy selected in the Record of Decision (ROD). Financial assurance must include all remedial activities for the site that have not been implemented.

9. Declaration of Covenants and Restrictions (*unchanged*)

Imposition of an institutional control in the form of a Declaration of Covenants and Restrictions for the controlled property was recorded with the County of Chautauqua on March 14, 2014; recording number 201406103201. The Declaration of Covenants and Restrictions requires:

- The property may only be used for industrial use;
- The use of groundwater underlying the property is prohibited without necessary water quality treatment;
- There shall be no construction, use, or occupancy of the property that results in the disturbance or excavation of the property that threatens the integrity of the Engineering Controls (ECs) or that results in unacceptable human exposure to contaminated soils;
- The owner of the property shall not disturb, remove, or otherwise interfere with the installation, use, operation, and maintenance of the ECs;
- The owner of the property or Responsible Party (RP) shall provide a periodic certification, prepared and submitted by a professional engineer or environmental professional, which will certify that the ICs and ECs put into place are unchanged from the previous certification, comply with the Site Management Plan (SMP), and have not been impaired;
- The owner of the property or RP shall continue in force and effect any ICs and ECs required for the remedy and maintain such controls, unless the owner first obtains permission to discontinue such controls from the Department, in compliance with the SMP, subject to modifications as approved by the Department;
- A Declaration of Covenants and Restrictions that shall run with the land and shall be binding upon all future owners of the property, and shall provide that the owner and its successors and assigns consent to enforcement by the Department of the prohibitions and restrictions that the Order on Consent requires to be recorded; and

- Any deed of conveyance of the property, or any portion thereof, shall recite that said conveyance is subject to the Declaration of Covenants and Restrictions.

10. Site Management Plan (*modified*)

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

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

Institutional Controls: The Declaration of Covenants and Restrictions discussed in remedial element 9.

Engineering Controls: The cover system discussed in remedial element 7.

This plan includes, but may not be limited to:

- an Excavation Plan which details the provisions for management of future excavations in areas of remaining contamination;
- descriptions of the provisions of the Declaration of Covenants and Restrictions including any land use and groundwater use restrictions;
- a provision for evaluation of the potential for soil vapor intrusion for any occupied buildings on the site, including provision for implementing actions recommended to address exposures related to soil vapor intrusion;
- a provision that should a building foundation or building slab be removed in the future, a cover system consistent with that described in Remedial Element 7 will be placed in any areas where the upper one foot of exposed surface soil exceeds the applicable soil cleanup objectives (SCOs);
- provisions for the management and inspection of the identified engineering controls;
- maintaining site access controls and Department notification; and
- the steps necessary for the periodic reviews and certification of the institutional and/or engineering controls.

b. a Monitoring Plan to assess the performance and effectiveness of the remedy. The plan includes, but may not be limited to:
    - monitoring of groundwater and soil vapor (if needed) to assess the performance and effectiveness of the remedy;
    - a schedule of monitoring and frequency of submittals to the Department; and
    - monitoring for vapor intrusion for any buildings on the site, as may be required by the Institutional and Engineering Control Plan discussed above.


Chadakoin River
Florida St
Short St
Bigelow Ave
Former Residence (159 Hopkins, Demolished 2020)
Former HH Metal Specialty, Inc. (now Viking Property Development, LLC)
Hope Plant 3
Former Hope Plant 6
Jametown Plastics
Minsker St
Former Hope Plant 7 (now Johnson Machine & Fibre Products)
Hopkins Ave
Former Hope Plant 5 (now United Industries, Inc.)
Rollform
Hope Plant 1
Former Jamestown Finishes (now United Industries, Inc.)
Blackstone Ave
Angove Ave
Jamestown Metal
United Alloys
Hope Plant 2
Schaefer Pipe and Supplies
Chassis Motor Vehicle Repair
Jamestown Mattress
United Industries Electrical
Blackstone Advanced Technologies (Sheet Metal Fabrication)
Allen St
Carolina St

Approximate OU-01 Site Boundary as defined by the July 2023 Order on Consent

Parcel

Note:
Offsite area outside of OU-01 boundary is identified as OU-03. Exact boundary of OU-03 is to be determined.

N

BASE MAP SOURCE:
Bing Aerial Imagery 2022

0 50 100 200
Scale in Feet

Essex Specialty Products, Inc	Essex/Hope Site, Jamestown, New York

FIGURE 1A
2023 Order on Consent -
Site Overview Map
Focused Feasibility Study

CREATED BY: LA
REVIEWED BY: JK

Jacobs

Approximate OU-01 Focused Feasibility Study Area Boundary

Parcel

Note:
Offsite area outside of OU-01 boundary is identified as OU-03. Exact boundary of OU-03 is to be determined.

