Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision
Olin Industrial Welding Site
Operable Unit No. 3
City of Niagara Falls, Niagara County, New York
Site Number 9-32-050

March 2006

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* DENISE M. SHEEHAN, *Commissioner*

DECLARATION STATEMENT - RECORD OF DECISION

Olin Industrial Welding Inactive Hazardous Waste Disposal Site
Operable Unit No. 3
City of Niagara Falls, Niagara County, New York
Site No. 9-32-050

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedy for Operable Unit #3 of the Olin Industrial Welding site, a Class 2 inactive hazardous waste disposal site. The selected remedial program was chosen in accordance with the New York State Environmental Conservation Law 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 Operable Unit #3 of the Olin Industrial Welding inactive hazardous waste disposal site, and the public's input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A listing of the documents included as a part of the Administrative Record is included in Appendix B of the ROD.

Assessment of the Site

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

Description of Selected Remedy

Based on the results of the Environmental Investigations of the Olin Industrial Welding site and the criteria identified for evaluation of alternatives, the NYSDEC has selected the construction of an asphalt cover system as the remedy for this site. The components of the remedy are as follows:

- A remedial design program will be implemented to provide the details necessary for the construction, maintenance, and monitoring of the remedy.
- Placement of an asphalt pavement cover system over the site surface with appropriate storm water controls.
- Development of a site management plan to address residual soil and groundwater contamination and any use restrictions.
- Imposition of an institutional control in the form of an environmental easement.
- Periodic certification of the institutional and engineering controls.

- Maintenance of the components of the remedy until remedial objectives have been achieved, or until a NYSDEC/NYSDOH determination that continued operation is not feasible.

- A long term groundwater monitoring program to evaluate effectiveness of the cover system.

New York State Department of Health Acceptance

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

Declaration

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

MAR 24 2006

Date

Dale A. Desnoyers, Director
Division of Environmental Remediation

TABLE OF CONTENTS

RECORD OF DECISION

OLIN INDUSTRIAL WELDING SITE
Operable Unit No. 3
Niagara Falls, Niagara County, New York
Site No. 9-32-050
March 2006

SECTION 1: SUMMARY OF THE RECORD OF DECISION

The New York State Department of Environmental Conservation (NYSDEC), in consultation with the New York State Department of Health (NYSDOH), has selected this remedy for Operable Unit No. 3 of the Olin Industrial Welding site. The presence of hazardous waste has created significant threats to human health and the environment that are addressed by this remedy. As more fully described in Sections 3 and 5 of this document, on-site disposal activities have resulted in the disposal of hazardous wastes, including SVOCs, pesticides and metals. These wastes have contaminated the soils and groundwater at the site and have resulted in:

- a significant threat to human health associated with potential direct exposure to contaminated site soils and groundwater;

To eliminate or mitigate these threats, the NYSDEC has selected the following remedy:

- A remedial design program will be implemented to provide the details necessary for the construction, maintenance, and monitoring of the remedy.
- Placement of an asphalt pavement cover system over the site surface with appropriate storm water controls.
- Development of a site management plan to address residual soil and groundwater contamination and any use restrictions.
- Imposition of an institutional control in the form of an environmental easement.
- Periodic certification of the institutional and engineering controls.
- Maintenance of the components of the remedy until remedial objectives have been achieved, or until a NYSDEC/NYSDOH determination that continued operation is not feasible.
- A long term groundwater monitoring program to evaluate effectiveness of the cover system.

The selected remedy, discussed in detail in Section 8, is intended to attain the remediation goals identified for this site in Section 6. The remedy must conform with officially promulgated standards and criteria that

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

SECTION 2: SITE LOCATION AND DESCRIPTION

The Olin Industrial Welding site is located in the City of Niagara Falls on the west side of Veterans Drive between Buffalo Avenue and 30th Street. The site is approximately 13 acres in size and is bordered to the north and west by commercial and residential properties, to the east by Veterans Drive (and Gill Creek immediately east of that), and to the south by Buffalo Avenue. The entire Olin Industrial Welding site is surrounded by a perimeter chain-link fence. Figure 1 shows the site location and surrounding area.

An operable unit represents a portion of the site remedy that for technical or administrative reasons can be addressed separately to eliminate or mitigate a release, threat of release or exposure pathway resulting from the site contamination. Operable Unit (OU) No. 3 (also referred to as the Packard Road Parcel), which is the subject of this document, consists of the southern portion of the Olin Industrial Welding site between Buffalo Avenue and the previously capped northern portions of the Olin Industrial Welding site (OU 2). Figure 2 shows the site details. The OU3 portion of the Olin Industrial Welding site is an area of approximately 4.3 acres. It is relatively flat with a surface which is mostly covered by dirt and some limited natural vegetation. Approximately 1/4 of the OU3 parcel is covered by concrete slabs (former building floors). Two soil "mounds", with heights of 3 to 5 feet above ground surface, are also present on the western half of the OU3 parcel.

The other operable units for this site are: Operable Unit No. 1, which consisted of removal of sediments from the adjacent stretch of Gill Creek (from the bridge at Falls Street to the bridge at Buffalo Avenue), with consolidation of the sediment under the northern Olin Industrial Welding site cover system; and Operable Unit No. 2, which consisted of the original Olin Industrial Welding site as well as the adjacent former American Legion Post property. Olin completed remedial measures on Operable Unit No. 1 in 1998. Olin completed remedial measures for Operable Unit No. 2 in 1999.

SECTION 3: SITE HISTORY

3.1: Operational/Disposal History

The Olin Industrial Welding site was used for a lab and a process plant under an Olin pilot program during the early-mid 1950s. The buildings were removed thereafter, and in the late 1950s the site was filled and graded by Olin using process wastes and plant and building debris. Wastes reportedly disposed on site during this period include brine sludge, fly ash, and building debris contaminated with hexachlorocyclohexane (BHC).

3.2: Remedial History

In 1983 the NYSDEC listed the site as a Class 2 site in the Registry of Inactive Hazardous Waste Disposal Sites in New York. A Class 2 site is a site where hazardous waste presents a significant threat to the public health or the environment and action is required.

The Olin Corporation conducted a Remedial Investigation and Feasibility Study (RI/FS) of OU1/OU2 from 1987 to 1993. A Record of Decision was issued in November 1994 which required: consolidation of

contaminated soils and Gill Creek sediments on the site; installation of a leachate collection and discharge system to control perched groundwater; installation of a cover system to limit infiltration and prevent direct contact with wastes; long term land use restrictions; and operation, monitoring, and maintenance of the remedial systems.

