907015

Department of Environmental Conservation

Division of Hazardous Waste Remediation

Record of Decision

Essex/Hope Site
City of Jamestown, Chautauqua County
I.D. Number 9-07-015

March 1994

New York State Department of Environmental Conservation
MARIO M. CUOMO, *Governor* LANGDON MARSH, *Acting Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Essex/Hope Inactive Hazardous Waste Site
City of Jamestown, Chautauqua County, New York
Site No. 907015

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Essex/Hope inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40CFR300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Essex/Hope Inactive Hazardous Waste Site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included in Appendix B.

Assessment of the Site

Actual or threatened release of hazardous waste constituents from this site, if not addressed by implementing the response action selected in this ROD, presents a current or potential threat to public health and the environment.

Description of Selected Remedy

Based upon the results of the Remedial Investigation/Feasibility Study (RI/FS) for the Essex/Hope Site and the criteria identified for the evaluation of alternatives the NYSDEC has selected groundwater extraction/treatment, soil excavation and disposal, subsurface soil treatment, capping, and monitoring. The components of the remedy are as follows:

- Excavation and off-site disposal of a layer of highly contaminated subsurface soil containing PCBs and trichloroethylene in the area of the north parking lot sump.

- Use of air sparging technology in the area of the north parking lot sump 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.

- Implementation of a long term monitoring program to determine the effectiveness of the remedial efforts.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

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

March 11, 1994
Date

Ann Hill DeB
Ann Hill DeBarbieri
Deputy Commissioner

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RECORD OF DECISION

ESSEX/HOPE SITE

Jamestown(C), Chautauqua County, New York
Site No. 907015

March 1994

SECTION 1: SITE LOCATION AND DESCRIPTION

The Essex/Hope site is located on a 4.7 acre site that is currently owned and operated by Lilly Industrial Coatings at 125 Blackstone Avenue in the City of Jamestown (Figure 1). The property is bordered by Hopkins Street to the north and Blackstone Avenue to the south and is traversed by an abandoned railroad right of way. This area of Jamestown is situated in the center of a steep sided, flat bottom glacially derived valley of silt sand and gravel, which is drained to the southeast by the Chadakoin River, a class "C" stream, 800 feet north of the site. The NYSDEC classifies streams according to their potential use. A Class C stream is considered suitable for fishing and fish propagation, but not as a drinking water supply or for swimming. The site is located in a highly industrialized area of the City that has seen various degrees of industrial use for the past 75 years. Contamination on site is the result of past spillage of solvents used in the operation of the facility. Due to the site's location near a prinicipal drinking water aquifer and a class C stream, the property was listed on the New York State Registry of Inactive Hazardous Waste Sites as a Class 2 site. A class 2 designation indicates that the property poses a significant threat to public health or the environment.

SECTION 2: SITE HISTORY

2.1: Operational/Disposal History

Essex Specialty Products owned and operated the manufacturing facilities at the site from 1982 to 1989, at which time the facilities were sold to Lilly 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 approximately the early 1900's. Hope Windows, Inc., currently known as Hopes 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.

There are three areas of concern at the site that are the result of past manufacturing practices. An area of concern is a specific area of contamination that can be isolated and dealt with separate from other areas. Area No.1 (known as the North Parking Lot Sump (NPLS) area) is located in a parking area on the south side of Hopkins Street and is contaminated with trichloroethylene and PCBs. Area No.2 (known as the Above Ground Storage Tank/Underground Storage Tank (AST/UST) area) is located on the east side of the railroad right-of-way (ROW) and was the location of an above ground tank farm. This area is contaminated with benzene, toluene, and xylene (BTEX). Area No. 3 (known as the Under ground Storage Tank (UST) area) is located on the east end of the site along Blackstone Avenue. The area is the location of several abandoned underground storage tanks (USTs) and is contaminated with petroleum hydrocarbons and ethylbenzene, toluene, and xylene (ETX) (Figure 2).

2.2: Remedial History

The following is a summary of the investigations completed or in progress at the Essex/Hope site. The major investigative activity conducted at a inactive hazardous waste site is a Remedial Investigation/Feasibility Study (RI/FS). During the RI, the nature and extent of contamination at the site is determined. This information is then used during the FS to determine an appropriate remedial action that effectively eliminates the threat posed by the site.

- October 1990: Essex Specialty Products notified DEC of contamination at site
- December 1990: Submitted Site Investigation Report to DEC
- June 1991: Essex signed an Order on Consent (legal document) to conduct a RI/FS at the site.
- October 1991: Essex signed an Order on Consent to conduct an Interim Remedial Measure (IRM) to remove contaminated soil from site.
- June 1992: Completed "Stained Soil" IRM
- July 1992: Essex submitted "Stained Soil" IRM Summary Report
- October 1992: Completed Phase I RI
- June 1993: Essex Completed Phase II RI
- November 1993: Essex submitted FS report

SECTION 3: CURRENT STATUS

Essex, under the supervision of the NYSDEC, initiated a Remedial Investigation/Feasibility Study (RI/FS) in October 1991 to address the contamination at the site. Two phases of the RI were necessary in order to determine the extent of the contamination from the three initial source areas. The second phase of the RI was completed in June 1993 and the FS report submitted in November 1993. DEC has begun negotiation with the company to enter into a Remedial Design/Remedial Action (RD/RA) Order on Consent to implement the chosen remedial alternative at the site.

3.1: Summary of the Remedial Investigation

The purpose of the RI was to define the nature and extent of any contamination resulting from previous activities at the site.

The RI was conducted in two phases. The first phase was conducted between January 1992 and March 1992 and the second phase between July 1992 and March 1993. A report entitled "Remedial Investigation, Former Essex Specialty Products, Inc." dated October 1992 and "RI Report Supplement, dated June 1993, have been prepared describing the field activities and findings of the RI in detail. A summary of the RI follows:

The RI activities consisted of the following:

- Soil vapor survey to investigate extent of contamination.

- Installation of soil borings and monitoring wells for analysis of soils and groundwater as well as physical properties of soil and hydrogeologic conditions.

- Sampling of near-by surface water.

- Conducting a utility survey to determine if any off-site transport conduits exist.

- Excavation of test pits to locate underground pipes to a drainage sump.

The analytical data obtained from the RI was compared to Applicable Standards, Criteria, and Guidance (SCGs) in determining remedial alternatives. Groundwater, drinking water, and surface water SCGs identified for the Essex/Hope Site were based on NYSDEC Ambient Water Quality Standards and Guidance Values and Part V of NYS Sanitary Code. For the evaluation and interpretation of soil and sediment analytical results, NYSDEC soil cleanup guidelines for the protection of groundwater, background conditions, and risk-based remediation criteria were used to develop remediation goals (Table 2).

Based upon the results of the remedial investigation in comparison to the SCGs and potential public health and environmental exposure rates, certain areas and media of the site require remediation. The following discussion summarizes the extent and degree of contamination at the site:

North Parking Lot Sump (NPLS) Area

VOCs were identified in the vicinity of MW-3S adjacent to the drainage sump in the NPLS area. Analysis of the ground water indicates levels of TCE in MW-3S at approximately 650 ppm, 0.03 ppm in downgradient MW-7S, and 0.019 ppm in MW-8 (Figures 4 & 5). The discovery of TCE is consistent with reported accounts of past manufacturing activities conducted in the vicinity by previous owners. Polychlorinated biphenyls (PCBs) also were detected within MW-3S at 0.29 ppm. PCBs were not detected in any other monitoring well on site. The source of the PCBs, near MW-3, is not known.

In order to define both the nature and extent of the TCE contamination and PCB residue surrounding MW-3S, the suspected source area of the TCE, a soil boring program was initiated in the NPLS area. In February 1993, five soil borings were advanced around the sump. In March 1993, three additional soil borings were advanced in the vicinity of the sump and MW-3, and one was installed through the floor of the former Plant No. 5 building approximately 25 feet north-east of the location where Hope had operated a TCE degreaser pit. The soil boring installed within the building was subsequently developed as a monitoring well screened in the 6 to 11 foot deep interval. The following conclusions regarding VOCs in the soils within the NPLS area were presented in the RI Report Supplement dated June 1993.

- Based on observations made during the soil boring program completed in the NPLS area, a visually discernable layer of a dense non-aqueous phase liquid (DNAPL) was not exhibited in the subsurface soils. However, staining of the soils, in the form of spotting, was observed in SB-2 and SB-3 below the static water table in the interval exhibiting a thin laminated clay layer.