N

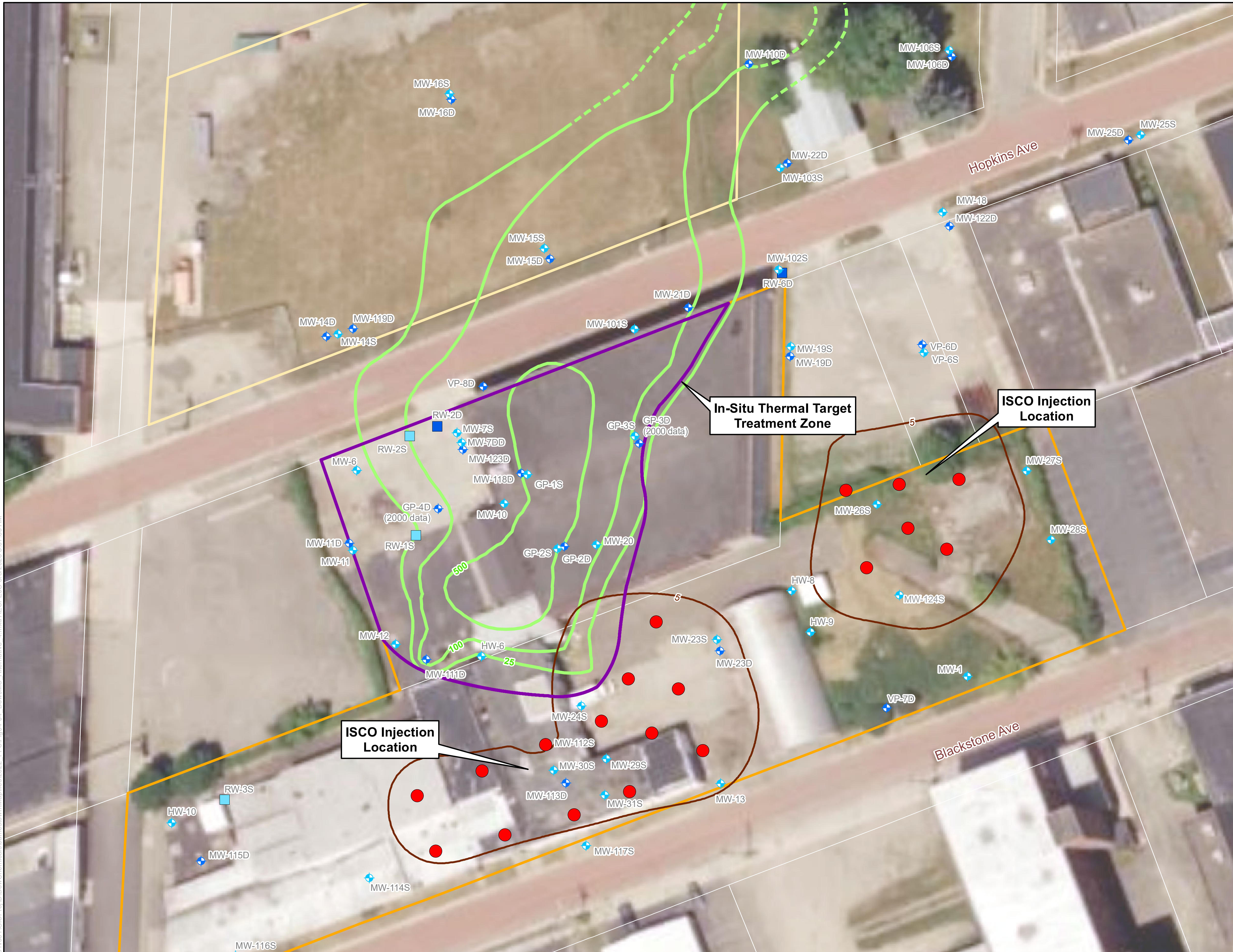
BASE MAP SOURCE:
Bing Aerial Imagery 2022

0 35 70 140
Scale in Feet

Essex Specialty Products, Inc	Essex/Hope Site, Jamestown, New York

FIGURE 1B
Site Features Map
Focused Feasibility Study

CREATED BY: LA	Jacobs
REVIEWED BY: JK	



- Proposed In-Situ Chemical Oxidation Injection Location
- Proposed In-Situ Thermal Target Treatment Zone (24,037 ft sq)
- Former Hope Plant 6 Area
- Approximate OU-01 Focused Feasibility Study Area Boundary
- Deep Monitoring Well
- Shallow Monitoring Well
- Deep Recovery Well
- Shallow Recovery Well
- Soil CVOC Contour (mg/kg) (Dashed Where Inferred)
- Shallow WBZ CBTEX Contour (µg/L) (Dashed Where Inferred)

1. Most recent data from 2022 Annual Sampling used when available, supplemented with October 2020, September 2019, November 2018, March 2017, October 2017, and September 2016 monitoring well or grab sample data.
2. ISCO injection locations are conceptual and will be refined during design.