Olin completed construction of OU1 (removal of sediments and re-vegetation of Gill Creek) in 1998. The DEC issued an explanation of significant differences (ESD) in October 1999 which allowed the use of an asphalt cover as an equivalent cover to the remedy detailed for OU2 in the November 1994 Record of Decision. Olin completed construction of OU2 in 1999. The OU2 remedial system consisted of a low permeability liner system with a soil/grass cover over the northern portion of the site, and an asphalt cover system over the southern portion of the site (also known as the former American Legion Post property). The OU2 remedial system also included a combined leachate collection and discharge system. Figure 2 depicts the details of the Olin Industrial Welding site, with completed remedial features (OU2) on the center and northern portions of the site, and OU3 on the southern portion of the site.

SECTION 4: ENFORCEMENT STATUS

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

The NYSDEC and Olin Corporation entered into a Consent Order for an RI/FS on November 11, 1987. A subsequent Order was issued on March 3, 1997 for the implementation of the remedial design and construction, including operation, maintenance and monitoring.

SECTION 5: SITE CONTAMINATION

An remedial investigation (RI) of OU3 was completed which was used to identify potential significant threats to human health and the environment.

5.1: 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 during 2001. The field activities and findings of the investigation are described in the January 18, 2002 "Environmental Characterization Report" and the July 31, 2002 "Supplemental Groundwater Data Report".

The following activities were conducted to characterize the nature and extent of site contamination on the OU3 portion of the Olin Industrial Welding site:

- Installation of 67 soil borings and 2 monitoring wells for analysis of soils and groundwater, physical properties of soil, and hydrogeologic conditions;
- Sampling of the 2 new monitoring wells;
- 5 samples collected from the two soil/debris piles; and
- Collection of 181 soil samples from 72 sampling locations.

To determine whether the soil and groundwater contain contamination at levels of concern, data from the investigation were compared to the following Standards, Criteria, and Guidance (SCGs):

- Groundwater, drinking water, and surface water SCGs are based on NYSDEC "Ambient Water Quality Standards and Guidance Values" and Part 5 of the New York State Sanitary Code.

- Soil SCGs are based on the NYSDEC "Technical and Administrative Guidance Memorandum (TAGM) 4046; Determination of Soil Cleanup Objectives and Cleanup Levels".

Based on the RI results, in comparison to the SCGs and potential public health and environmental exposure routes, certain media and areas of the site require remediation. These are summarized below. More complete information can be found in the Environmental Characterization Report.

5.1.1: Site Geology and Hydrogeology

The OU3 parcel stratigraphy is similar to the remainder of the Industrial Welding site to the north. The upper portion of the overburden consists of fill materials comprised mostly of soil, but also containing some gravel, cinders, brick, asphalt, etc. The majority of the overburden is a silty clay which ranges in thickness from 1 to13 feet. In some areas of the site there is a silty sand layer directly above the bedrock surface. Bedrock ranges in depth from 4 to 18 feet below grade.

In general, there are 3 groundwater aquifers in the vicinity of the Olin Industrial Welding site- perched, shallow, and deep. The perched aquifer was identified in the area north of OU3 as the water bearing zone above the native clay layer. A shallow aquifer was identified on the eastern portion of the Olin Industrial Welding site, and extends from the silty clay layer to the top of bedrock. These overburden aquifers are not continuous over the entire Olin Industrial Welding site. The deep aquifer begins at a depth of approximately 30 feet below grade (and corresponds to the bedrock B-fracture zone and below as designated at the nearby Olin, DuPont, and Solvent Chemical sites).

5.1.2: Nature of Contamination

As described in the Environmental Characterization report, many soil and groundwater samples were collected to characterize the nature and extent of contamination. As summarized in Table 1, the main categories of contaminants of concern that exceed their SCGs are semi-volatile organic compounds, pesticides, and metals.

The primary pesticides of concern are hexachlorocyclohexanes (BHCs) such as alpha-BHC, beta-BHC, delta-BHC, and gamma-BHC (lindane). The primary metal of concern is mercury. Numerous polycyclic aromatic hydrocarbons (PAHs) were also detected in site soils above SCGs. However this is likely due to the presence of fill materials at the site (such as asphalt, etc.). Fill materials such as this are typical in the urban area where the site is located.

5.1.3: Extent of Contamination

This section describes the findings of the investigation for all environmental media that were investigated.

Chemical concentrations are reported in parts per billion (ppb) for water, and parts per million (ppm) for soil. For comparison purposes, where applicable, SCGs are provided for each medium.

Tables 1 and 2 summarize the degree of contamination for the contaminants of concern in site soils and groundwater and compares the data with the SCGs for the site. The following are the media which were investigated and a summary of the findings of the investigation.

Surface Soil

Since a cover system similar to the remainder of the Olin Industrial Welding site was anticipated for the OU3 portion of the site, surface soil was not characterized.

Subsurface Soil

Soil borings were completed on the northern end of OU3 (closest to the previously capped portion of the Olin Industrial Welding site) using a 50'x50' grid pattern spacing. Soil borings on the remainder of the OU3 parcel were conducted using a 75'x75' grid spacing pattern. A total of 67 soil borings were installed in the overburden. Continuous split spoon samples were collected from each soil boring location in order to characterize the nature of the overburden material and determine the nature and extent of soil contamination. Soil samples were generally collected from each split spoon retrieved, to a depth of about 8 feet. In areas where concrete slabs were present, the concrete was penetrated at those locations in order to perform the boring. Figure 3 indicates soil boring locations.

PAHs, pesticides, and mercury were detected in concentrations above SCGs throughout the site. PAHs detected in site soils include benzo(a)anthracene at up to 140 ppm (vs. SCG of 0.224 ppm), benzo(a)pyrene at up to 130 ppm (vs. SCG of 0.061 ppm), chrysene at up to 140 ppm (vs. SCG of 0.4 ppm), benzo(b)flouranthene at up to 110 ppm (vs. SCG of 1.1 ppm), benzo(k)flouranthene at up to 130 ppm (vs. SCG of 1.1 ppm), indeno(1,2,3-cd)pyrene at up to 80 ppm (vs. SCG of 3.2 ppm), and dibenzo(a,h)anthracene at up to 44 ppm (vs. SCG of 0.014 ppm). Pesticides detected in site soils include alpha-BHC at up to 5.9 ppm (vs. SCG of 0.11 ppm), beta-BHC at up to 5.3 ppm (vs. SCG of 0.2 ppm), delta-BHC at up to 1.0 ppm (vs. SCG of 0.3 ppm) and gamma-BHC at up to 1.0 ppm (vs. SCG of 0.06 ppm). Mercury concentrations detected in soils were generally less than 300 ppm (vs. SCG of 0.1 ppm). The highest concentration of mercury detected was 1850 ppm, and was from soil at a depth of 2 to 4 feet below ground surface. Table 1 indicates the range of PAH, pesticide, and mercury concentrations detected in site soils, and the number of samples which exceeded SCGs.