- Laboratory analysis of selected soil samples, selection of which was based on in-field photoionization readings, exhibited trichloroethylene (TCE) at concentrations ranging from 5.9 ppm to

220.0 ppm along the thin laminated clay layer. The highest levels were encountered between the sump and former degreaser pit. The depth to the thin laminated clay layer, where present, varies between 10 feet and 18 feet below ground.

o A review of the exhibited levels of 1,2-dichloroethylene (DCE), which is a degradation product of TCE, indicates that the area in the vicinity of the sump was the historic point source of the TCE. The concentrations of DCE exhibited within the soil below the ground water table are highest in the area immediately surrounding the sump. The exhibited levels diminish proceeding from the sump to the area surrounding MW-3S. Additionally, the highest level of DCE exhibited above the ground water table was obtained from the sample collected from the soil boring advanced through the floor of the sump.

o PCB residues (4.5 to 33 ppm) were detected in the 12 to 14 foot deep interval in three soil borings located to the south east (SB-3, SB-4 and SB-5) and in the 14 to 18 foot deep intervals of SB-7 (Figure 3). However, PCB residues were not detected in the samples obtained from more shallow intervals in these same soil borings. Also, the depth at which the PCB residues have been detected corresponds to the depth at which the highest concentration of VOCs is exhibited.

Based on a review of the soil boring log sheets, and laboratory data, it appears that the highest levels of TCE are localized in an area southeast of the sump in the immediate vicinity of MW-3S. Although a DNAPL was not observed, up to 220 ppm of TCE was exhibited in the soil at a depth of between 12 and 16 feet within a localized area surrounding MW-3S. The exhibited levels of TCE were observed to diminish steadily below this depth and as the sample location moved horizontally distant from MW-3S. Accordingly, it is concluded that this localized area is the most significant potential source of ground water impact of TCE.

<u>Former Above Ground Storage Tank/Underground Storage Tank (AST/UST) Area</u>

A source of (VOCs), consisting primarily of ethylbenzene, toluene, xylene (ETX) and other VOCs commonly associated with petroleum derived compounds, was identified in the vicinity of MW-2 (Figure 2) as a result of the soil boring program. Analysis of subsurface soils in the area revealed total VOC concentrations ranging from less than detectable (0.01 ppm) in soil boring B-15 to 360 ppm in B-13. Immediately east of this area, two soil samples were obtained from B-10, one sample from 0- to 2-foot interval and one from the 6- to 8-foot interval, and analyzed for xylenes. The 0- to 2-foot sample exhibited a xylene concentration of 2700 ppm and the 6- to 8-foot sample did not exhibit elevated concentrations. No trichloroethylene (TCE) was exhibited in the soil samples collected from this location. Based on this data, it appears that the elevated surface concentrations are the result of a localized surface spill.

Analysis of ground water in the vicinity (MW-2, MW-4 and HW-10) also revealed detected levels of ETX. Total VOCs detected in MW-2, MW-4 and HW-10 were quantified at 241 ppm, 53 ppm, and 144 ppm, respectively. The areal extent of VOCs in ground water related to this area appears to be defined by VOC concentrations exhibited in downgradient monitoring well nests 14, 15, and 16 and soil vapor information obtained downgradient of the former AST/UST area.

UST Area

Analysis of soils collected from excavations adjacent to the side walls of the five USTs revealed the presence of ethylbenzene, toluene and xylene (ETX) a maximum concentrations of 1000, 410, 3600 ppm respectively. Using the results of the ground water sampling and analyses, the extent of ETX in the shallow ground water appears to be limited to the area on the plant site adjacent to the UST area (Figure 4).

Table 1 provides a Summary of Chemicals of Concern, concentration ranges and the media in which they were detected.

Clean-up Goals have been developed for the site based on the appropriate Standards, Criteria and Guidances (SCGs). The clean-up goals for soil are 1 part per million (ppm) for each individual volatile organic contaminate (VOC) and 10 ppm total VOCs. These goals have been established to protect groundwater quality. Groundwater clean-up goals have been established at drinking water standards as provided by Part 5 of the NYS Sanitary Code (Table 2).

3.2 Interim Remedial Measures:

An Interim Remedial Measure (IRM) was conducted in the "Former Stained Soil Area" (Figure 2) at the site based on the findings of a Site Assessment performed by the Company in 1990. An IRM is implemented when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS.

Analyses of a small area of surface soils immediately east of the existing above ground tank farm revealed the presence of bis (2-ethylhexyl) adipate and phthalate residues within both stained surface soils and underlying soils. As a result, an Interim Remedial Measure (IRM) was implemented to remediate accessible stained soils in the area. In May 1992, Essex Specialty Products conducted an IRM at the Site for the removal of contaminated soil along the sites eastern property line. The IRM project consisted of the excavation, characterization, transportation, and off-site disposal of approximately 500 cubic yards of soil containing various semi-volatile compounds, (primarily bis(2-ethylhexyl) phthalate). The contamination was the result of the spillage of manufacturing chemicals stored in the facility's above ground storage facility. All contaminated soil was removed to the established clean-up goal of 10 mg/kg, except in a small area below the foundations of the tank containment structures. Further excavation could not be performed without jeopardizing the structural integrity of the facility. An evaluation on the remaining soil was performed as part of the Risk Assessment in the RI. The results of the stained soils area IRM are documented in the summary report entitled Soil Excavation Stained Soils Area, dated July 1992. No further action is warranted.

3.3 Summary of Human Exposure Pathways:

A baseline risk assessment was performed using available analytical data generated by O'Brien & Gere Engineers, Inc. The risk and hazard index estimates were calculated to highlight potential sources of risk so that they may be considered for inclusion in the remedial process as remedial objectives. In summary, the following conclusions may be made:

1. The increased cancer risk calculated for off-site receptor populations at the site (1.14 per ten thousand or 1.14×10^{-4}) is in excess of the Superfund site remediation goal in the NCP (10^{-4} to 10^{-7}). The most significant exposure pathways for off-site residents are the future use of off-site ground water, and

the inhalation of volatilized residues from on-site source areas. The primary cause for the calculated risk level is the presence of trichloroethylene and its degradation product vinyl chloride present in ground water. However, the calculated risk estimates rare based upon people consuming groundwater, which is very unlikely. The actual risks to off-site receptor populations are expected to be significantly lower than the calculated risk estimates.

2. The total calculated average noncancer Hazard Indices (HIs) for on-site workers at the site (8.35) is in excess of the Superfund site remediation threshold of 1.0. The calculated HIs for on-site workers are primarily due to the calculated air emission of VOCs from the UST area at the site. Remediation of soils at the UST area would minimize the potential for future exposures to airborne volatilized residues from the site.

In summary, the site posses an unacceptable risk to on-site workers due to air emissions from contaminated soil and an unacceptable risk to local residents due to groundwater contamination.

3.4 Summary of Environmental Exposure Pathways:

An ecological assessment was performed for the site and surrounding areas. The results of this assessment are summarized below:

1. Special resources such as significant habitats, endangered species, lakes, or wild and scenic rivers were not identified within a 2-mile radius of the site.

2. A cover type analysis determined that nearly 80% of a 0.5-mile area encompassing the site (400 of 502 acres or 0.620 of 0.785 mi^2) is characterized by urban industrial, commercial-business, and residential districts which are not "important" wildlife habitats as defined by NYSDEC.

   About one-fifth of the terrain within the study area is of value to wildlife, and of that, two terrestrial habitat types could provide the necessary life-sustaining requirements for indigenous communities. These habitat types are a thin band of stream bank vegetation along the Chadakoin River and a mixed hardwood stand to the south of the site. The only aquatic habitat within the study boundary was the Chadakoin River.

3. Based on the ground water analytical results, the chemicals of concern at the site include bis(2-ethylhexyl)adipate, bis(2-ethylhexyl)phthalate, trans-1,2-dichloroethene, ethylbenzene, fluoranthene, methylene chloride, naphthalene, phenanthrene, pyrene, toluene, trichloroethene, vinyl chloride and xylene.

4. The only significant environmental pathway of chemical migration from the site is via ground water movement, and the only potentially exposed habitat is the Chadakoin River. It was concluded during the RI/FS that none of the contaminants of concern are expected to be released to the Chadakoin River at levels that could adversely impact the aquatic community of the Chadakoin River.

   Off-site monitoring indicated that toluene and the less mobile compounds bis(2-ethylhexyl)adipate, fluoranthene, phenanthrene, and pyrene were not exhibited in ground water hydraulically downgradient from the site. In addition, off-site ground water concentrations of t-1,2-dichloroethene, ethylbenzene, naphthalene, and trichloroethene are below NYSDEC ambient water quality criteria for aquatic organisms. U.S.EPA and NYSDEC ambient water quality criteria do not exist for xylene and bis(2-ethylhexyl)phthalate. However, their maximum off-site ground water concentrations were lower than NYS ground water standards for drinking water, which are more stringent than criteria for aquatic life.

Only U.S.EPA ambient water quality criteria for drinking water was available for vinyl chloride. Off-site maximum ground water concentrations in select monitoring wells exceed these values. A conservative model predicted that vinyl chloride is not being discharged to the river. Even if vinyl chloride was observed at current maximum off-site ground water concentrations, these levels would be below safety and health standards for humans and aquatic organisms. Moreover, adsorption, dilution and degradation processes further reduce or eliminate the levels of contaminants in ground and surface water. An additional margin of safety would be introduced by the dilution offered by the Chadakoin River to any ground water borne residues discharged to that water body.

