URS

Voluntary Clean-Up Program

Interim Remedial Measures Completion Report

Alumax Extrusions Inc.
320 South Roberts Road
Dunkirk, New York

Prepared for:
Alcoa, Inc.

URS Corp. Project No: 19532-094-029/39937760
April 30, 2004

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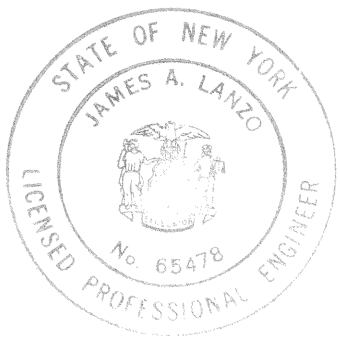
CERTIFICATION

I certify that the NYSDEC-approved Residual Source Area Interim Remedial Measure Work Plan for the Alumax Extrusions, Inc. Dunkirk facility, dated July 15, 2003, as revised in subsequent addendums dated October 6, 2003 and October 24, 2003, was implemented and that all construction activities were completed substantially in accordance with the Work Plan and were personally witnessed by me or by qualified URS Corporation staff.



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Date: 5/3/2004

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1.0 Introduction

This Voluntary Clean-Up Program (VCP) Interim Remedial Measures (IRM) Completion Report (Completion Report) documents the IRM that was completed in accordance with the New York State Department of Environmental Conservation (NYSDEC) approved IRM Work Plan for the Closed Alumax Extrusions, Inc. facility, located at 320 South Roberts Road, Dunkirk, New York (Site). As indicated in the NYSDEC's October 29, 2003 work plan approval letter, the final IRM scope of work is presented in the IRM Work Plan dated July 15, 2003 as revised in subsequent addendums dated October 6, 2003, and October 24, 2003. The remainder of this section provides a brief history of the Site's involvement in the VCP and the Site's industrial use, which predates the VCP Volunteer's acquisition of the property.

Alcoa Inc. (Alcoa), as the Volunteer, received correspondence dated 25 July 2002 from Mr. Glen Bailey, Senior Attorney with the New York State Department of Environmental Conservation (NYSDEC), indicating that their VCP application is complete and that they are eligible to participate in the VCP as a PRP Volunteer. The Site was assigned Site #: V00589-9, and the Voluntary Cleanup Agreement has been assigned Index #: B9-0616-02-06. Accordingly, Alcoa performed a Site Investigation (SI) in accordance with a NYSDEC approved work plan. The SI Report was submitted to NYSDEC and the New York State Department of Health (DOH) on May 9, 2003 with revisions dated October 9, 2003. Alcoa subsequently received NYSDEC approval of the SI Report in a letter dated November 15, 2003. Based on the recent Site investigation and previous work done at the Site, a "Residual Source Area" was identified that is amenable to source control treatment via zero valent iron (ZVI) injection. Additionally, residual materials identified in two catch basins located within the building were addressed in this IRM. In addition to documenting completion of the IRM in accord with the approved work plan, this Completion Report provides a combined Institutional Control Plan / Operations and Maintenance Plan (Combined Plan) as Appendix A, which provides guidance concerning Soil/Asphalt Cover, Soil Excavation and Management, Groundwater Use, and Continued Monitoring of the Groundwater associated with the Residual Source Area. Because the Combined Plan will require ongoing implementation for the foreseeable future (and likely by others as it is Alcoa's intention to divest the Site for industrial re-use), it has been prepared as a stand- alone document.

This Completion Report is submitted for review by NYSDEC so that approval can be obtained pursuant to the VCP as a final remedy, which addresses both the Residual Source Area and Sitewide concerns via the IRM and the combined Institutional Control Plan. Alcoa believes that NYSDEC can appropriately provide it with a Sitewide release of liability pursuant to the VCP, thus permitting further industrial development of the Site and its surroundings.

Overview of Site History

Industrial development of the Site was initiated around 1920, when the American Locomotive Company expanded its Dunkirk operations. The Site use has varied over time and uses have included a foundry, a coal storage pile, finishing line for locomotives, and finned heat exchanger fabrication. In 1976, the facility was acquired by Alumax Inc. (Alumax), which operated an aluminum extrusion business at the Site until 1993, operating as Alumax Extrusions, Inc. Alcoa's acquisition of Alumax in 1998 included the idled Dunkirk facility. Alcoa has not conducted any operations at the facility since acquisition. Based on this long industrial history, future use is expected to be restricted-industrial or restricted-commercial as indicated in the VCP application.

Overview of Site Characterization

The SI Report indicated that an area identified as the Residual Source Area contained concentrations of trichloroethene (TCE) and its degradation products in soil that may be contributing constituents of concern identified in Site groundwater. The source of the TCE is believed to have been a former above ground storage tank, which was removed prior to Alumax's acquisition of the property in 1976. Groundwater impacted by the Residual Source Area is not currently, nor likely to be in the future, utilized as a water supply. As indicated in the SI Report and the IRM work plan, interim remedial measures in the form of *in-situ* treatment were proposed to reduce the potential contribution to groundwater. Additionally, institutional controls in the form of a soil excavation and management plan, a soil cover/paving plan, and groundwater and land use restrictions will be applied to the Site. The treatment of the Residual Source Area and the application of the institutional controls are intended to effectively reduce contaminant mass, restrict the potential for movement of contaminants in ground water beyond the Residual Source Area and further off-Site, and eliminate casual exposure to constituents of potential concern based on the expected land use. Additionally, a sub-slab venting system was installed in the Residual Source Area to prevent the accumulation of gases beneath the slab. This should reduce the potential for vapor intrusion into the building.

This IRM was completed as a final remedy for the Residual Source Area and, as previously indicated, also includes institutional controls for the management of low concentration impacts from past industrial uses of the Site.

1.1 Site Description

The Site consists of two buildings, the Main Building constructed in 1921 and the Office Building constructed in 1990. The Main Building is approximate 140,000 square feet and the office building is approximately 7,200 square feet. The Site consists of two parcels, which in aggregate comprise approximately 12 acres. A surveyed Site plan was provided as part of the VCP application. The Site location and Site layout are shown on Figures 1 and 2, respectively.