While some subsurface soils contain very high mercury, pesticide, and PAH concentrations, these contaminants are generally not concentrated in particular areas or depths in site soils. The contaminants are distributed across the site and at various depths, and as such, there are no soil contaminant "source areas" present.

Groundwater

Two groundwater monitoring wells (PRMW-1 and PRMW-2) were installed within the overburden to characterize the nature and extent of any groundwater impacts from the site. Figure 3 shows the well locations. No PAHs were detected above groundwater SCGs. Several pesticides were detected in

concentrations above groundwater SCGs. Beta BHC was detected up to 0.52 ppb (vs. standard of 0.04 ppb), and gamma BHC was detected at up to 0.058 ppb (vs. standard of 0.05 ppb). Mercury was detected in one of the groundwater wells above SCGs (up to 1.3 ppb vs. standard of 0.7 ppb). Table 2 indicates the range of pesticide and mercury concentrations detected in groundwater, and the number of samples which exceeded SCGs.

5.2: Interim Remedial Measures

An interim remedial measure (IRM) is conducted at a site when a source of contamination or exposure pathway can be effectively addressed before completion of the RI/FS. There were no IRMs performed at this site during the RI/FS.

5.3: Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. An exposure pathway describes the means by which an individual may be exposed to contaminants originating from a site. An exposure pathway has five elements: [1] a contaminant source, [2] contaminant release and transport mechanisms, [3] a point of exposure, [4] a route of exposure, and [5] a receptor population.

The source of contamination is the location where contaminants were released to the environment (any waste disposal area or point of discharge). Contaminant release and transport mechanisms carry contaminants from the source to a point where people may be exposed. The exposure point is a location where actual or potential human contact with a contaminated medium may occur. The route of exposure is the manner in which a contaminant actually enters or contacts the body (e.g., ingestion, inhalation, or direct contact). The receptor population is the people who are, or may be, exposed to contaminants at a point of exposure.

An exposure pathway is complete when all five elements of an exposure pathway exist. An exposure pathway is considered a potential pathway when one or more of the elements currently does not exist, but could in the future.

At this site, contamination exists in soils and groundwater. For a complete exposure pathway to occur, persons would have to come into contact with the contaminated soil or groundwater. Exposure to these media could occur through excavation activities at the site. Because the site is fenced, the only current potential pathway of exposure is for utility workers who may enter on-site utility trenches during repair or replacement activities. The potential pathway is:

- Dermal (skin) contact with contaminated soils and groundwater.

The site is located in an industrial area and is not readily accessible to the general public or employees of adjacent businesses. Exposures to contaminated groundwater via drinking water are not expected since all occupied structures in the area are served by public water. Completed pathways may occur in the future for utility workers or site workers during subsurface construction activities.

5.4: Summary of Environmental Impacts

This section summarizes the existing and potential future environmental impacts presented by the site. Environmental impacts include existing and potential future exposure pathways to fish and wildlife receptors, as well as damage to natural resources such as aquifers and wetlands.

The OU3 portion of the Olin Industrial Welding site does not currently pose any significant environmental impacts. Site contamination has impacted the groundwater resource in the overburden aquifer. However, these impacts are limited, as the overburden aquifer yields little water. Potential storm water runoff from the OU3 portion of the site is be collected by the local combined (sanitary and storm water) sewer, which is treated by the Niagara Falls waste water treatment plant.

SECTION 6: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. At a minimum, the remedy selected must eliminate or mitigate all significant threats to public health and/or the environment presented by the hazardous waste disposed at the site through the proper application of scientific and engineering principles.

The remediation goals for this site are to eliminate or reduce to the extent practicable:

- exposures of persons at or around the site to PAHs, pesticides, and mercury in site soils and groundwater; and

- the release of contaminants from soil into groundwater that may create exceedances of groundwater quality standards.

SECTION 7: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy must be protective of human health and the environment, be cost-effective, comply with other statutory requirements, and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Given the fact that cover systems have been successfully employed on the remainder of the Olin Industrial Welding site (OU2 which included an asphalt cover on the southern portion and a low permeability membrane and soil cover on the northern portion), the remedial alternatives considered for OU3 were limited. A remedy was proposed by Olin for OU3 of the Olin Industrial Welding site which is similar to the asphalt cap portion of the OU2 remedy. The remedy proposed by Olin for OU3 is detailed in the June 2005 document entitled "Conceptual Engineering Design - Asphalt Cap", which is available for review at the document repositories identified in Section 1.

A summary of the remedial alternatives that were considered for this site are discussed below. The present worth represents the amount of money invested in the current year that would be sufficient to cover all present and future costs associated with the alternative. This enables the costs of remedial alternatives to be compared on a common basis. As a convention, a time frame of 30 years is used to evaluate present worth costs for alternatives with an indefinite duration. This does not imply that operation, maintenance, or monitoring would cease after 30 years if remediation goals are not achieved.

7.1: Description of Remedial Alternatives

The following potential remedies were considered to address the contaminated soils and groundwater at the site.

Alternative 1: No Action

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

Present Worth: *$0*
Capital Cost: *$0*
Annual OM&M: *$0*

Alternative 2: Institutional Controls

Institutional controls would be implemented to restrict site access and prevent human exposures to site contaminants within the soils and groundwater. Site access would be physically controlled by long term maintenance of the perimeter fence. An environmental easement would be implemented to prevent future site uses which may be incompatible with the site remedy. A site management plan would be developed to ensure that any future site use be limited to commercial or industrial uses and that any future construction include appropriate mitigation efforts to deal with contaminated site soils and groundwater. Periodic certification would be required from the property owner that the institutional controls are still in place and that nothing has occurred that would impair the ability of the controls to protect public health or the environment.

This alternative would also include an annual groundwater monitoring program to assess long term site contamination and the effectiveness of the institutional controls at achieving the remedial objectives. Overburden groundwater samples would be collected and analyzed from the two existing wells. The implementation of the environmental easement and development of an Operation, Monitoring, and Maintenance (OM&M) plan for the institutional controls could be completed and finalized in 3-6 months.