SECTION 4: ENFORCEMENT STATUS

The Potential Responsible Parties (PRP) for the site include:

Essex Specialty Products, Inc.

Lilly Industrial Coatings, Inc.

Hopes Architectural Products, Inc.

The NYSDEC and Essex Specialty Products, Inc. entered into a Consent Order on June 26, 1991. The Order obligates the responsible parties to implement a RI/FS remedial program. Upon issuance of the Record of Decision the NYSDEC will approach the PRPs to implement the selected remedy under an Order on Consent.

The following is the chronological enforcement history of this site.

Date	Index No.	Subject of Order
06/26/91	**B9-0354-90-11**	**RI/FS**
10/31/91	**B9-0354-90-11**	**Soil Removal IRM**

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6NYCRR 375-1.10. These goals are established under the guideline of meeting all standard, criteria, and guidance (SCGs) and protecting human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

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 RAOs (Table 2) for groundwater and soil quality.

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

Potential remedial alternatives for the Essex/Hope Site were identified, screened and evaluated in a three-phase Feasibility Study. This evaluation is presented in the report entitled Feasibility Study, Essex/Hope Site, (OBG, July 1993). A summary of the detailed analysis follows.

6.1: Description of Alternatives

Alternative 1

No Action

Present Worth:	$ 670,000
Capital Cost:	$ 0
Annual O&M:.	$ 43,600
Time to Construct	0 years

The no action alternative would require implementation of a ground water monitoring program. This program would be used to monitor ground water conditions and provide a data base for periodically reevaluating the risks and assessing whether future remedial actions may be required.

This is an unacceptable alternative as the site would remain in its present condition, and human health and the environment would not be adequately protected because contamination would continue to be released to the environment.

Alternative 2

Limited soil excavation and off-site disposal, groundwater containment and capping

Present Worth:	$ 5,733,000
Capital Cost:	$ 5,539,290
Annual O&M:	$ 12,600
Time to Construct	1 year

Alternative 2 is the removal and containment alternative. This alternative would involve soil removal and disposal off-site and ground water containment. Implementation of this alternative would inhibit transport mechanisms by which the contaminants may leave the site. This alternative provides containment through installation of a vertical barrier surrounding the contaminant plume and installation of a cap over the areas exhibiting VOC and semivolatile organic compounds (SVOCs) residuals. Also included in Alternative 2 are ground water monitoring and land use deed restrictions.

The cap under consideration is an asphalt cap. The vertical barrier may be composed of a soil bentonite slurry, and would be keyed to the till and/or bedrock. The cap would minimize infiltration of water into the residual VOCs contaminated soils, and the vertical barrier would retard horizontal flow of ground water beneath the Site. The residual VOC contaminated soils and contaminated ground water would effectively be isolated by the cap and vertical barrier components of this alternative.

Alternative 3

Limited soil excavation w/off-site disposal, groundwater collection/treatment and disposal, vacuum extraction of soils and capping

Present Worth:	$ 2,893,000
Capital Cost:	$ 839,985

Annual O&M:	$	133,544
Time to Construct		1 year

Alternative 3 provides for collection of ground water utilizing recovery wells, physical/chemical treatment of contaminated ground water, limited excavation of highly contaminated soil, in situ vacuum extraction of the VOCs contaminated unsaturated soils, and installation of a cap over soils containing residual VOCs and SVOCs. This alternative also includes ground water monitoring, land use deed restrictions and fencing.

The ground water recovery and treatment system would remove Site ground water and provide treatment to achieve acceptable ground water contaminant levels. Treated ground water would be discharged to either the Chadakoin River or to the Publicly Owned Treatment Works (POTW). The treatment system would be designed to achieve effluent limitations established pursuant to the technical requirements of the State Pollutant Discharge Elimination System (SPDES) Program or local POTW pretreatment standards. The ground water recovery system would be operated to control ground water. The cap would contain the soils exhibiting residual VOCs and SVOCs and minimize infiltration of water through contaminated unsaturated soils, thereby minimizing further impact to the ground water.

Ground water treatment process options suitable for this alternative include utilizing activated carbon adsorption, oxidation, or granular activated carbon and air stripping. Carbon adsorption will remove high molecular weight organics, through adsorption onto carbon. The GAC would subsequently be disposed of off-site. or regenerated on-site or off-site.

Alternative 4

Limited soil excavation w/off-site disposal, groundwater collection/treatment/discharge, excavation/treatment/on-site disposal of contaminated soils

Present Worth:	$	8,352,000
Capital Cost:	$	5,698,935
Annual O&M:	$	172,564
Time to Construct		1 year

Alternative 4 provides for collection of ground water utilizing recovery wells, limited excavation of highly contaminated soil, physical/chemical treatment of contaminated ground water and excavation/physical/chemical treatment of VOCs and SVOCs contaminated soils. This alternative also includes ground water monitoring and land use deed restrictions.

The ground water recovery and treatment system would remove and treat the contaminated ground water at the Site. The ground water recovery system would be operated to control ground water until the exhibited concentrations attain clean up goals. The contaminated ground water would be treated to concentrations at or below effluent limitations established in accordance with the technical requirements of the SPDES Program, or in accordance with POTW pretreatment standards as appropriate. Following treatment, ground water would be discharged to either the Chadakoin River or POTW.

Process options suitable for this alternative include: l) contaminated soils treatment utilizing thermal treatment; and 2) ground water treatment utilizing granular activated carbon, oxidation, or granular activated carbon and air stripping.

Alternative 5

Limited soil excavation w/off-site disposal, groundwater collection/treatment and disposal, in situ air stripping and air sparging of subsurface soils and capping

Present Worth:	$ 2,958,070
Capital Cost:	$ 910,890
Annual O&M:	$ 133,172
Time to Construct	1 year

Alternative 5 is an enhancement of Alternative 3. In addition to the remedial methods included in Alternative 3, an air sparging system would be utilized to decrease the duration of ground water remediation at the TCE source location. Air sparging systems inject air into the saturated soils which drives volatile contaminants in the groundwater into the unsaturated soils above the water table. A vacuum extraction system then removes the contaminants from the soils.

6.2 Evaluation of Remedial Alternatives

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

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs). Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance. Alternatives 1 and 2 will not achieve SCGs since groundwater and drinking water standards will continue to be exceeded. Alternatives 3,4 and 5 will achieve SCGs after remediation of soil and groundwater has been completed.

2. Protection of Human Health and the Environment. This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective. Alternatives 2,3,4 & 5 would protect human health and the environment through the elimination of the unacceptable risk. The risk would be eliminated with the remediation of the soil and groundwater, capping of the effected areas to prevent contact with the contamination, and deed restrictions to prevent to exposure of the contamination to the public or the environment. Alternative 1 will not since no remedial efforts will be implemented.

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 implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared with the other alternatives. Alternative 1 has no short-term effect since no work is being proposed. Alternatives 2,3,4 and 5 all have short term effects to be considered during the construction phase of their implementation. However, engineering controls to address volatile and particulate emissions can be implemented to reduce and/or eliminate any off-site threat. All alternatives are expected to be of similar duration to implement except Alternative No. 5 which may reduce the actual time necessary to remediate the site due to the technologies being applied.

4. Long-term Effectiveness and Permanence. This criterion evaluates the long-term effectiveness of alternatives after implementation of the response actions. 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 controls intended to limit the risk, and 3) the reliability of these controls. Alternative 1 has a unacceptable long term effectiveness. Alternatives 2,3,4 and 5 have varying but similar effectiveness based on the technologies applied. Alternative 5 has the greatest reliability

and shortest time to achieve the remedial goals because of the technologies being applied.

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. Alternative 1 would not result in the reduction of any of the criteria. Alternative 2 would reduce the mobility but not the toxicity or volume. Alternatives 3,4 and 5 would meet all criteria to different degrees.

6. Implementability. The technical and administrative feasibility of implementing each alternative is evaluated. Technically, this includes the difficulties associated with the construction, the reliability of the technology, and the ability to monitor the effectiveness of the remedy. Administratively, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc. All alternatives are readily implementable by today's standards. Alternative 2 may be the most difficult to implement due to the varying hydrogeological conditions at the site.

7. Cost. Capital and operation and maintenance costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision. Cost for varying remedial alternatives can vary significantly due to the time required to implement a specific technology and the type and sophistication of technology to be used. The costs for each alternative are presented in Table 3.