1.2 Site History

The purpose of this brief summary is to provide an introduction to the history and potential concerns associated with the property located at 320 South Roberts Road, Dunkirk, NY.

1.2.1 Recent Site History

In July 1998, Alcoa acquired the assets of Alumax, Inc. (Alumax) including the subject property in Dunkirk, New York. At the time of the acquisition, the Alumax property had been idled and Alcoa has conducted no operations at the Site since the acquisition. The property had been used for heavy industrial purposes for about 73 years prior to acquisition by Alcoa. Alcoa has undertaken five phases of Site investigation including cleanup of some Site soils, a former oil storage tank site, and storm drain sediments. The investigation results and cleanup activities are documented in the following reports, which were previously provided to NYSDEC and are incorporated by reference in the current submittal:

- **Phase I Environmental Site Assessment of 320 Roberts Road, Dunkirk, New York.** Prepared by ICF Kaiser Engineers, December 15, 1998.

- **Phase II Environmental Site Assessment of the Closed Alumax Extrusion Facility, 320 South Roberts Road, Dunkirk, New York.** Prepared by IT Corporation, July 19, 1999.

- **Phase III Environmental Site Assessment, The Closed Alumax Extrusions, Inc. Facility, 320 South Roberts Road, Dunkirk, New York.** Prepared by IT Corporation, October 2000.

- **Chlorinated Hydrocarbon Source Investigation, The Closed Alumax Extrusions, Inc. Facility, 320 South Roberts Road, Dunkirk, New York**. Prepared by IT Corporation, January 2002.

- **Voluntary Clean-up Program, Site Investigation Report, Alumax Extrusions Inc., 320 South Roberts Road, Dunkirk, New York, NYS VCP Site #V00589-9**. Prepared by URS Corporation. (May 6, 2003)

These reports collectively document what is currently known about the environmental conditions at the property, as well as specific actions that have been undertaken to address certain instances of environmental contamination. The Phase I Environmental Site Assessment (ESA) focused on historical activities and current Site observations to identify potential environmental conditions. The Phase II ESA Report presents the findings of sampling activities performed to further evaluate conditions identified in the Phase I. The Phase II activities focused on items that were of concern to a then potential purchaser. The Phase III activities included remediation of concerns identified in the Phase II ESA. The potential purchaser also installed wells on the property boundary between the former Alumax Extrusions property and the adjacent Roblin Steel property to assess groundwater quality. The sample results of the offSite wells indicated the presence of chlorinated solvents in offSite groundwater; thus a focused groundwater investigation was included in the Phase III scope of work. The Phase III sample results and groundwater elevations resulted in conflicting interpretations regarding the possible source(s) of the chlorinated hydrocarbons. The "Chlorinated Hydrocarbon Investigation," which included ground-penetrating radar, as well as soil gas, and soil sampling activities, was intended to determine whether a source of chlorinated hydrocarbons existed within the Site. This investigation identified a suspected former aboveground storage tank, the remnants of which are visible within the floor of the main building, and also identified elevated concentrations of chlorinated solvents in soils in the vicinity of the suspected tank.

The VCP Site Investigation Report summarized the VCP Site investigation which includes the previous Site work along with the VCP Scope of Work. These activities assessed the soils and groundwater at the Site. Aquifer testing was completed on all on-Site monitoring wells. The exposure assessment indicated that on-Site constituents could, for the most part, be addressed via institutional controls. The previously identified chlorinated hydrocarbon Residual Source Area was identified as a subject for interim remedial measures, with an *in-situ* approach preferred.

1.2.2 Past History of the Site

<u>Brooks Locomotive/American Locomotive Company (1918-1962)</u>

Volunteer's relationship - none

The Brooks Locomotive Company and American Locomotive Company (American Locomotive) initially developed the subject property, along with adjacent properties to the north and west, as a locomotive manufacturing facility. This was a fully integrated facility that included foundries; metal working, painting, and finishing shops; offices, and a coal burning power plant. American Locomotive also produced military equipment during World War II, including artillery guns, gun cartridges, fragmentation bombs, thrust shafts, missile housings, nozzles, boosters, and other components. Plans from the 1950s and 1960s indicate that American Locomotive manufactured boilers and heat exchangers. Non-destructive testing was performed, including the use of x-ray equipment. The Atomic Energy Commission contracted American Locomotive after World War II to manufacture nuclear reactor components and packaged reactor units. A radiological survey was performed on the property during the Phase II ESA, which indicated levels consistent with background. American Locomotive also manufactured components of the crawler for the Apollo/Saturn V Space Rocket. Site drawings are not readily available and Site operations pertaining to hazardous materials storage and handling are not well documented for the time frame during which American Locomotive operated the property.

The subject property (i.e., former Alumax facility) was listed during the early stages of its operation by American Locomotive as a foundry, pattern shop, wood kiln, finishing shop, and coal storage area. A later drawing showing American Locomotive Thermal Products Division indicated that the subject property was used for the manufacture of heat exchanger parts, fin tubes, prefabricated refinery and other high pressure tubing, fin tubing and fin tubing bundles.

Properties adjacent to the former Alumax facility during the American Locomotive Company operations included the following:

- coal-fueled power plant,
- paint shop,
- pipe dipping and boiler shop,
- oil cellar,
- maintenance shop,
- pickling,
- sheet metal fabrication,
- tube bundle manufacturing,
- assembly and testing of heat exchangers,
- general machining,
- shot blast,

- application of corrosion preventative coating,
- missile fabrication and heat treating,
- light machining and paint shop,
- non-radioactive equipment fabrication for the nuclear industry ,
- pipe fabrication, and
- fuel oil storage.

Progress Park (1963-1969)

Volunteer's relationship - None

Progress Park purchased the former American Locomotive property for redevelopment, and leased portions of the former American Locomotive property to:

- **Roblin Steel** (adjacent and to the north of the former Alumax property);
- **Plymouth Tube** (adjacent to the northwest of former Alumax property);
- **Cendella Wood Products** (adjacent to the west of the former Alumax property);
- **Meissa Laboratories** (occupied an unknown portion of Progress Park).