Present Worth: *$87,000*
Capital Cost: *$10,000*
Annual OM&M: *$5,000*

Alternative 3: Asphalt Cover System

This alternative would include the placement of an asphalt pavement cover over the site. The objective of this alternative would be to eliminate potential human exposures to contaminated soils and groundwater. It would also reduce infiltration into site soils, thereby limiting the release of contaminants from soil into groundwater. The asphalt cover system would be similar to the adjacent asphalt cover employed on the adjacent portion of the Olin Industrial Welding site. The existing soil/debris piles would either be graded and compacted over the site or removed prior to construction of the cover. Conceptually, the asphalt cover would consist of: a 6 inch layer of sub-base material (crushed stone or other suitable material) which would be overlaid by 3.5 inches of asphalt. The asphalt mix used

would be similar to the adjacent asphalt cover of OU2, and would be formulated and constructed to achieve a permeability of $1x10^{-7}$ cm/s or less. Because the high asphalt content pavement will be softer than standard paving asphalt, it will not be suitable for vehicular traffic. The fence around OU3 will therefore be maintained in order to prevent unauthorized site access. The cover system would also incorporate storm water collection and discharge features.

An environmental easement would be implemented to prevent future site uses which may be incompatible with the site remedy. A site management plan would be developed to ensure that any future site use be limited to commercial or industrial uses and that any future construction include appropriate mitigation efforts to deal with contaminated site soils and groundwater. Periodic certification would be required from the property owner that the institutional and engineering controls are still in place and that nothing has occurred that would impair the ability of the controls to protect public health or the environment. This alternative would also include a periodic groundwater monitoring program to assess long term site contamination and the effectiveness of the remedy at achieving the remedial objectives. Overburden groundwater samples would be collected and analyzed from the two existing wells.

The design of the cover system could be completed in 3-6 months, and construction of the cover system would likely take 1-2 months.

Present Worth: *$1,010,000*
Capital Cost: *$750,000*
Annual OM&M: *$17,000*

7.2 Evaluation of Remedial Alternatives

The criteria to which potential remedial alternatives are compared are defined in 6 NYCRR Part 375, which governs the remediation of inactive hazardous waste disposal sites in New York State. A detailed discussion of the evaluation criteria and comparative analysis is included in the FS report.

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

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

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 NYSDEC has determined to be applicable on a case-specific basis.

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.

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.

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.

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

7. Cost-Effectivness. Capital costs and operation, maintenance, and monitoring costs are estimated for each alternative and compared on a present worth basis. Although cost-effectiveness is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the other criteria, it can be used as the basis for the final decision. The costs for each alternative are presented in Table #2.

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

8. Community Acceptance - Concerns of the community regarding the RI and the PRAP have been evaluated. The responsiveness summary (Appendix A) presents the public comments received and the manner in which the NYSDEC addressed the concerns raised. In general, the public comments received at the public meeting were supportive of the selected remedy.

SECTION 8: SUMMARY OF THE SELECTED REMEDY

Based upon the Administrative Record (Appendix B) and the discussion presented below, the NYSDEC has selected Alternative #3 - an asphalt cover system, as the remedy for this site. The elements of this remedy are described at the end of this section.

The selected remedy is based on the results of the RI and a remedy consideration process which acknowledges the effectiveness of the adjacent cover systems constructed on the remainder (OU2) portion of the Olin Industrial Welding site.

Alternative 3 has been selected because, as described below, it satisfies the threshold criteria and also provides the best balance of the primary balancing criteria described in Section 7.2. It will achieve the remediation goals for the site by preventing potential direct human contact with contaminated soils and

groundwater, and it will reduce infiltration into site soils, thereby limiting the release of contaminants from soil into groundwater which may create exceedances of groundwater quality standards.

Alternative 3 has short-term impacts which can easily be controlled. The time needed to achieve the remediation goals is slightly longer for Alternative 3 (due to needed construction time) than Alternative 2.

Alternatives 2 and 3 both rely on property use restrictions and long-term monitoring to achieve satisfactory long term effectiveness and permanence. Alternative 1 does not provide long term effectiveness or permanence since the site fence is not be maintained to prevent unauthorized site access.

None of the alternatives reduce the volume of contaminated soils on the OU3 portion of the Olin Industrial Welding site. Therefore, restrictions on the use of the property are needed. Alternative 3 reduces the infiltration of water into site soils, thereby limiting further impacts to site groundwater.

Alternatives 1, 2 and 3 are all readily implementable.

Alternative 3 is the most expensive alternative, since it involves design and construction. Alternative 3 also includes higher long term OM&M costs than alternative 2.

The estimated present worth cost to implement the remedy is $ 1,010,000. The cost to construct the remedy is estimated to be $750,000 and the estimated average annual operation, maintenance, and monitoring costs for 30 years is $17,000.

The elements of the selected remedy are as follows:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.

2. Placement of an asphalt pavement cover over the site surface with appropriate storm water controls. The asphalt mix used will be similar to the adjacent asphalt cap of OU2, and will be formulated and constructed to achieve a permeability of $1x10^{-7}$ cm/s or less. Since the low permeability asphalt will be softer than standard paving asphalt, it will not be suitable for vehicular traffic. The fence around OU3 will be maintained in order to prevent unauthorized site access.

3. Development of a site management plan to: (a) address residual contaminated soils that may be excavated from the site during future redevelopment. The plan will require soil characterization and, where applicable, disposal/reuse in accordance with NYSDEC regulations; (b) identify any use restrictions; and (d) provide for the maintenance of the components of the remedy.

4. Imposition of an institutional control in the form of an environmental easement that will (a) require compliance with the approved site management plan; (b) limit use and development of the property to commercial or industrial uses which do not impact the integrity of the asphalt cover and drainage features; (c) restrict the use of groundwater as a source of potable water,

without necessary water quality treatment as determined by NYSDOH; and (d) require the property owner to complete and submit to the NYSDEC a periodic certification.

5. The property owner will provide periodic certification, prepared and submitted by a professional engineer or such other expert acceptable to the NYSDEC, until the NYSDEC notifies the property owner in writing that this certification is no longer needed. This submittal will contain certification that the institutional controls and engineering controls are: still in place; allow the NYSDEC access to the site; and that nothing has occurred that would impair the ability of the control to protect public health or the environment, or constitute a violation or failure to comply with the site management plan.