8. Community Acceptance - Concerns of the community regarding the RI/FS reports and the Proposed Remedial Action Plan have been evaluated. A " Responsiveness Summary" was prepared and is attached as Appendix A, that describes public comments received and how the Department will address the concerns raised.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the RI/FS, and the evaluation presented in Section 7, **the NYSDEC has selected Alternative 5 as the remedy for this site.**

Selection of Remedy

The risk assessment conducted during the RI indicated that the contaminated soils and groundwater will pose an unacceptable future risk due to direct contact with exposed soils. In addition, the potential exists for contaminants in the vadose layer to continue percolating into the ground water, and for the ground water to continue migrating from source areas and cause excursions of the Ambient Water Quality Standards (AWQS) for the water discharged to the Chadakoin River. The Site ground water quality is also in excess of presently established drinking water standards. Although the ground water is not currently utilized as a source of potable water and a public water system is currently in place, it is possible that someone could install a well and use the ground water as a drinking water source. For these reasons, the No Action Alternative would not achieve the remedial action objectives presented in Section 5, and therefore would not be protective of human health and the environment.

Alternative 2 also would not achieve all the remedial action objectives. Specifically, Alternative 2 does not satisfy the preference for permanence associated with treatment. Also, Alternative 5 achieves the remedial goals at about one-half the cost of Alternative 2.

The remaining alternatives presented (Alternatives 3, 4 and 5) offer various options involving containment, collection and treatment that are implementable at this site. Alternative 4 does not provide any increase in protectiveness over Alternatives 3 or 5, since each results in a reduced volume of contaminated media and provides containment of the material to a specific area. Alternative 4 does provide a greater degree of permanence with the destruction of the contaminants through the use of thermal treatment technology. However, Alternative 4 may also cause significant interruption to plant operations due to the extensive excavation activities involved with the thermal treatment proposed. It will also be more difficult to implement this alternative due to the close proximity of buildings and other structures that will limit the depth of excavations and amount of contaminated soil removed near foundations.

Of the containment and treatment alternatives, Alternatives 3 and 5 offer equal protectiveness since both alternatives utilize the similar treatment and containment technologies. Alternative 5, however, will likely require less time to remediate the Site resulting in lesser total costs, due to the inclusion of an additional groundwater treatment technology than Alternative 3. The reduction in implementation time is not shown in the worse case estimate presented because the annual costs for each alternative is projected for a thirty year period without anticipated reductions of effort.

Accordingly, **Alternative 5 is selected for implementation at the Site.** However, since insufficient information exists to adequately assess the applicability of air sparging, the utilization of ground water treatment via air sparging would be initially limited to the immediate TCE source area in the vicinity of the NPLS area sump.

The estimated present worth cost to implement the remedy is $2,958,070. The cost to construct the remedy is estimated to be $ 910,890 and the estimated average annual operation and maintenance cost for 30 years is $133,172. The time period of 30 years was chosen for cost comparison purposes only. It is expected that the preferred remedy could be completed in much less time (perhaps two to five years).

The elements of the selected remedy are as follows:

- Excavation and off-site disposal of the layer of highly contaminated soil containing trichloroethylene and PCBs.
- Collection of groundwater utilizing recovery wells
- Physical/chemical treatment of groundwater
- Vacuum extraction of unsaturated soils
- Air sparging of groundwater and saturated soils to enhance contaminant reduction and reduce the remediation period
- Installation of an asphalt cap in source areas to inhibit infiltration of precipitation
- Implementation of a long term monitoring program which will allow the effectiveness of the selected remedy to be monitored. This long term monitoring program will be a component of the operations and maintenance for the site and will be developed in accordance with Remedial Design.

SECTION 8: <u>HIGHLIGHTS OF COMMUNITY PARTICIPATION</u>

As part of the remedial investigation process, a citizen participation plan, dated November 1992, was developed for the Essex/Hope site project. The objectives of the plan are: promote public understanding of the NYSDEC's responsibilities, planning and remedial activities; provide opportunities for the NYSDEC to learn from the public; and provide information that would facilitate a comprehensive remedial program protective of both public health and the environment.

The following public participation activities have been conducted as part of the project:

* A Citizen Participation Plan dated November 1992 was developed.

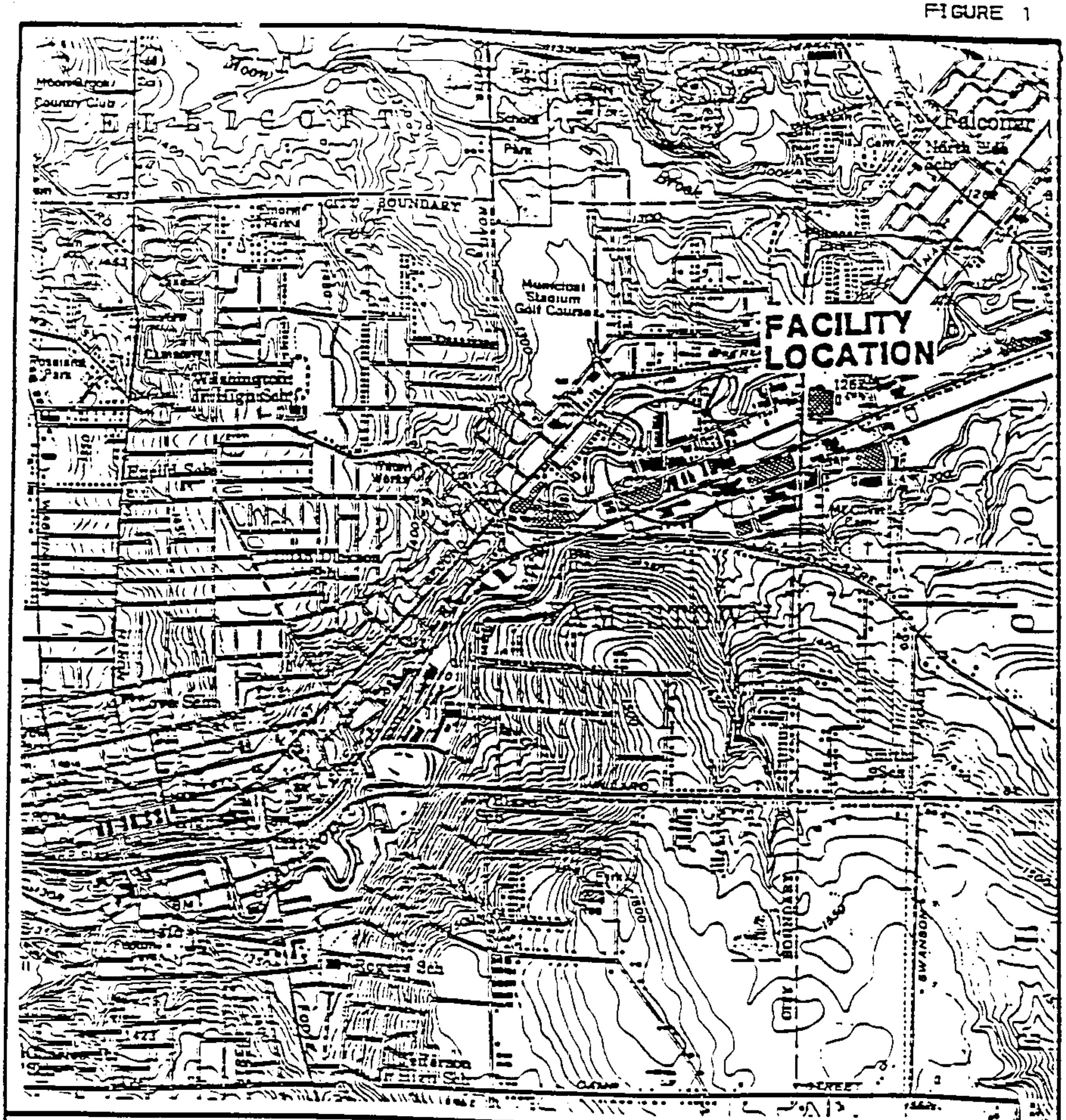
* A document repository was established at the James Prendergast Library.

* Held a public meeting on November 19, 1991 to discuss the proposed investigative work to be conducted as part of the Remedial Investigation and a proposed Interim Remedial Measure.

* Developed and mailed Fact Sheets to all interested parties concerning the status of activities on the site dated: November 1991, January 1992, May 1992, March 1993, and September 1993.

* Held a public meeting on February 8, 1994 to present the Proposed Remedial Action Plan (PRAP) for the site. Comments received during the meeting and the public comment period (from February 1, 1994 to March 6, 1994) and the Department's responses are presented in the Responsiveness Summary in Appendix A.