Allegheny Ludlum (1969-1972)

Volunteer's relationship - None

Records concerning Allegheny Ludlum's activities at the Site are not well documented. Allegheny Ludlum is known as a specialty steel manufacturer.

Aluminum Extrusion, Small Business (1972-1976)

Volunteer's relationship - None

A small aluminum extrusion company purchased the property in 1972 for the purposes of starting an aluminum extrusion business. According to the owner of this business, a Mr. Sam Avny, only one batch of aluminum molding was extruded due to an aluminum shortage. In 1975 the business and aluminum extruder equipment were sold to Alumax Extrusion, Inc.

This business had an oil sump associated with the hydraulic press, and the owner indicated that he had used transformer oil as a dust suppressant. Soil sampling was performed in this area and polychlorinated biphenyls (PCBs) were not detected above NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4046 recommended soil clean-up objectives. No other information on chemicals and wastes produced is available.

Alumax Extrusion Inc. (1976-present)

Volunteer's relationship – Current Owner

Alumax Extrusion Inc. (acquired by Alcoa in July 1998) manufactured extruded aluminum window moldings at the facility until closing in November 1993. A paint line was added during the 1980s. The office building located near South Roberts Road was built in the early 1990s.

Chemicals used and wastes generated on-Site include non-PCB hydraulic oil for presses, paint, non-chlorinated paint solvents, sodium hydroxide, ammonia, chlorine, thermofil insulation, calcium chloride, methylene chloride, detergent, sodium metabisulfate, sulfuric acid, muriatic acid, polymer, butyl carbitol, diacetone alcohol, xylene, diesel fuel, isopropyl alcohol, and chrome-containing solution. Chlorinated solvents were not used as part of the process.

Decommissioning activities performed since 1998 have included removal of most of the plant equipment. Environmental assessment activities were initiated in concert with a proposed sale of the property. Remedial activities have included removal of swale soils, cleaning out oil sumps and catch basins, removal of the paint line, decommissioning of the wastewater treatment facilities, shutting in an onSite gas well, and soil and groundwater testing. These activities are more fully detailed in the Phase III Environmental Site Assessment (October 2000).

1.2.3 Neighboring Property Investigations

Investigations are ongoing at the adjacent former Roblin Steel and Edgewood Warehouse facilities. Chautauqua County Department of Public Facilities has submitted a "Draft Site Investigation/Remedial Alternatives Report Work Plan" for the former Roblin Steel facility. The following investigation reports have been completed for neighboring properties and provide testimony to the history of heavy industrial land use within the area:

- **Environmental Site Review of Roblin Steel Plant Site, Dunkirk, New York**, Acres International Corporation, January 1989.

- **Phase II Environmental Site Assessment, Roblin Steel Plant**, Dunn Geoscience Corporation, October 1990.

- **Groundwater Assessment, Roblin Steel Plant, Dunkirk, New York**, Harrison Hydrosciences, May 1991.

- **Analysis of Soil and Slag Piles for Lead, Roblin Steel Site**, Roy F. Weston, Inc., January 1994.

- **Groundwater Investigation Report, Common Boundary of the Former Roblin Steel and Alumax Extrusion Sites**, Clough Harbour and Associates, 1999.

- **Draft Site Investigation/Remedial Alternatives Report (SI/RAR) Work Plan for the Former Roblin Steel Site (NYSDEC Site No. B00173-9), 320 South Roberts Road, City of Dunkirk, Chautauqua County, New York**, TVGA Engineering, Surveying, P.C., April 2002.

- **Phase I Environmental Site Assessment Report, Edgewood Warehouse**, Clough Harbour and Associates, October 1997.

- **Phase II Environmental Site Assessment Report, Edgewood Warehouse**, Clough Harbour and Associates, May 1999. (was unavailable for review, but referred to in the SI/RAR Work Plan for Roblin Steel)

These reports were either obtained from NYSDEC via the file review process or provided to NYSDEC as part of submitted reports. These reports indicate that a number of hazardous materials and wastes were associated with these neighboring facilities, including chlorinated solvents, pickle liquor, oil and greases, electric arc furnace dust, PCB oil, and pesticides. It is Alcoa's understanding that the investigation of the Roblin Steel site by Chautauqua County is proceeding along a parallel, but independent, track with the NYSDEC.

1.3 Contemplated Use

The Site use is expected to remain "Restricted Industrial" or potentially "Restricted Commercial," as defined by the "Draft - Voluntary Cleanup Program Guide" (NYSDEC, 2002).

> **Restricted Commercial** – Residential Uses are not allowed in this category. Commercial uses are allowed but require engineering controls and/or institutional controls. Some types of "commercial" uses that could create "residential" types of exposures are excluded, such as day-care and health care facilities. Retail stores, warehouse/distribution centers, service facilities, and office complexes would be included in the commercial definition.
>
> **Restricted Industrial** – Residential and commercial uses are not allowed. Industrial uses are allowed but they require the use of engineering controls and/or institutional controls. Metalworking, manufacturing, and other industrial uses are included in this category.

1.4 Summary of Environmental Conditions

This IRM Work Plan focuses on the Residual Source Area, an area identified to contain chlorinated hydrocarbons in the north central portion of the Main building, and the sediment in two catch basins located within the building. This area and sediments in two catch basins located within the building are the only areas identified for remedial action in the SI report. Because the Residual Source Area lies beneath the floor slab of the Main Building, it is not a direct contact concern. However, the potential does exist to impact groundwater, and, in fact, the Residual Source Area is believed to be the source of chlorinated solvent contamination detected in nearby on-Site monitoring wells. Therefore, groundwater quality and aquifer conditions are also discussed in this summary.