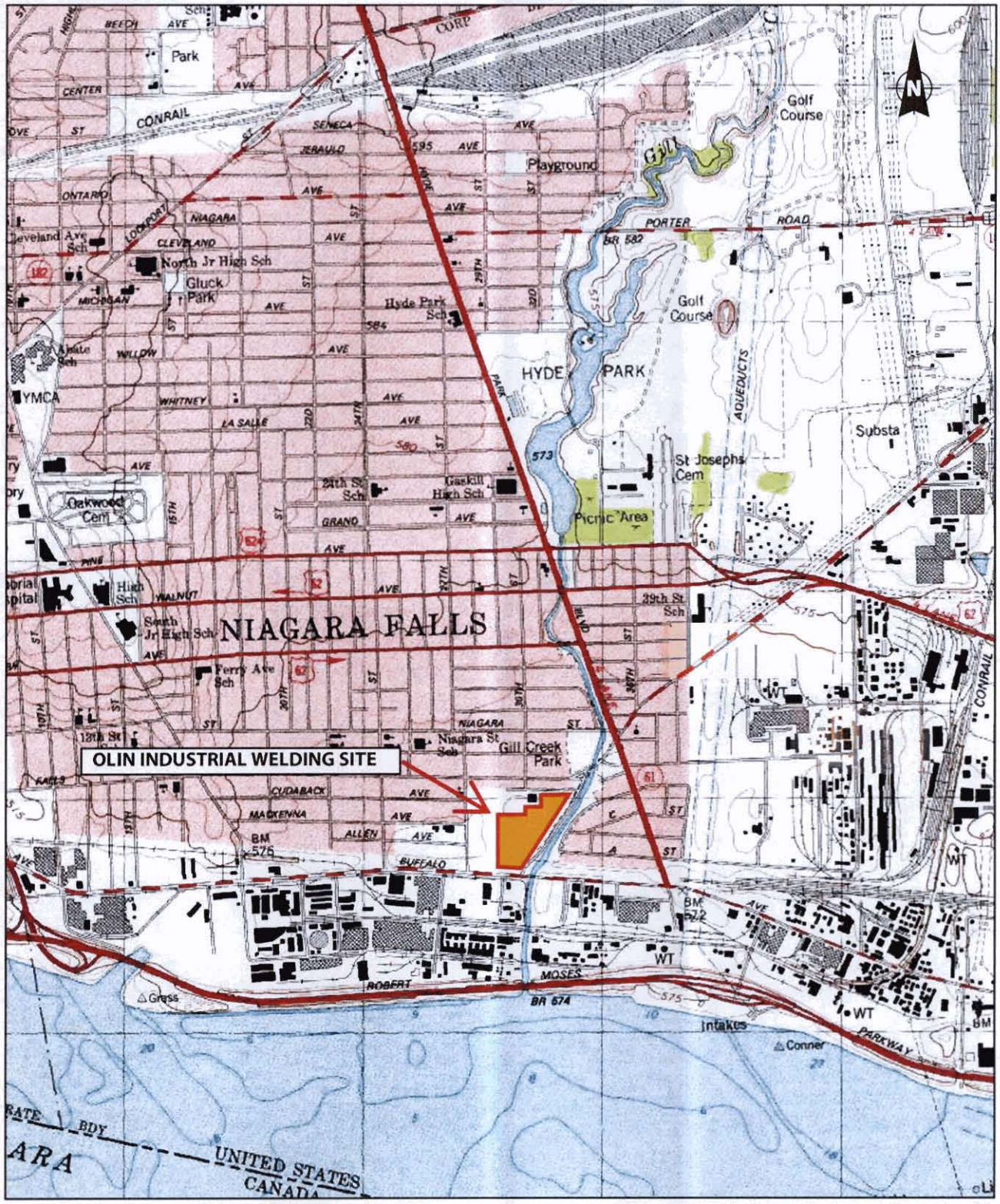
6. Maintenance of the components of the remedy until remedial objectives have been achieved, or until a NYSDEC/NYSDOH determination that continued maintenance is technically impractical or not feasible.

7. Since the remedy results in untreated hazardous waste remaining at the site, a long term groundwater monitoring program will be instituted. This program would allow the effectiveness and the integrity of the cover system to be monitored and will be a component of the operation, maintenance, and monitoring for the site.

SECTION 9: HIGHLIGHTS OF COMMUNITY PARTICIPATION

As part of the remedial investigation process, a number of Citizen Participation activities were undertaken to inform and educate the public about conditions at the site and the potential remedial alternatives. The following public participation activities were conducted for the site:

- Repositories for documents pertaining to the site were established.
- A public contact list, which included nearby property owners, elected officials, local media and other interested parties, was established.
- A Fact Sheet was sent to the contact list in February 2006 to announce the PRAP and the date and time of the meeting to present the PRAP.
- A public meeting was held on March 1, 2006 to present and receive comment on the PRAP.
- A responsiveness summary (Appendix A) was prepared to address the comments received and during the public comment period for the PRAP.



: Niagara Falls Quadrangle, 7.5 Minute Series Topographic Map 1980.

SCALE

0 0.5 1 Mile

Figure 1 SITE LOCATION MAP - OLIN INDUSTRIAL WELDING SITE (#9-32-050)