FIGURE 1



ESSEX/HOPE SITE
JAMESTOWN, NEW YORK

SITE LOCATION MAP

QUADRANGLE LOCATION

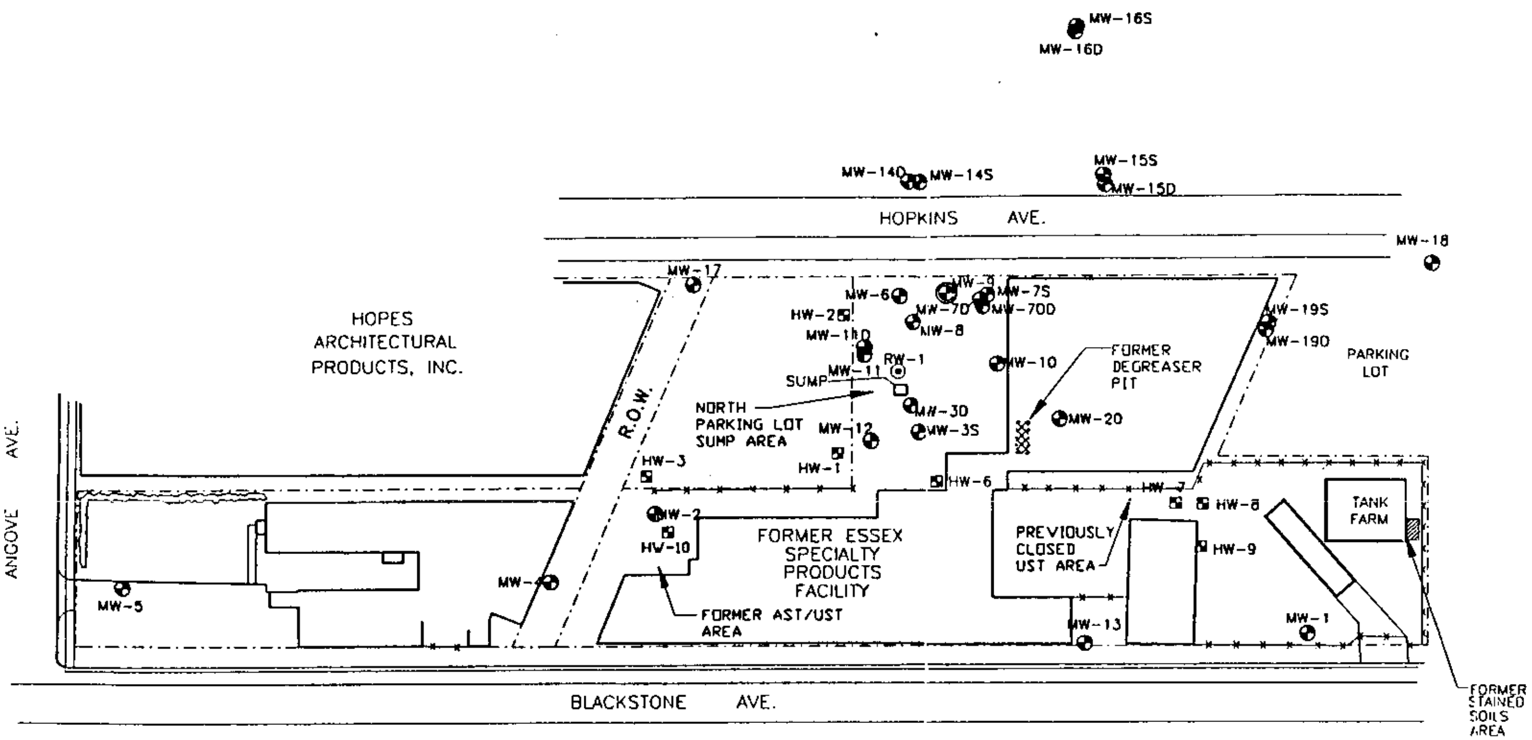
0 2000 4000

SCALE 1"=2000'

ADAPTED FROM 7.5 MIN. U.S.G.S. QUAD MAP, JAMESTOWN, NEW YORK

O'BRIEN & GERE ENGINEERS INC

FIGURE 2



LEGEND

- PROPERTY BOUNDARY
- MONITORING WELL
- RECOVERY WELL
- ABANDONED MONITORING WELL
- MONITORING WELL INSTALLED BY HOPE (APPROXIMATE LOCATION)