Residual Source Area – Soils

A total of 19 samples were collected from nine soil boring locations within the Main building (Figure 3 and Table 1). The boring locations were selected to radiate outward from a metal ring embedded in the concrete floor, suspected to be a former aboveground storage tank (AST) location (identified while performing a ground penetrating radar survey), and were also selected based on the results of a passive soil gas survey discussed in the SI Report (URS 2003). These samples were analyzed for volatile chlorinated hydrocarbons. This investigation was previously summarized in the "Chlorinated Hydrocarbon Investigation" (IT, 2002) and the "Site Investigation Report" (URS, 2003).

During the recent SI, soil samples were collected from an additional 11 locations north of the Main building, and indicate that soils outside the building are not significantly impacted by chlorinated hydrocarbons and are not considered part of the Residual Source Area. However deep soil samples collected just above bedrock in the Residual Source Area and its immediate vicinity do show some impact, presumably from impacted groundwater. The building footer is believed to be situated on or keyed into bedrock, acting as a barrier for lateral migration of groundwater and contaminants. Based on Site observations, a gap in the building footer may be present in the vicinity of monitoring well AL-1, accounting for the elevated chlorinated hydrocarbon concentrations in this area in contrast to other nearby wells. Information concerning the location and sample results from the 11 additional borings is provided in the VCP SI Report (URS, 2002)

The sample analytical results for the Residual Source Area are provided in Table 1 and Figure 3. The results indicated a maximum concentration of TCE in GP-4 (1,500 mg/kg). The highest concentrations were detected at a depth of 8.7-9.7 feet below ground surface (ft – bgs).

Boring logs indicated ash and sand fill in the vicinity of the suspect former AST location (GP-1, -2, -3, -5, -6, and –7, with the fill being present only near the surface of GP-6). Moving outward the materials encountered were predominantly clay [GP-6 (ash/sand near surface), GP-8, and GP-9]. Bedrock was generally encountered at a depth of 10-12 ft – bgs.

Groundwater

Nine groundwater monitoring wells were installed at the Site as part of the VCP and earlier investigations. Additionally, one former production well (PW-1) is located on the property and was also used for monitoring purposes. The former production well was reportedly never used during active plant operations due to poor production rates. The shallow monitoring wells are installed to a nominal depth of approximately 17 ft - bgs and were installed in this manner initially to mirror similarly installed wells on the former Roblin property, which are situated along the property boundary shared between the subject Site and the former Roblin Steel property. These wells have screens 10-feet in length and are screened across both the top of bedrock and the groundwater surface. Groundwater was not encountered in the soils during the installation of the wells; however, the static water levels in the wells were within the soil horizon. The shallow wells include AL-1, AL-2, AL-3, AL-4, AL-5, and AL-6. Three deep wells were installed during the SI to a maximum depth of approximately 60 ft - bgs. Because the main purpose of these wells is to determine the vertical extent of groundwater contamination, care was taken to limit the length of screen and also to construct the wells in such a way to ensure that the cross contamination from the upper zone did not impact the water quality of the lower zone. Therefore, AL-1D was constructed with double casing, with steel upper casing used to seal the shallow weathered zone of bedrock. Once the wells were installed, the new wells were developed by purging a minimum of five (5) well volumes. Due to the poor recharge rates, this development took approximately a week to complete. The turbidity in each of the wells remained above 100 nephelometric turbidity units (NTUs). Monitoring wells were sampled by purging with a bailer and waiting for sufficient recovery to allow sampling. All monitoring wells were readily bailed dry. The production well was purged using the low flow technique and was sampled after the stabilization of parameters.

The shallow wells and the production well were sampled for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), and Target Analyte List (TAL) metals. However, NYSDEC was informed that the deep wells did not produce sufficient water to sample for a complete suite of constituents. After consultation with NYSDEC, it was agreed that the deep wells would be sampled for TCL VOCs only, and additional analysis would be performed if the sample results from the shallow wells indicated that additional parameters should be added. AL-4D did not contain sufficient water to sample and AL-6 had poor recharge that resulted in excessive sampling time. A field decision was made to eliminate the total metals from this well due to insufficient sample volume; however, a dissolved metals sample was collected and analyzed. Results from the other wells at the Site did not indicate a significant metals issue that would require the collection of a total metals sample from AL-6.

Slug tests were performed on each of the groundwater monitoring wells that contained sufficient water to perform the test. The hydraulic conductivity values derived from these slug tests ranged from 10^{-5} to 10^{-7} feet per minute.

Four temporary test wells (TW-1, TW-2, TW-3, and Tank-1) were sampled within the Residual Source Area and are shown on Figure 3. The highest groundwater concentration (32 mg/L) was identified in the sample collected in the suspected former tank location. These temporary wells were a removed prior to the ZVI injection.

Existing off-Site well data were acquired via public sources to incorporate into the groundwater analysis for delineation purposes. The off-Site data quality was not validated during this investigation and some of the information is considered preliminary. Based on review by URS, the off-Site data appears to be of sufficient quality to be used for delineation purposes; however, it is recommended that caution be used when considering the off-Site data and that the original source of the data be referenced for interpretation.

Field Observations

Groundwater was generally not encountered in the soils and is primarily derived from the shallow weathered bedrock. However, water was encountered at a depth of approximately 4 feet below the surface in the sand/ash fill portion of the Residual Source Area and groundwater in the shallow bedrock is believed to be under artesian pressure in the shallow bedrock. Core samples indicated that bedrock at the Site is a dark-gray to black, finely laminated shale. Fractures were rarely encountered below a depth of 24 feet below the top of bedrock. The fractures encountered below that depth were generally near horizontal bedding plane partings with little or no indications of weathering, filling, or staining along the fractures. Other fractures appeared to terminate within a few inches along bedding plane partings. The shallow fractures showed limited iron staining and clay infilling, suggesting water movement. Organic vapors generally were not encountered in the borings. However, they were encountered in the soils in the borings for AL-1 and AL-1D, with the highest readings (50 parts per million by volume [ppmv]) being encountered near the top of rock in AL-1D.

Hydrogeology

The Site is primarily paved and low conductivity clayey soil covers most of the Site; therefore, groundwater recharge areas at the Site are believed to be fairly limited. The existing hydrogeologic investigation at the Site and the neighboring sites has indicated a fairly complex groundwater flow pattern in the shallow bedrock and is believed to be impacted by bedrock fractures, utilities, and building foundations. The effect of the utilities (sewers and water lines) and building foundations is potentially enhanced by the low conductivity of both the soils and bedrock, which allows for greater contrasts in the groundwater levels than would be expected from higher conductivity materials.