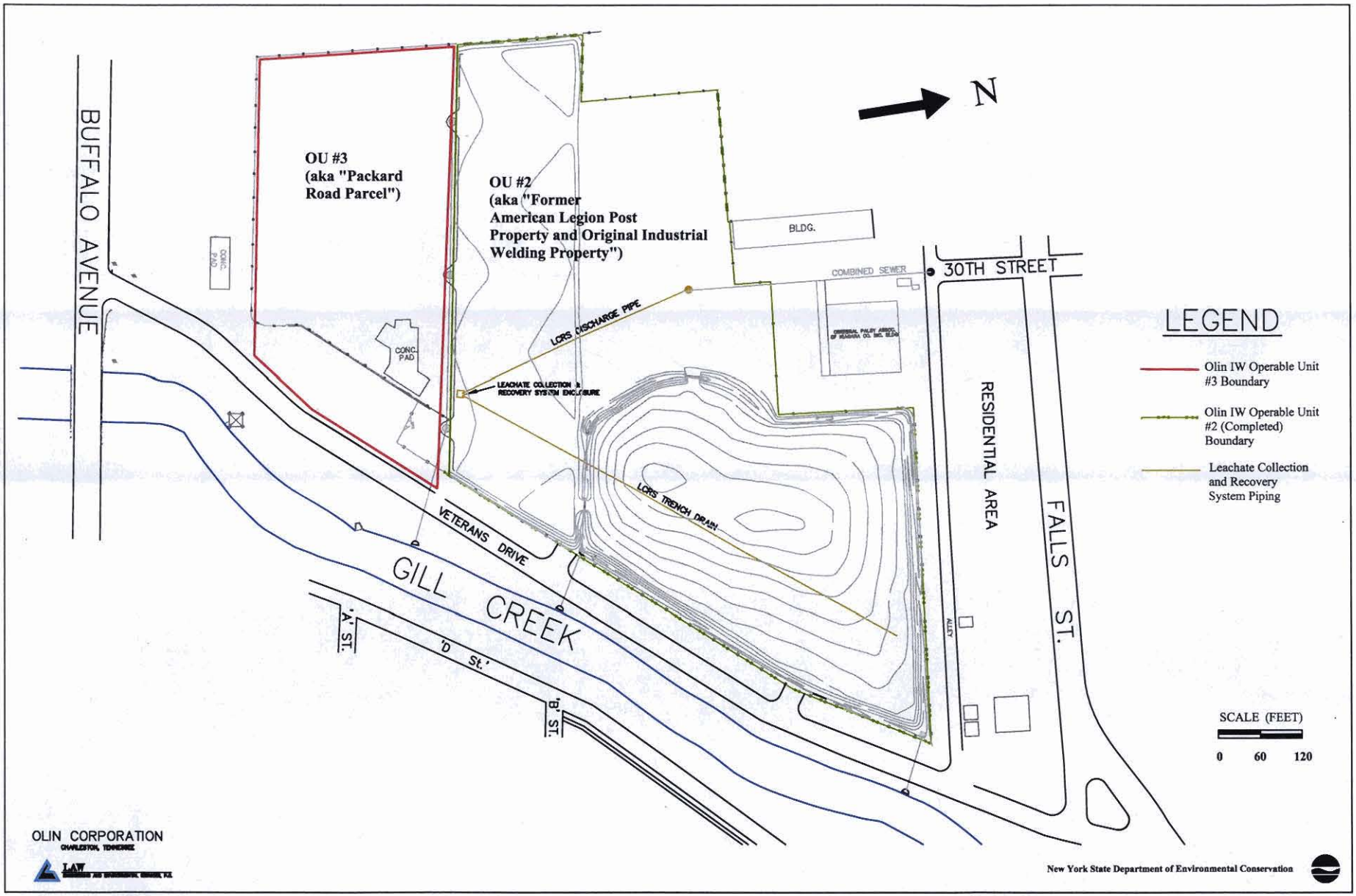


Figure 2 - Olin Industrial Welding Site (#932050)