AST – ABOVEGROUND STORAGE TANK
UST – UNDERGROUND STORAGE TANK

FEASIBILITY STUDY
ESSEX/HOPE SITE
JAMESTOWN, NEW YORK

SITE PLAN

1" = 80' 0 80 160
SCALE IN FEET

O'BRIEN & GERE ENGINEERS INC.
Syracuse, New York

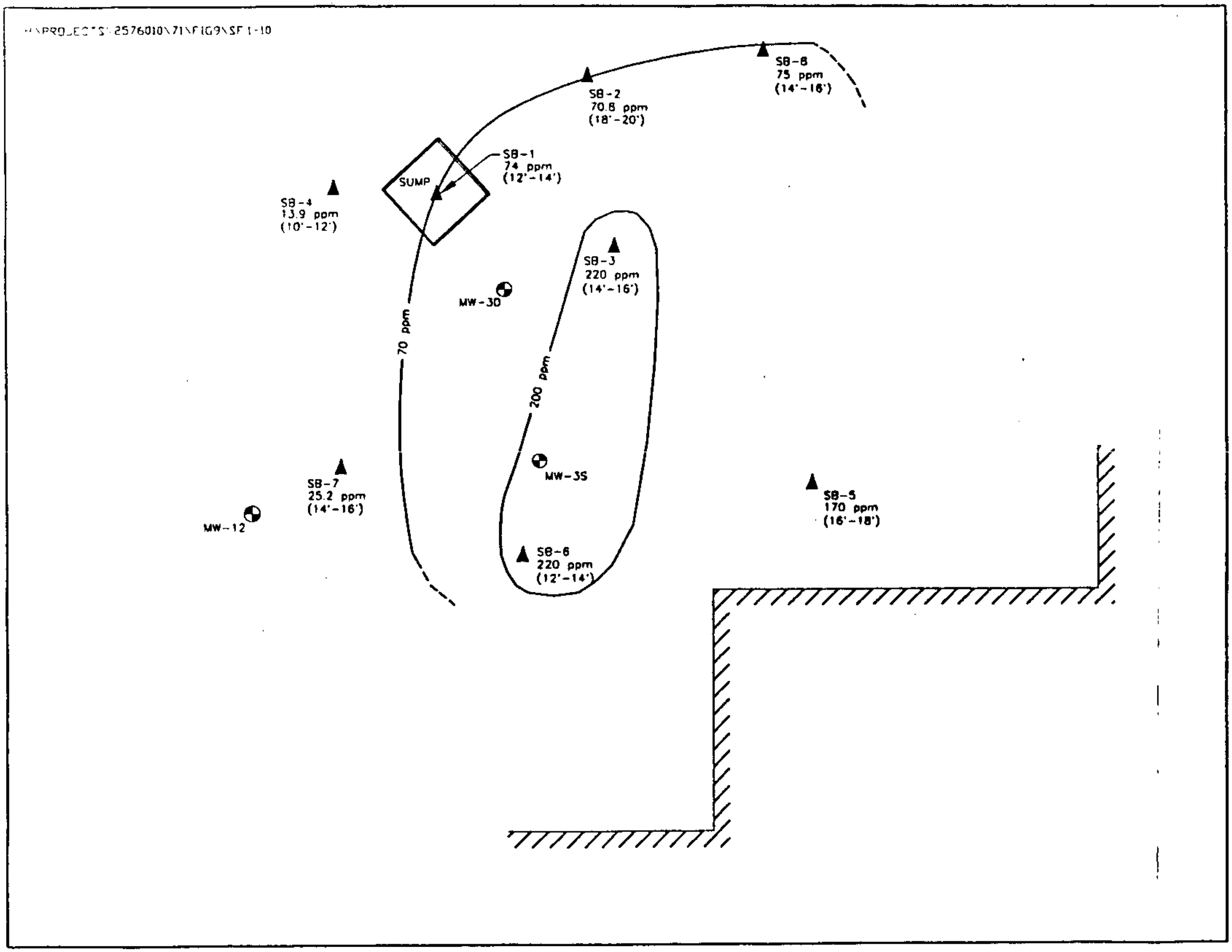


FIGURE 3

LEGEND

- - - - - INFERRED CONTOUR

——— TRICHLOROETHYLENE (TCE) ISO-CONCENTRATION LINE

SB-5 SOIL BORING

MW-12 GROUND WATER MONITORING WELL

220 ppm (14'-16') ACTUAL CONCENTRATION DETECTED AND DEPTH INTERVAL OF SAMPLE

FEASIBILITY STUDY
ESSEX/HOPE SITE
JAMESTOWN, NEW YORK

SOIL BORING
ANALYTICAL RESULTS
TCE CONTOUR MAP

1" = 10' 0 10 20

SCALE IN FEET

O'BRIEN & GERE
ENGINEERS INC.
Syracuse, New York

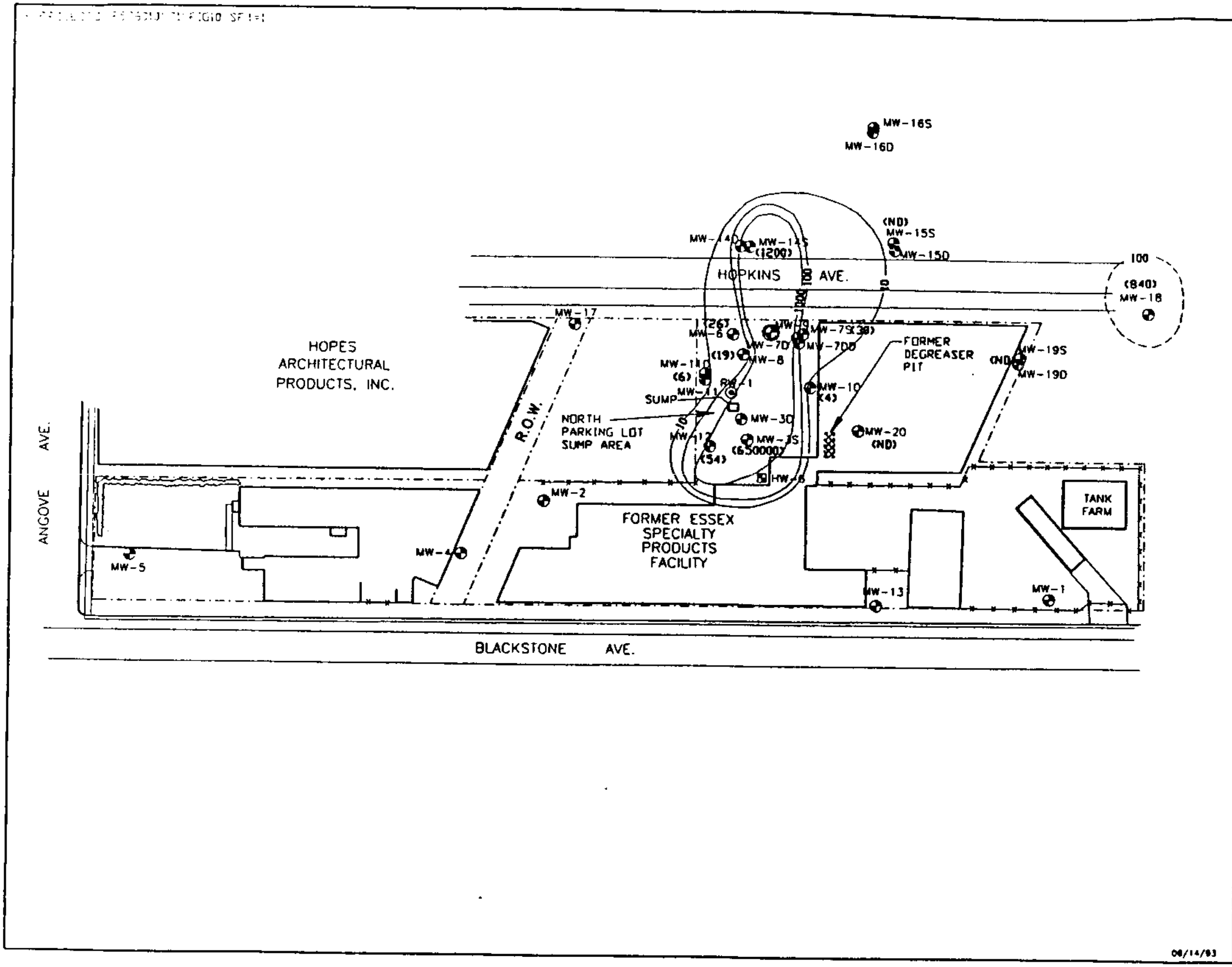


FIGURE 5

LEGEND

- PROPERTY BOUNDARY
- RW-1 MONITORING WELL
- RECOVERY WELL
- ABANDONED MONITORING WELL
- MONITORING WELL INSTALLED BY HOPES (APPROXIMATE LOCATION)
- 10 ISO-CONCENTRATION LINE (CONCENTRATION OF TCE IN ppb) (DASHED WHERE INFERRED)
- (ND) NON DETECT

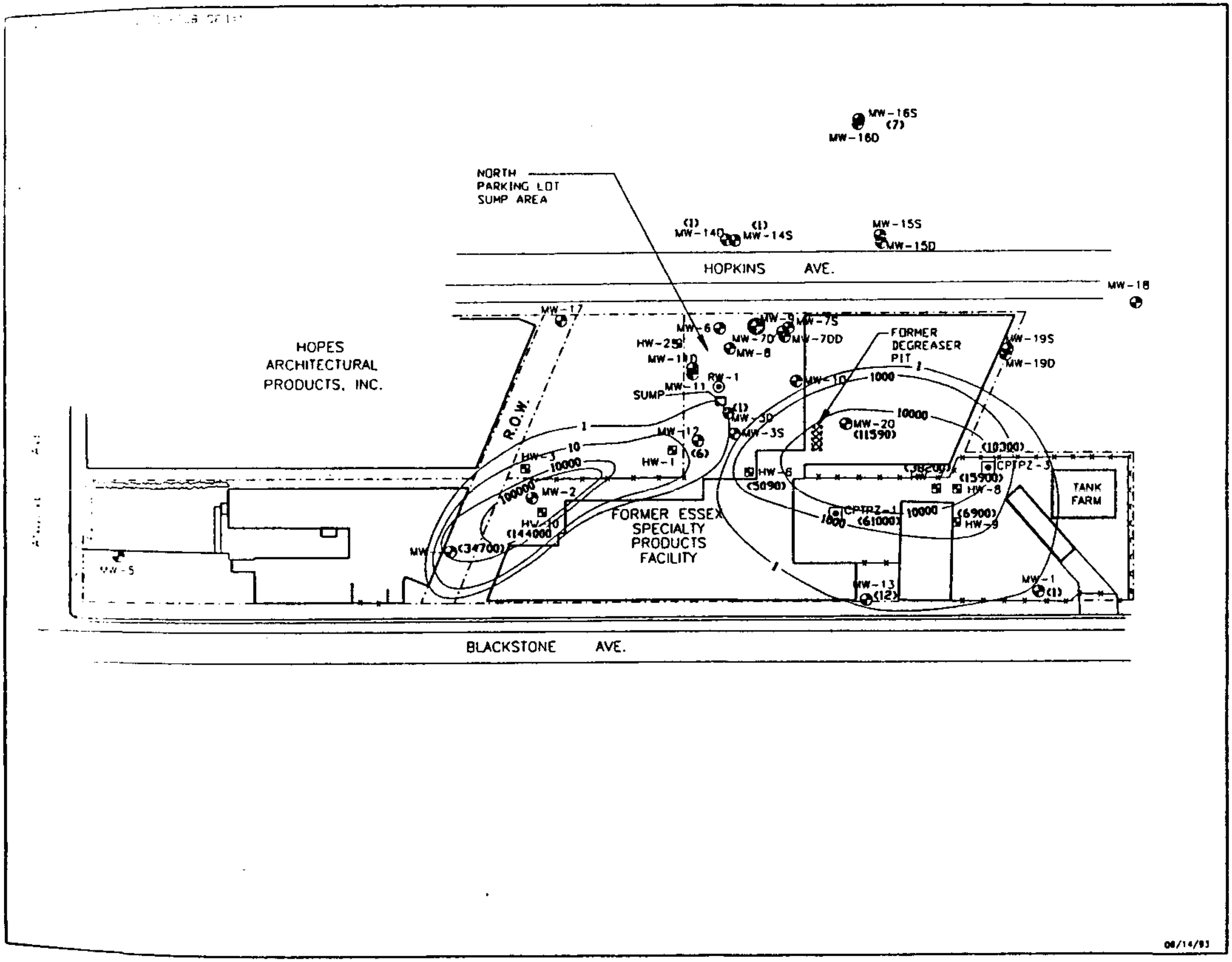
FEASIBILITY STUDY
ESSEX/HOPE SITE
JAMESTOWN, NEW YORK

SHALLOW GROUND WATER ANALYTICAL RESULTS - TCE CONTOUR MAP

1" = 80' 0 80 160
SCALE IN FEET

OBRIEN & GERE ENGINEERS INC
Syracuse New York

FIGURE 4



LEGEND

- PROPERTY BOUNDARY
- MONITORING WELL
- RW-1 RECOVERY WELL
- ABANDONED MONITORING WELL
- MONITORING WELL INSTALLED BY HOPE (APPROXIMATE LOCATION)
- 10 ISO-CONCENTRATION LINE (CONCENTRATION OF ETX IN ppb)
- CONE PENETROMETER GROUND GROUND WATER ANALYTICAL RESULTS - CONC. OF ETX IN ppb