Water levels in the on-Site shallow wells were measured on February 17, 2003 to develop a groundwater surface contour map (Figure 4). This figure shows that groundwater generally flows to the north. However, it is believed that the water levels from wells located between the closed Alumax and former Roblin buildings are unreliable due to the influence of the building foundations and utilities, and these wells were not used in developing the contour map.

The fracture patterns identified in the core samples indicated few fractures below a depth of 24 feet in any of the three cored locations (AL-1D, AL-3D, and AL-4D) and there is believed to be very little interconnection between the deep wells; therefore, a groundwater contour map was not developed for this unit. It is also believed that there is very little hydraulic interconnection among the deep wells and the shallow wells. Although near vertical fractures may exist in the bedrock, they were not encountered at depth and the fracture patterns in the shallow bedrock seem to indicate that fractures typically terminate along bedding planes.

Slug tests were performed on each of the on-Site monitoring wells, with the exception of AL-4D, which was dry at the time of the testing. Test data from AL-5 appeared to be impacted by recharge from snowmelt and the results of the slug test were questionable and therefore excluded. The slug test data were interpreted using the Bouwer-Rice method. The results indicated that most on-Site wells had a hydraulic conductivity of between 10^{-5} and 10^{-7} ft/min (10^{-5} to 10^{-8} cm/sec).

Groundwater flow velocity was calculated using the gradient developed in the groundwater flow map and the range of hydraulic conductivities derived from the slug tests. The resulting flow velocity was determined to range from approximately 0.2 to 2 feet per year. However, this is based on the Sitewide hydraulic gradient and localized artificial hydraulic gradients appear to exist. This slow flow rate is supported by what appears to be limited migration of the chlorinated hydrocarbon plume from the Residual Source Area.

Based on the on-Site groundwater analytical results, the area impacted with TCE and its degradation products is fairly isolated. The groundwater analytical results are shown on Figure 5.

Based on the data collected at the Site and the available data from the adjacent Roblin Steel site, contaminant migration appears limited to the respective properties, both of which do not currently use groundwater and future potable or industrial groundwater use is unlikely due to the low well yields and availability of water via the municipality. Potential impacts of the groundwater to sewer were also evaluated. Concentrations of TCE were found to be present in an offsite sewer located on the former Roblin Steel property at levels below the Safe Drinking Water Act (SDWA) standards (sample location W-Sewer on Figure 10). The sewer sample was collected just prior to the influent of another water source and additional mixing is expected as this sewer drains to the sewer main. Therefore, the potential impacts to offsite sewer lines via the groundwater pathway, as well as by direct migration of contamination via groundwater, are believed to be limited.

2.0 Summary of Interim Remedial Actions

The interim remedial actions addressed two separate areas, 1) the Residual Source Area and 2) the sediments in the north and south bay catch basins. The IRM discussion below includes a background on the selection criteria for the zero valent iron (ZVI) treatment, derived from the NYSDEC-approved work plan.

2.1 Zero Valent Iron Treatment

In-situ chemical treatment using ZVI was implemented within the Residual Source Area. Conditions at the Former Alumax Site that were most relevant for the remedy selection were:

(1) The contaminants of concern are TCE and it's natural degradation products, cis-1,2-dichloroethene (cis-DCE) and vinyl chloride (VC) which are readily degraded using the chosen ZVI technology;
(2) The Residual Source Area is beneath the building and removal is impractical and the ZVI technology can be implemented through isolated injection points with minimal impact on the existing structure;
(3) Groundwater is locally impacted and the chosen treatment technology addresses both the Residual Source Area and the associated impact on groundwater;
(4) The Residual Source Area consists primarily of permeable artificial fills including ash and sand. Surrounding clays are impacted to a lesser degree; however, the constituents within the clay are believed to be relatively immobile due to adsorption and relatively low hydraulic conductivity. The chosen treatment technology directly treats the Residual Source Area and indirectly addresses the less permeable clay;

(5) Groundwater is moving relatively slowly at the Site, with an estimated seepage velocity of 0.2-2 feet per year;
(6) Depth to contamination is relatively shallow, extending from approximately 4 to 12 ft below grade;
(7) Natural microbial activity is readily degrading contaminants at the Site, as evidenced by the relatively high concentrations in groundwater of natural degradation products (cis-DCE and VC) relative to the parent product (TCE). The chosen ZVI technology further enhances the natural degradation process. ZVI generates and maintains a strongly reducing, anaerobic environment, which is conducive to supporting the natural, anaerobic microbial degradation currently occurring at the Site;
(8) The ZVI technology provides rapid treatment (i.e., completing application in a matter of two weeks or less), and provides adequate residual treatment capacity to ensure long-term effectiveness. ZVI has long-term effectiveness in the subsurface and generally requires only a single application with long-term benefits. This a major benefit over other *in-situ* reagents that have relatively short life spans and may require additional application. This is important in treating low permeability material which may slowly release adsorbed contaminants;

Although ZVI can be emplaced via a number of methods, hydrofracturing and pressure injection were selected and implemented as the best emplacement techniques for the Site. The benefits of this emplacement method at the Site are discussed below:

(1) Hydrofracturing and pressure injection are widely used methods to emplace reagents and solids in the subsurface. Hydrofracturing is more effective than pneumatic fracturing at the shallow depths because lower pressure would be required. Therefore, hydrofracturing was selected over pneumatic fracturing for increased effectiveness and potential safety concerns. Hydrofracturing with pressure injection was used to place the ZVI along the clay/bedrock interface.
(2) The emplaced ZVI provides a relatively permeable treatment zone within the low permeability native clay and bedrock, thus providing a preferred pathway for groundwater migration through the treatment medium itself (i.e., contaminated groundwater will preferentially move through the zones within which the ZVI is emplaced, as these zones will have a higher hydraulic conductivity than the surrounding soils). Although somewhat more permeable treatment zones will be created, groundwater migration is expected to remain very slow.
(3) The ZVI was injected utilizing guar gum as an emulsifier to provide a higher permeability than other emulsifying agents. The guar gum also breaks down rapidly once the injection process is completed, further increasing the permeability.