CBTEX = sum of cumene, benzene, toluene, ethylbenzene, and total xylene concentrations.
total CVOCs = total chlorinated volatile organic compounds (sum of tetrachloroethene, trichloroethene, cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethene, and vinyl chloride detections).

N

BASE MAP SOURCE:
Bing Aerial Imagery 2022

0 25 50 100
Scale in Feet

Essex Specialty Products, Inc	Essex/Hope Site, Jamestown, New York

FIGURE 2
Alternative 4: In-Situ Thermal Treatment of the CVOC Area and In-Situ Chemical Oxidation of the Petroleum Area
Focused Feasibility Study

CREATED BY: AE
REVIEWED BY: DR

Jacobs

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Essex; Hope Site
Operable Unit No. 01: On-site Remedial Program
State Superfund Project
City of Jamestown, Chautauqua County, New York
Site No. 907015

The Proposed Amendment to the Record of Decision (AROD) for the Essex; Hope Site was prepared by the New York State Department of Environmental Conservation (NYSDEC) in consultation with the New York State Department of Health (NYSDOH) and was issued to the document repositories on August 16, 2023. The AROD outlined the remedial measure proposed for the contaminated soil and groundwater at the Essex; Hope Site.

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

A public meeting was held on September 7, 2023 which included a presentation summarizing the Focused Feasibility Study for the Essex; Hope Site as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the AROD ended on September 15, 2023.

This responsiveness summary responds to all questions and comments raised during the public comment period. No comments or questions were received during the public comment period.

APPENDIX B

Administrative Record

Administrative Record

Essex; Hope Site
Operable Unit No. 01: On-site Remedial Program
State Superfund Project
City of Jamestown, Chautauqua County, New York
Site No. 907015

The Amendment to the Record of Decision (AROD) for the Essex; Hope Site, Operable Unit No. 01, dated August 2023, prepared by the NYSDEC.

Orders on Consent

Order on Consent, Index No. B9-0354-90-11, between the NYSDEC and Essex Specialty Products, Inc., executed on June 26, 1991.

Order on Consent, Index No. B9-0354-90-11, between the NYSDEC and Essex Specialty Products, Inc., executed on October 31, 1991.

Order on Consent, Index No. B9-0354-94-05, between the NYSDEC and Essex Specialty Products, Inc., executed on July 28, 1995.

Order on Consent, Index No. R9-20230620-49, between the NYSDEC and The Dow Chemical Company, executed on September 11, 2023.

Reports/Work Plans

"Preliminary Site Assessment" 1988 Prepared by ERM

"Environmental Studies Report" 1991 Prepared by GZA

"Phase I Remedial Investigation" 1993 Prepared by O'Brien & Gere

"Phase II Remedial Investigation" 1994 Prepared by O'Brien & Gere

"Feasibility Study" 1994 Prepared by O'Brien & Gere

"Record of Decision" 1994 Prepared by NYSDEC

"Basis of Design" 1995 Prepared by Dow Environmental

"Remedial Action Closeout Report" 1998 Prepared by Radian Engineering

"Supplemental Investigation for SMAART Evaluations" 2000 Prepared by Radian International

"Plant 5 East and UST Area Investigation Report" 2001 Prepared by URS

"UST Area and Groundwater Vinyl Chloride Investigation Report" 2004 Prepared by URS

"UST Area and Offsite Groundwater Investigation Report" 2006 Prepared by URS

"Soil Vapor Sampling Report" 2008 Prepared by URS

"Supplemental Offsite Investigation Report" 2014 Prepared by AECOM

"Sil Vapor Investigation at Plant 5 and West Building Report" 2015 Prepared by AECOM

"Vapor Intrusion Investigation" 2016 Prepared by CH2M

"Data Gap Investigation" 2016 Prepared by CH2M

"Data Gap Investigation" 2017 Prepared by CH2M

"Site Management Plan" 2017 Prepared by CH2M

"Periodic Review Reports" 2017 – 2023 Prepared by CH2M/Jacobs

"Supplemental Investigation" 2019 Prepared by Jacobs

"Phase I Pre-design Investigation" 2021 Prepared by Jacobs

"Phase II Pre-design Investigation" 2022 Prepared by Jacobs

"Focused Feasibility Study" 2023 Prepared by Jacobs

"Citizen Participation Plan" 2023 Prepared by Jacobs

"Thermal Remedial Design Plan" 2023 Prepared by Jacobs

Correspondence

"Pre-Design Work Plan Comment Letter" March 28, 2022 from Josh Vaccaro - NYSDEC

"Focused Feasibility Study Comment Letter" February 10, 2023 from Josh Vaccaro - NYSDEC

"Response to Comments" March 10, 2023 from Brian Carling - Jacobs

"Focused Feasibility Study Comment Letter" July 05, 2023 from Josh Vaccaro – NYSDEC

“Response to Comments” July 26, 2023 from Brian Carling - Jacobs

“Remedial Design Comment Letter” September 12, 2023 from Josh Vaccaro - NYSDEC