FEASIBILITY STUDY
ESSEX/HOPE SITE
JAMESTOWN, NEW YORK

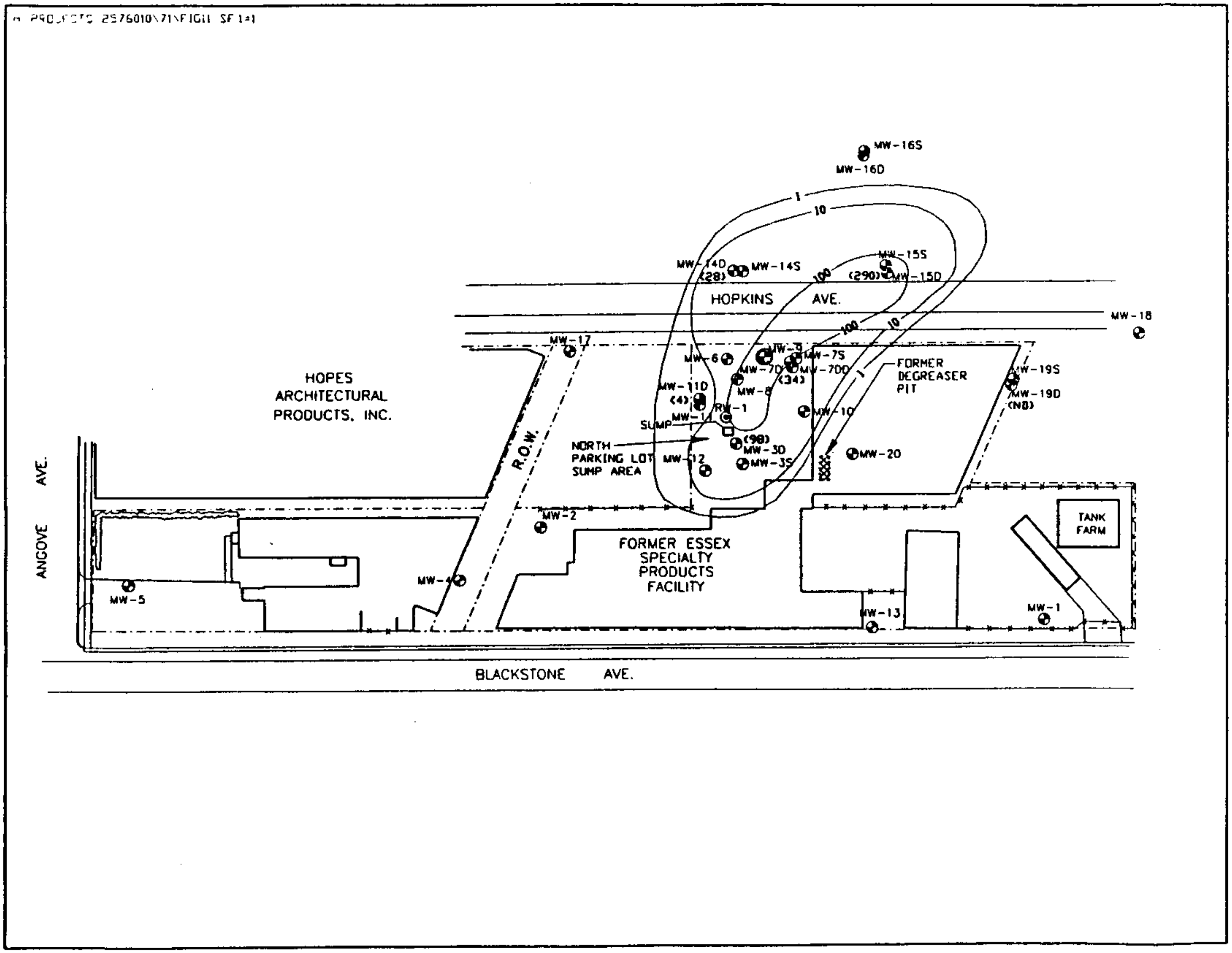
SHALLOW GROUND WATER ANALYTICAL RESULTS - ETHYLBENZENE, TOLUENE AND XYLENE (ETX) CONTOUR MAP

1" =80' 0 80 160

SCALE IN FEET

O'BRIEN & GERE ENGINEERS INC.
Syracuse, New York

FIGURE 6



LEGEND

- RW-1 PROPERTY BOUNDARY
- MONITORING WELL
- RECOVERY WELL
- ABANDONED MONITORING WELL
- (ND) NON DETECT
- 10 ISO-CONCENTRATION LINE (CONCENTRATION OF TCE IN ppb) (DASHED WHERE INFERRED)

FEASIBILITY STUDY
ESSEX/HOPE SITE
JAMESTOWN, NEW YORK

DEEP GROUND WATER ANALYTICAL RESULTS - TCE CONTOUR MAP

1" = 80' 0 80 160
SCALE IN FEET

O'BRIEN & GERE ENGINEERS INC.
Syracuse, New York

TABLE 1

ESSEX/HOPE SITE
JAMESTOWN, NEW YORK

SUMMARY OF CHEMICALS OF POTENTIAL CONCERN

Chemical	Ground Water Range (ug/l)	Soil Range (mg/kg)
<u>Volatile Organic Compounds</u>		
Acetone	μ - 50,000	
Benzene	μ - 310	
2-Butanone	μ - 2	
1,1-Dichloroethane	μ - 220	
1,1-Dichloroethene	μ - 19	
1,2-Dichloroethene (total)	μ - 68,000	< 0.011 - 4.8
Ethylbenzene	μ - 6,100	< 0.011 - 1,000
Methylene Chloride	μ - 50,000	< 0.011 - 0.15
Tetrachloroethene	μ	
1,1,1-Trichloroethane	μ - 28	
Trichloroethene	μ - 960,000	< 0.011 - 220
Toluene	μ - 220,000	< 0.011 - 410
Vinyl Chloride	μ - 2,300	
Xylenes (total)	μ - 31,000	< 0.011 - 3,600
<u>Semi-Volatile Organic Compounds/PCBs</u>		
BEHP	μ - 170	3.6 - 110*
Di-n-butylphthalate	μ - 1	
PCBs	μ - 290	μ - 33
<u>Inorganic Compounds</u>		
Arsenic	3.9 - 80.8	NA
Barium	87.3 - 3,900	NA
Beryllium	<1 - 9.0	NA
Cadmium	<2 - 10.1	NA
Chromium	15.4 - 247	NA
Iron	10,500 - 273,000	NA
Lead	9.6 - 292	NA

* = detected in surface soil only (0-2')
μ = Indicates the analyte was not detected in the sample or extraction.
NA = Not Analyzed

TABLE 2

ESSEX/HOPE SITE
JAMESTOWN, NEW YORK

SOIL AND GROUNDWATER
REMEDIAL ACTION OBJECTIVES (RAOs)

Media	Parameter	RAO
Soil	Total Volatile Organics Compounds (VOCs)	10 ppm
	Each Individual VOC	1 ppm
	Total Semi-Volatile Organic Compounds (SVOCs)	500 ppm
	Each Individual SVOC	50 ppm
	Polychlorinated Biphenyls (PCBs)	10 ppm
Groundwater(1)		
	Trans-1,2-Dichloroethylene	5 ppb
	Trichloroethene(trichloroethylene)	5 ppb
	Vinyl Chloride	5 ppb
	Ethylbenzene	5 ppb
	Toluene	5 ppb
	Xylene	5 ppb
	PCBs	0.1 ppb

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

ppm - part per million
ppb - part per billion

TABLE 3

ESSEX/HOPE SITE
JAMESTOWN, NEW YORK
SUMMARY OF PRELIMINARY COST ESTIMATES

Alternative	Description	Capital Cost	Annual O&M	Estimated Present Worth
1	-No Action -Monitoring	None	$ 43,600	$ 670,000
2	-GW containment -Excavation -Cap -Monitoring	$ 5,539,290	$ 12,600	$ 5,733,000
3	-GW treatment -Excavation -Vapor recovery -Capping -Monitoring	$ 839,985	$ 133,544	$ 2,893,000
4	-GW treatment -Excavation -Monitoring	$ 5,698,935	$ 172,564	$ 8,352,000
5	-GW treatment -Excavation -Vapor recovery -Capping -Air Sparging -Monitoring	$ 910,890	$ 133,172	$ 2,958,070

APPENDIX A

RESPONSIVENESS SUMMARY
for the
PROPOSED REMEDIAL ACTION PLAN

ESSEX/HOPE SITE INACTIVE HAZARDOUS WASTE SITE
JAMESTOWN(C), CHAUTAUQUA COUNTY
SITE NO. 907015

The Proposed Remedial Action Plan (PRAP) was prepared by the New York State Department of Environmental Conservation (NYSDEC) and issued to the local document repository on January 28, 1994. This Plan outlined the measures for the remediation of the Essex/Hope Site. The preferred remedy consists of:

- Excavation and off-site disposal of a layer of highly contaminated soil containing trichloroethylene (TCE) and polychlorinated biphenyls (PCBs) in the area of the north parking lot sump.

- Collection of groundwater utilizing a recovery well system and the physical/chemical treatment of the groundwater to meet appropriate discharge standards.

- Use of Air Sparging technology on groundwater and saturated soils in the north parking lot sump area to enhance contaminant reduction and reduce the length of the remediation period.