The primary disadvantage of the ZVI approach is that there is no direct treatment of clay-sorbed components. Treatment only occurs in the dissolved phase. However, the chosen approach provided adequate distribution of the ZVI within the ash/sand portions of the Residual Source Area to quickly reduce the contaminant mass and also to provide long term effectiveness to treat contaminants currently adsorbed in the clay, as they desorb into solution. The treatment of the Residual Source Area and the application of the institutional controls, presented in Appendix A should effectively reduce contaminant mass, restrict the potential for off-Site movement of contaminants, and eliminate casual exposure to constituents of potential concern based on the expected land use. The proposed institutional controls include restricted land use, groundwater use restrictions, and a soil excavation and management plan. The operation and maintenance plan includes continued groundwater monitoring and the long-term operation of a sub-slab venting system.

2.1.1 ZVI Placement

Previous investigations have indicated that an approximate 100 ft x 30 ft in area (Figure 6) was substantially impacted with TCE and its degradation products, prior to treatment. This area includes 1) an area consisting predominantly of ash and sand fill (approximately 50 ft x 30 ft), which is considered to be the Residual Source Area, and 2) chlorinated hydrocarbon impacted low permeability native clay. The majority of the impacted clay is not believed to meet the VCP definition of a source area. That is, it is not believed the clay has the potential to release significant amounts of contaminants to the environment, with the exception of the material in the immediate vicinity of the ash fill. However, it is prudent to treat a portion of this area to provide a buffer zone, provide treatment for chlorinated hydrocarbons that could potentially desorb, and also aid in accelerating the natural attenuation of the chlorinated hydrocarbons identified in AL-1. The depth interval subject to treatment extends from approximately 1 ft - bgs to approximately 12 ft - bgs (bedrock) within the Residual Source Area. The significantly impacted clay beyond the Residual Source Area appears to be limited to the zone near the bedrock interface. To ensure that product does not remain within the former AST, a concrete boring was completed within the suspected former tank area, i.e., within the iron ring, prior to the ZVI placement. This boring indicated that the subsurface consists of an ash and sand mixture and observable product was not encountered. Therefore, modifications to the overall treatment approach were not needed. However because substantial impact was noted in this area, an additional injection point was added in the center of this area.

Injections were performed at 11 locations inside and 6 locations outside of the building (Figure 6). The locations were initially selected in order to have a spacing of approximately 12 ft apart (6-ft radius of influence) based upon practical field experience of the anticipated radius of influence (maximum of about 10 ft) and allowing a conservative margin. The locations were further optimized so that one point was directly in the former AST; one point was directly adjacent; and four other points surrounded the former AST. In addition, 1 point is located near the doorway that may provide a conduit for groundwater transport towards AL-1 (see previous discussion), and three points are in the ash/sand fill areas. The outside locations, as requested by NYSDEC, were placed to provide treatment near GPR anomalies, which may represent subsurface utilities and potential subsurface migration pathways. The remaining points were distributed throughout the treatment area to provide approximately even coverage. The objective was to evenly distribute the ZVI throughout the treatment area, by injecting an average of approximately 1,600 lbs of ZVI per point at 10 points within the building. However, approximately 1,500 lbs of material was placed in each of 11 locations within the building and approximately 750 lbs of material was placed at each location outside the building.

Twelve confirmatory borings (along with calculations of the ZVI volume injected) were used to determine if sufficient material has been emplaced and if the distribution of the ZVI was adequate to ensure long-term treatment effectiveness. The borings were logged by a qualified geologist and inspected for the presence of ZVI, both visually and with the aid of a magnet. The confirmatory borings indicated that iron was present in all but the most eastern and western locations. Organic vapors were generally not found in the soil column in these borings so additional injection points were not needed. The confirmatory borings indicated that iron was disseminated within the fly ash and sand and was found near the bedrock surface in the clay samples, which supports that the ZVI was distributed as intended. One of the confirmation borings was placed in close proximity to one of the injection points and demonstrated that the iron was, in fact, being injected along induced fractures and not accumulating at the injection point. Figure 7 shows the location of the confirmatory borings and Appendix B provides descriptive logs of the borings. These borings were completed to determine proper placement and not as a treatment assessment; therefore, no samples were collected for laboratory analysis. Treatment assessment will be performed separately as part of the monitoring program, presented as part of the combined Institutional Control Plan (Appendix A). The confirmation borings indicate that the iron is adequately distributed throughout the Residual Source Area.

Four PVC vapor-monitoring points were temporarily installed within the treatment area to allow for periodic vapor monitoring beneath the concrete slab. Additionally, a passive sub-slab vent system was installed beneath the concrete floor in the injection area. This venting system utilizes a wind driven turbine and discharges to the exterior of the building to prevent the accumulation of gases beneath the floor slab. A drawing of the completed vent system and details are provided as Figure 8 and 9, respectively. Concrete and soil materials removed as part of the vent installation will be disposed at a regulated facility, once characterization is complete and an appropriate regulated disposal facility has been identified. Based on monitoring data collected in January and February 2004, the system is effectively reducing vapors beneath the slab and that the air emissions are not measurable. Previous discussion with NYSDEC indicated that the emissions from this exhaust are considered to be *de minimus* and a permit is not required.

ZVI Placement was performed by URS Corporation between December 10 and December 15, 2004. Injection points within the building were placed at the locations identified in the IRM Work Plan, with the exception of an additional injection point located in the center of the suspected AST. The six injection points, originally placed 5 feet apart, were spread out to provide better coverage. Mr. Greg Sutton of NYSDEC agreed to the relocation of these points, prior to the injection. The locations of the completed injection points are shown on Figure 6.