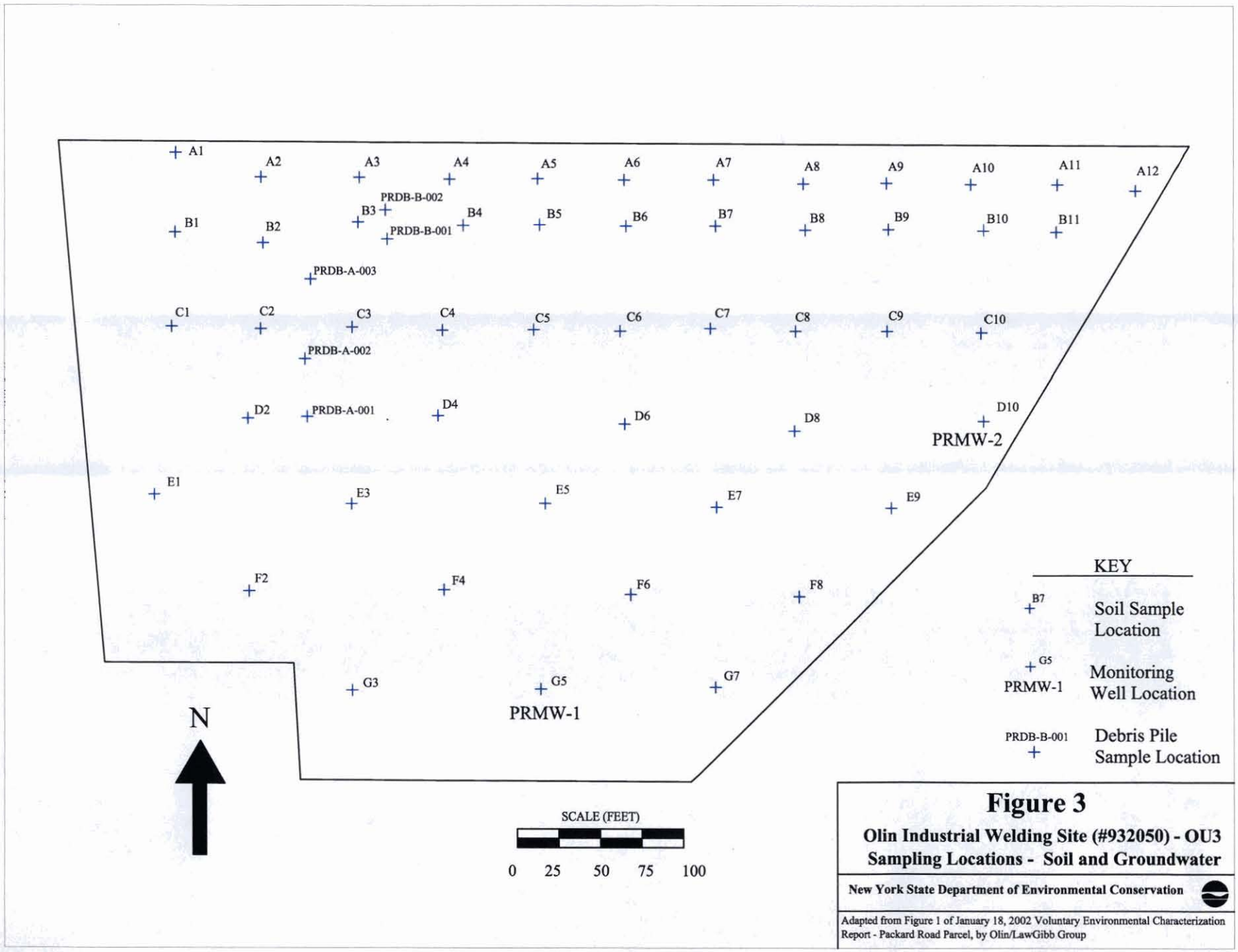


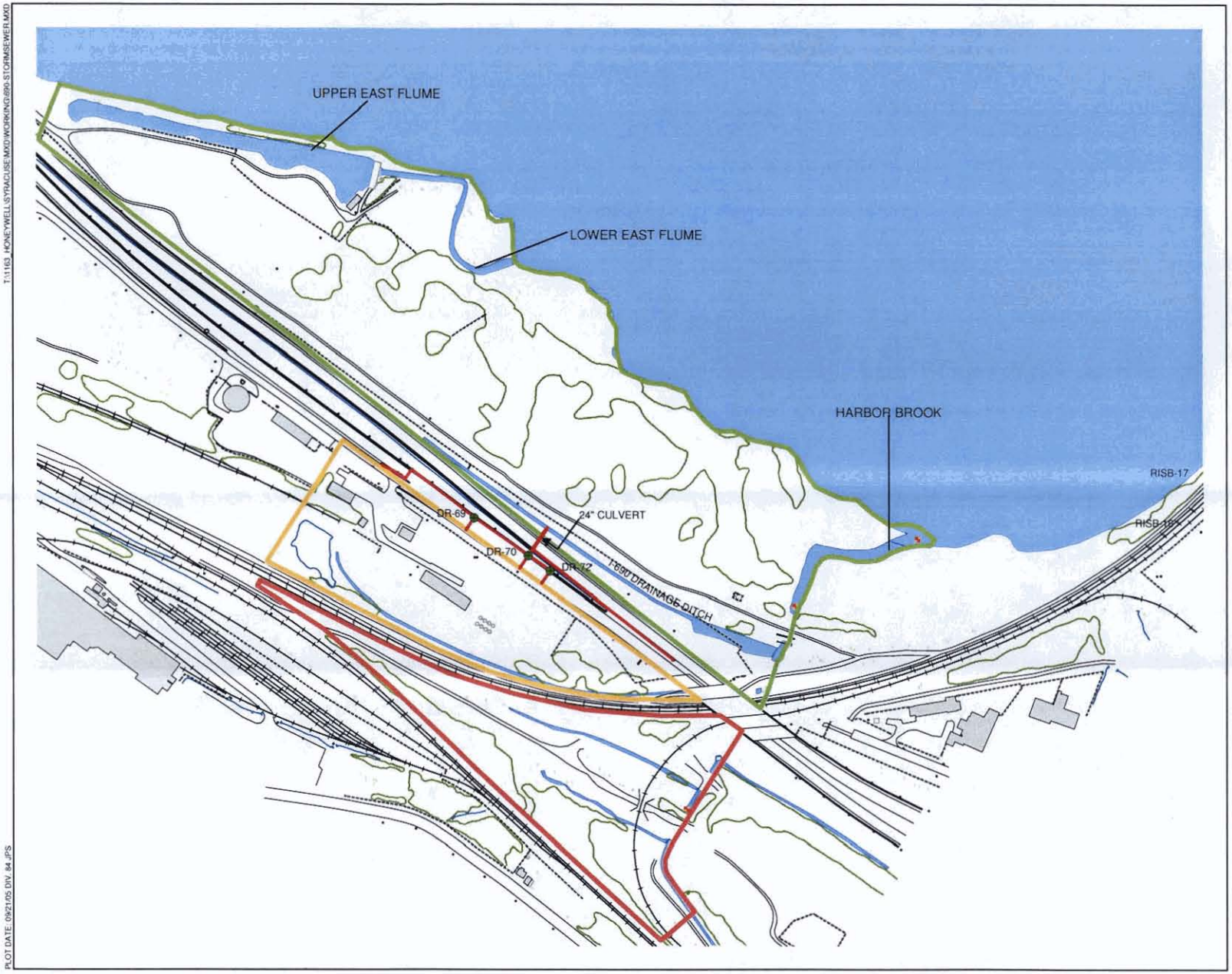
Figure 3

Olin Industrial Welding Site (#932050) - OU3
Sampling Locations - Soil and Groundwater

New York State Department of Environmental Conservation

Adapted from Figure 1 of January 18, 2002 Voluntary Environmental Characterization Report - Packard Road Parcel, by Olin/LawGibb Group

T:\1163_HONEYWELL\SYRACUSE\MXD\WORKING\690-STORMSEWER.MXD



PLOT DATE: 09/21/05 DIV. 84 JPS

FIGURE 1

LEGEND

- CATCH BASIN

STORM SEWER

- 24" CULVERT
- STORM SEWER

HONEYWELL
WASTEBED B/HARBOR BROOK
REMEDIAL INVESTIGATION
GEDDES, NEW YORK

I-690 STORM DRAINS

0 175 350 700
Feet

SEPTEMBER 2005
1163.31502

O'BRIEN & GERE ENGINEERS, INC

APPENDIX A

Responsiveness Summary

RESPONSIVENESS SUMMARY

Olin Industrial Welding Site
Operable Unit No. 3
City of Niagara Falls, Niagara County, New York
Site No. 9-32-050

The Proposed Remedial Action Plan (PRAP) for OU3 the Olin Industrial Welding 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 February 10, 2006. The PRAP outlined the remedial measure proposed for the contaminated soil and groundwater at the Olin Industrial Welding (OU3) site.

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

A public meeting was held on March 1, 2006, which included a presentation of the Remedial Investigation (RI) as well as a discussion of the proposed remedy. The meeting provided an opportunity for citizens to discuss their concerns, ask questions and comment on the proposed remedy. These comments have become part of the Administrative Record for this site. The public comment period for the PRAP ended on March 15, 2006.

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

PUBLIC MEETING QUESTIONS

COMMENT #1: **In the presentation, BHC was mentioned. Is that the pesticide compound found at the site?**

RESPONSE: Several isomers of BHC (aka hexachlorocyclohexane) are found on the site. BHC is the primary pesticide contaminant found on the site.

COMMENT #2: **Regarding site history, the dates for the building demolition in the PRAP are wrong. The buildings were not demolished until 1958. The site is on Packard Road, not Veterans Drive.**

RESPONSE: The Site History section of the ROD has been revised to reflect more general date ranges during the 1950s. The dates listed in the PRAP and during the public meeting were taken from previous Olin reports. While Olin has referred to the OU3 portion of the Olin Industrial Welding site as the "Packard Road Property" in the past, and several local residents know this stretch of road as Packard Road, it is in fact currently designated as Veterans Drive. The City of Niagara Falls may have renamed the road in the past due to the presence of the American Legion Post (now relocated).

COMMENT #3: **How deep was the soil tested?**

RESPONSE: The Olin Environmental Characterization did continuous soil sampling to a depth of 8 feet below grade.