- Use of Air Stripping of unsaturated soils utilizing Soil Vapor Extraction technology in both the Underground Storage Tank Area (UST) and the Former UST/Aboveground Storage Tank Area.

- Installation of an asphalt cap in contaminated areas, to inhibit infiltration of precipitation and aid in the control of storm-water run-off away from the site.

- Implementation of long term monitoring and maintenance of the site to insure the integrity of the remedy. The long term monitoring program will be a component of Operation and Maintenance for the site and will be developed in accordance with the Remedial Design.

The release of the PRAP was announced via a notice to the mailing list and notice in the local newspaper, informing the public of the PRAP's availability and the time, date and location of the public meeting.

A public meeting was held on February 8, 1994 at the Jamestown Community College and included a presentation of the PRAP and a discussion of the proposed remedy. Comments on the proposed remedy were received from the public at the meeting and by writing during the comment period. The comment period closed March 6, 1994.

This Responsiveness Summary responds to all questions and comments raised at the February 8, 1994 public meeting and received in writing by the Department during the comment period. Comments received have become part of the Administrative Record for this site. A stenographic record of the meeting was compiled and is available for review in the document repository.

The following are comments related to the PRAP and the State's response:

COMMENT #1: Regarding soil vapor extraction and groundwater extraction: How will you further treat the contaminants once they are drawn off? Will you use carbon adsorption or another technology?

RESPONSE #1: The degree of treatment required for the disposal of the groundwater generated at the site will be dependent on the point of discharge. Discharge standards for either a Publicly Owned Treatment Works (POTW) (if discharged to the sanitary sewer) or a direct discharge to surface waters will be reviewed during design of the remedial system. It is anticipated that some degree of treatment of groundwater will be required prior to its discharge. The discharge of contaminants from the Soil Vapor Extraction System may also need to be treated when compared to the allowable air discharge standards and the amount of contaminants to be removed from the soil. The use of carbon adsorption is a typical method of treating organics compounds such as those found on this site and will be considered during design of the system.

COMMENT #2: There were a large number of monitoring wells drilled near the site. Were any drilled near the Chadakoin River to determine if it is being impacted? Was the River itself sampled? What about the residential area?

RESPONSE #2: Monitoring well installation was performed in stages so as to track the extent of contamination away from the source on-site. As the distance away from the source increased the concentration in the groundwater proportionally decreased until contaminants were at low or non-detectable levels at the point sampled farthest from the site. Additional monitoring wells past this point were not necessary at this time. The location of the monitoring wells in relation to the residential area and the Chadakoin River are shown on Figures 8 and 9 of the Feasibility Study. In addition, samples of the Chadakoin River were also collected and analyzed. The analysis did not detect any contamination from the site in the river water samples.

COMMENT #3 The remedy should remediate the presence of trichloroethylene (TCE) in the deep aquifer at Plant 5 to prevent the spread of TCE in the northerly direction

RESPONSE #3 The chosen remedial action will address the TCE in the deep aquifer in the North Parking Lot Sump Area (adjacent former Hope Plant #5) with the installation of a groundwater extraction system. The system will be designed to reverse the groundwater gradient in the area of the contamination so as to both capture contamination on and off the site.

COMMENT #4 The remedy should remediate the DNAPL (Dense Non-Aqueous Phased Liquid) "spotting" noted in the vicinity of SB-2 and SB-3.

RESPONSE #4 The chosen remedial action includes the excavation of a highly contaminated layer of soil, containing TCE and PCBs, in the area of SB-2 and SB-3 in the North Parking Lot Sump Area. The soil is being removed to reduce the over all time required to remediate this area by removing a known source of DNAPL that would contribute to groundwater contamination in this area.

COMMENT #5 The remedy should take adequate steps to detect and prevent the off-site migration of TCE in the shallow and deep aquifer from Plant 5 to the north/northeast (ie: in the direction of Hope's Architectural's Plant 6 and the Chadakoin River).

RESPONSE #5 The chosen remedial action will prevent the off-site migration of TCE in the shallow and deep aquifer through the use of a groundwater extraction well system. In addition, the shallow groundwater water will also be remediated through the use of Air Sparging technology, so as to reduce the time required to attain the remedial action objectives established for the site.

COMMENTS #6 The remedy should take adequate steps to detect and prevent the off-site migration of solvent contamination from the vicinity of MW-2, in a northerly direction (ie: in the direction of Hope's Architectural's Plant 1, the "former railroad right-of-way," Hope's Architectural's Plant 3 and 6, and the Chadakoin River).

RESPONSE #6 The chosen remedial action will prevent the migration of ethylbenzene, toluene and xylene contamination in the area of MW-2 through the use of a groundwater extraction well system. A long term monitoring plan will be implemented to monitor the progress of the remedial action and determine if additional actions are necessary to achieve the objectives of the project.

APPENDIX B

ADMINISTRATIVE RECORD

ESSEX/HOPE SITE
SITE NO. 907015
JAMESTOWN(C), CHAUTAUQUA COUNTY

DATE:	ITEM:
12/14/90	S.Kaczmar to NYSDEC, Submission of Draft Remedial Investigation report dated 12/90
02/27/91	R.Marino to Lilly Ind. Coatings, Notification of listing property as a Class 2 site on the NYS Registry of Inactive Hazardous Waste Sites.
06/26/91	Effective date of Remedial Investigation/Feasibility Study Order on Consent
08/07/91	S.Kaczmar to G. Sutton, Transmittal of Draft RI/FS work plan dated August 1991
10/23/91	S.Kaczmar to G.Sutton, Transmittal of Stained Soil Area IRM Work Plan dated October 1991
10/31/91	S.Kaczmar to G.Sutton, Transmittal of Addendum 1 to Stained Soil IRM Work Plan
10/31/91	Effective date of Stained Soil Interim Remedial Measure Order on Consent
11/91	November 19, 1991 Public Meeting announcement
11/19/91	Public meeting to discuss proposed Remedial Investigation activities
12/02/91	G.Sutton to D.Stuart, NYSDEC/DOH approval of Stained Soil Area Interim Remedial Measure (IRM) Workplan dated October 1991
12/02/91	G.Sutton to D.Stuart, NYSDEC/DOH approval of Remedial Investigation/Feasibility Study Workplan dated November 1991
02/06/92	S.Kaczmar to G. Sutton, Transmittal of Former Storage Tank Area IRM Work Plan, February 1992
04/06/92	D.Towers to G.Sutton, Transmittal of Stained Soil Area IRM Plans and Specifications
04/17/92	A.Farrel to G.Sutton, Transmittal of Addendums 2 & 3 to Plans and Specification for Stained Soil IRM
04/27/92	S.Kaczmar to G.Sutton, Preliminary results remedial investigation and proposal for additional work
04/30/92	G.Sutton to D.Stuart, NYSDEC/DOH approval of Former Storage Tank Area IRM
06/18/92	S.Kaczmar to G.Sutton, Proposal for additional remedial investigation work
07/24/92	Submittal of Stained Soil Area Summary Report by O'Brien & Gere (OBG) Engineers
08/21/92	Submittal of Draft North Parking Lot Sump Area IRM Work Plan by O'Brien & Gere (OBG) Engineers
10/22/92	Submittal of Draft Remedial Investigation Report by O'Brien & Gere (OBG) Engineers
11/92	Citizen Participation Plan, Essex/Hope Site, City of Jamestown, Chautauqua Co.

02/04/93	S.Kaczmar to G.Sutton, Submission of Work Plan for additional Remedial Investigation activities dated February 1993
02/17/93	S.Kaczmar to G.Sutton, Proposal to for DNAPL investigation activities in the area of the north parking lot sump area
02/26/93	S.Kaczmar to G.Sutton, Submission of draft Remedial Action Objectives
03/15/93	Information Fact Sheet mailing
03/26/93	G.Sutton to W.Witt, NYSDEC/DOH comments on preliminary Remedial Action Objectives
03/30/93	S.Kaczmar to G.Sutton, Request to operate Soil Vapor Extraction (SVE) Pilot Plant Study
06/02/93	S.Kaczmar to G.Sutton, Submittal of draft RI Supplemental Investigation Report dated June 1993
07/16/93	S.Kaczmar to G.Sutton, Transmittal of draft Feasibility Study dated July 1993
07/16/93	G.Sutton to S.Kaczmar, Approval of long term SVE Pilot Plant study
07/23/93	G.Sutton to W.Witt, NYSDEC/DOH approval of Remedial Investigation Report of October 1992 and supplemental information
09/17/93	Information Fact Sheet mailing
10/11/93	S.Kaczmar to G. Sutton, Response to NYSDEC/DOH comments of September 7, 1993
10/27/93	G.Sutton to W.Witt, Comments on OBG letter of October 11, 1993
11/30/93	S.Kaczmar to G. Sutton, Response to NYSDEC/DOH comments of September 7, 1993
01/24/94	Notice of Public Meeting of February 8, 1994