The injections were completed by advancing the injection nozzle to the top of rock using a direct push rig. The depth to bedrock ranged from 9 feet 3 inches to 12 feet below the surface. The drill rod was then pulled up slightly to expose the injection ports on the nozzle. Approximately 1,500 lbs of iron was mixed in an emulsion consisting of 7.5 gallons of guar powder and 300 gallons of water. A single batch was injected at each of the borings located on the interior of the building and approximately a half batch was injected at each location on the exterior of the building (1,500 and 750 pounds of iron, respectively). Initial pumping pressures ranged from 50 to 120 pounds per square inch (psi). Once the fracturing started the injection maintained a pressure of 40 to 90 psi, as required to maintain the steady injection rate. The iron was injected from bedrock to a depth of 4 feet below the surface, except at locations IP-1, IP-3, IP-8, IP-10, and IP-11. In boreholes IP-1 and IP-3, a seal was not maintained when the injection rod was raised. To maintain a seal, the rods were lowered and the injection was resumed. The scope of work indicated that the injection would only occur at the bedrock/soil interface in IP-8, IP-10, and IP-11; these injections were completed in accordance with the plan.

2.1.2 Confirmatory Borings

Ten confirmatory soil borings were performed following ZVI placement to document the distribution of the ZVI. These borings were placed at the approximate locations identified in the IRM Work Plan (Figure 7). Table 2 identifies the depths at which iron was verified. Iron was identified in all but CB-1, CB-2, CB-8, and CB-9, the furthest east and the furthest west borings, indicating that the iron was well distributed throughout the Residual Source Area. Organic vapors were not identified in the soils from borings CB-1, CB-2, CB-8, or CB-9; however, organic vapors (15.2 ppm) were detected at the bedrock interface in boring CB-9. Therefore, the lack of identifiable iron at these locations did not warrant additional injection points. Iron was found to be either disseminated or in seams less than ½ inch thick in most of the boreholes. The thin layers indicate that the iron has achieved good lateral distribution and did not just form a plug within the borehole. Seams up to 6 inches thick were identified in boring CB-5 and CB-6 and iron was identified in borings located over 20 feet from the nearest injection point. Iron in the ash and sand area was generally found to be disseminated and a magnet was needed to identify the presence of the iron.

2.1.3 Sub-Floor Vent System

The ZVI technology has the potential to generate hydrogen and other gases, which may be a concern if allowed to accumulate beneath the floor slab. Some of these compounds are potentially explosive at elevated levels in the vapor phase. In addition, some of the VOCs may also be an indoor air concern, if allowed to accumulate and migrate into buildings that are in use for industrial or commercial purposes. A sub-floor vapor venting system was installed to prevent the accumulation and migration of these "off gases" at elevated levels. This venting system was installed in accordance with the NYSDEC-approved preliminary design, submitted as an addendum to the IRM Work Plan. Two NYSDEC-approved modifications were made to the original plan: 1) the east end of the vent system was truncated to eliminate the need to cut through steel rails embedded in the concrete and 2) the top of the vent pipe was modified to exhaust at approximately 11 feet above the ground. The exhaust modification was made to avoid potential hazards associated with a power line mounted on the side of the building. The vent system was completed between December 15 and 19, 2003 and the as-built sub-floor venting plan and details are provided on Figure 8.

The installed vent system consisted of two 3-inch diameter slotted, schedule 80 PVC headers which were placed in a trench, approximately 1 foot wide by 2 feet deep. The trench was backfilled with NYSDOT No. 1 and 2 aggregate. The concrete flooring was then repaired with wire reinforced concrete. The east ends of the vent headers were manifolded to a single exhaust riser pipe and exhausted through a wind driven turbine.

Four vent wells were installed to monitor the effectiveness of the venting system. General criteria for acceptable vapor levels to be monitored at each vent well and the vent exhaust limits are as follows:

-Vapor phase lower explosive limit (LEL) levels at 10%, or less
-Total VOC levels (by PID) less than 50 ppmv

The vapor probes were installed through the concrete floor slab into the subgrade material. The vent wells were constructed of 2 in. diameter PVC pipe with a field-slotted interval beneath the bottom of the floor slab. The slotted interval was then backfilled with aggregate. The vent wells were flush-mounted on the floor with manhole covers.

As indicated in the NYSDEC-approved IRM Work Plan, the vapor probes and exhaust will be monitored monthly for lower explosive limit (LEL) and total VOCs and will be discontinued after 2 consecutive months of acceptable vapor levels. The vapor probes were monitored on January 30, 2004 and on February 25, 2004. The acceptable criteria was met for both events, therefore, the monthly monitoring is being discontinued. However, the vapor probes will be monitored during the scheduled groundwater monitoring events (quarterly for the first year) to provide additional assurance that vapor intrusion from the treated Residual Source Area is not an issue.

2.1.4 Monitoring Well AL-7 Installation

Monitoring well AL-7 was installed on January 30, 2004 in the Residual Source Area just southeast of the suspected former AST (Figure 6). AL-7 was installed to a total depth of 12 feet, with the base of the well resting on shale bedrock. No odors or elevated organic vapors readings were detected on the drill cuttings during installation. The well was completed with a 5 foot pre-packed, 10-slot, nominal 2-inch inside diameter, PVC well screen. An additional sand pack was installed around the sand pack to approximately 2 feet above the screen. Bentonite pellets were then used to provide a seal to approximately 1 foot below the ground surface. The bentonite was hydrated prior to backfilling the remaining annulus with concrete and installing the flush mount security manhole. The top of the well was secured with a locking expandable cap. The materials encountered consisted of black ash and sand, with some slag and coal fragments. Disseminated iron was noted in the ash and sand fill. A descriptive log is provided in Appendix B.

2.1.5 Sewer Basin Sediment Removal

Sediments identified in two catch basins located on the interior of the building, one in the northwest corner of the building and the other in the southwest portion of the building were removed (Figure 10) and containerized for offSite disposal. This was accomplished by vacuuming the sediment from the catch basins using a drum vacuum and manual scraping. This method was effectively used to address the catch basins on the exterior portion of the building in 2000. Removed sediments from the current IRM activity were containerized and have been characterized for disposal; these sediments were analyzed and found to be non-hazardous. The sample results are provided in Appendix C. A total of approximately 2 drums of material was removed from the catch basins. The materials will be disposed at a permitted offsite facility, once the shipment to an appropriate regulated facility has been arranged.