COMMENT #4: **Were there any air samples taken during the environmental characterization?**

RESPONSE: Air sampling for worker and community health and safety was performed during intrusive activities (drilling and soil boring) during the OU2 RI. No air monitoring action levels were exceeded during this work.

COMMENT #5: **During construction of the remedy, how much soil disturbance will occur? Will dust or airborne particulates pose a health threat to people that live to the north? Will dust suppression methods be used to reduce the potential dust during construction?**

RESPONSE: As it is presently envisioned (and presented in the Olin conceptual design), the asphalt cover will be installed at the present grade, with a minimum of disturbance to the existing surface soils. The two small existing soil/debris piles will be either removed or graded prior to cover construction. During construction of the cover, the NYSDEC and NYSDOH will require real-time community air monitoring for particulates. Established action levels will be utilized to ensure that appropriate mitigation efforts (such as water spraying, etc) are undertaken, if necessary.

COMMENT #6: **I am concerned about how this site could be used in the future. Does the site always have to have a fence for safety? What if people (including children) were to use the site- would there be any health risks?**

RESPONSE: As explained in the ROD and in the meeting, the remedy will include a Site Management Plan to ensure that: the remedy is properly maintained; future site uses are restricted via an Environmental Easement to commercial and industrial purposes; and that, in the event of future site uses, any encountered contaminated soils and groundwater must be properly characterized, handled, and disposed. The site is not required to have a fence. Olin (or any subsequent owner) must maintain the cover systems. The use of the fence to restrict unauthorized site access (and thus the potential for such activities which may damage the cover systems) is appropriate, but is not required to protect human health or the environment. The cover systems themselves are effective at providing these protections.

COMMENT #7: **How can I obtain a copy of the ROD when it comes out?**

RESPONSE: If you contact Mr. Jeff Konsella of the NYSDEC, an electronic copy of the ROD can be sent to you when it is finalized. Or if you prefer, a paper copy can be made.

COMMENT #8: You mentioned that groundwater collected at the site in the leachate collection system gets discharged to the sewer system. Where is that discharge?

RESPONSE: The leachate collection system installed as part of the OU2 remedy utilizes a manhole due south of 30th Street as a discharge point. The collected leachate/groundwater is discharged under a permit with the Niagara Falls Water Board. This discharge is subject to periodic reporting requirements (under terms of the discharge permit with the Water Board).

COMMENT #9: Will another meeting be held either before or after the ROD?

RESPONSE: The March 1, 2006 public meeting was the only public meeting regarding selection of the remedy for OU3 of the Olin Industrial Welding site anticipated at this time. It is expected that the ROD will be released by the end of March 2006. Additional Fact Sheets will be sent to the mailing list prior to the start of construction activities for the remedy and at other important stages in the project as appropriate. These Fact Sheets will be used to inform the public about the expected start date and project duration and will include NYSDEC and NYSDOH contacts.

COMMENT #10: The area immediately west of OU3 used to be a pond and low lying area. Were soil tests done in that area to determine if there were any impacts from the site?

RESPONSE: The RI/FS for OU2 included sampling of off-site locations, including this area.

COMMENT #11: Was there pesticide wastes disposed in full barrels? How did the wastes get there? I watched them dispose of fiber drums of material at the Industrial Welding site.

RESPONSE: Olin reportedly disposed of building wastes (from the Buffalo Avenue plant) which were contaminated with pesticides. The NYSDEC is not aware of any evidence of bulk disposal of pesticide wastes at the Industrial Welding site. It is not known what might have been in any fiber drums disposed of at the site. However, no wastes of this type were encountered during the excessive sampling that was performed at the site.

COMMENT #12: Where did the former High Energy Fuels reactors and materials go after Olin shut down the product? How do you know that this material is not still at the site?

RESPONSE: The NYSDEC is not aware of the final fate of the materials used in the Olin High Energy Fuels pilot program after it was ended. There are several aerial photos from the 1950s which show historical operations and filling during this time frame. The NYSDEC is not aware of any evidence that High Energy Fuels waste material was disposed of at the site. The extensive soil boring program and chemical analysis performed on the site soils and groundwater during the site investigations would have revealed the presence of such wastes.

COMMENT #13: What area of the Industrial Welding site was found to have the most contamination?

RESPONSE: The majority of historic waste disposal, filling and grading was performed on the northern portion of the site. This area generally corresponds to the low permeability membrane cap (with grass cover) portion of the site. This area includes leachate collection and discharge to control groundwater impacts. The former process building and laboratory were located on the southern portion of the site.

COMMENT #14: Is there any reason to suspect radioactive wastes at the site? Even if there was radioactive material used , wouldn't it all be gone by this time?

RESPONSE: The former "High Energy Fuels" reactor was a chemical process, and as such, radioactive substances were not used. The NYSDEC has no reason to suspect that radioactive materials were used (other than the small amounts that are contained in some instrumentation) or were disposed at the site. The duration of time that a radioactive material emits radiation depends on the characteristics of the radioactive material. Some forms of radioactive material can emit harmful amounts of radiation for thousands of years.

APPENDIX B

Administrative Record

Administrative Record

Olin Industrial Welding Site
Operable Unit No. 3
Site No. 9-32-050

1. Proposed Remedial Action Plan for the Olin Industrial Welding Site, Operable Unit No.31, February 2006, prepared by NYSDEC.

2. "Conceptual Engineering Design- Asphalt Cap", June 2005, Mactec Engineering and Consulting, PC.

3. "Supplemental Groundwater Data", July 31, 2002, Olin Corp.

4. "Environmental Characterization of Soils and Groundwater", January 18, 2002, Olin Corp.

5. "Operation and Maintenance Manual", July 2001, Law Engineering.

6. "Final Engineering Report", April 2000, Law Engineering.

7. "Final Remedial Design - Industrial Welding Site", September 1999, Law Engineering.

8. "Final Engineering Report for Gill Creek Excavation", November 1998, Law Engineering.

9. "Final Remedial Design - Gill Creek", July 1998, Law Engineering.

10. "Record of Decision" - Olin Industrial Welding Site, November 1994, NYSDEC.

11. "Final Characterization Report - Gill Creek", July 1993, IT Corp.

12. "Final Remedial Investigation/Feasibility Study Report - Olin Industrial Welding Site", Vol. 1, July 1993, International Technology Corp.

13. "Final Remedial Investigation/Feasibility Study Report - Olin Industrial Welding Site", Vol. 2, July 1993, International Technology Corp.