3.0 Groundwater Monitoring and Long Term Effectiveness

As indicated in the SI Report, the Site will be the subject of the following institutional controls: groundwater use restrictions, soil cover and paving plan, and soil excavation and management plan. The institutional controls are discussed fully in the Combined Plan, provided as Appendix A. Application of these controls will ensure that casual exposure to constituents at the Site is limited. A groundwater monitoring program is included in the operations and monitoring (O&M) portion of the Combined Plan and is being implemented to ensure that the ZVI application continues to perform as expected. Based on the chosen remedial approach, groundwater monitoring is the only O&M requirement and a full plan is not necessary.

The groundwater monitoring supplements confirmation sampling, as discussed above, and was designed with the following objectives:

(1) Define baseline groundwater conditions prior to the ZVI injection.

(2) Evaluate the impact of the ZVI injection on groundwater conditions.

(3) Verify that the IRM has met the objectives of:

  a. Providing an initial degree of treatment of VOCs in direct contact with the ZVI.

  b. Providing necessary long-term treatment to ensure that VOCs do not continue to migrate from the Residual Source Area to surrounding groundwater. The confirmatory borings were used to confirm a remedy-in-place; whereas, groundwater monitoring will be completed as part of the operations and maintenance plan to monitor the improvements in the groundwater quality.

Groundwater VOC concentrations were analyzed in samples taken from AL-1 and AL-2 as part of the VCP Site Investigation completed in April 2003. In addition, groundwater samples from AL-1 and AL-2, and a single composite sample from TW-1 and TW-2, were analyzed for sulfate concentrations. The groundwater from AL-1 and AL-2 was analyzed for dissolved oxygen concentrations in May 2003 using a down-well probe. These groundwater data, coupled with groundwater and soil VOC data from the Chlorinated Hydrocarbon Source Investigation completed in January 2002, provided the baseline upon which the injection program was designed. TW-1 and TW-2 were temporary piezometers that were installed through the concrete floor during the investigation. It was necessary to sacrifice these piezometers during the ZVI injection process.

Prior to injection, three additional groundwater samples were collected for screening purposes from the temporary wells (TW-1, TW-2, TW-3, and the Tank-1) located within the immediate vicinity of the source area and screened from approximately 5-10 feet below the surface. The purpose of sampling these locations was to provide baseline groundwater VOC data in the immediate vicinity of the source area to determine the effectiveness of the treatment. The four locations are shown on Figure 7. These temporary wells were not constructed to perform long-term monitoring and have since been removed. These samples were analyzed for volatile organic compounds and the analytical results are provided in Table 3.

The aquifer was allowed to stabilize and react with the emplaced ZVI, after which groundwater samples were collected from the three locations indicated in the IRM Work Plan:

(1) AL-1

(2) AL-2

(3) AL-7

The samples were collected on February 25, 2004 and were analyzed for TCL VOCs to document changes in groundwater quality, post placement. These results are provided in Table 3. The sample results from AL-1 show a steady reduction in the ratio of TCE to daughter products (1,2-DCE and VC), indicating that the chemical degradation is proceeding. The actual concentrations also appear to be reducing; however, some sampling variation is suspected and mixing due to the injection may have also occurred in the Residual Source Area. Therefore, the reduction of the ratio of TCE to daughter products is seen as the best indicator that degradation is proceeding and that the iron is working.

Post-treatment sampling of the three wells will continue on a quarterly basis for a period of one year, to assess if dissolved chlorinated VOC concentrations are exhibiting a decreasing trend. An almost immediate reduction is expected in AL-7 area; however, the impact on the water quality in AL-1 is not expected to be evident for some time, based on the low groundwater velocity between these wells. After the initial year of monitoring, the need and frequency for additional monitoring will be evaluated in a report summarizing the groundwater results. However once significant constituent reductions are documented, annual monitoring performed in conjunction with the review of the institutional control plan may be proposed until total concentrations of chlorinated VOCs in AL-1 and AL-7 are below 100 µg/l. A more complete discussion of the on-going groundwater monitoring is provided in the Combined Plan.

4.0 Closing

This IRM Completion Report was primarily designed to address the Residual Source Area as identified in the SI Report (URS, 2003), and also includes a summary of catch basin cleanouts. Completed exposure pathways are not known for constituents associated with the Residual Source Area and the primary concern was the potential for this area to represent a continuing source of groundwater contamination. The implemented treatment technology (ZVI placement) will reduce contaminant mass and address the short-term and long-term impact to groundwater from this area. Sitewide institutional controls are also being implemented to eliminate casual exposure to subsurface constituents at this facility which will remain subject to industrial or restricted commercial land use. The combined use of source area treatment and institutional controls is designed to be protective of human health and the environment to the extent needed based on the current and proposed future Site use, and serves as the basis for the NYSDEC to issue a Site-wide release pursuant to the VCP so that this location can be returned to productive use.

TABLE 1
Residual Source Area
Soil Analytical Results
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

SAMPLE ID SAMPLE DEPTH(ft) SAMPLE DATE		NYSDEC TAGM Soil Clean-up Objectives	GP1-0-1 0 - 1 9/17/2001	GP2-0-1 0 - 1 9/17/2001	GP2-0-1D 0 - 1 9/17/2001	GP2-9.5-10.5 9.5 - 10.5 9/17/2001	GP3-0-1 0 - 1 9/17/2001	GP3-7.5-8.5 7.5 - 8.5 9/17/2001	GP4-0-1 0 - 1 9/17/2001
PARAMETER	UNITS								
Volatile Organics									
Acetone	ug/kg	200	2800U	5600U	11000U	26000U	3100U	**7.7J**	1700U
2-Butanone	ug/kg	300	2800U	5600U	11000U	26000U	3100U	**3.2J**	1700U
1,2-Dichloroethane	ug/kg	100	**13J**	1400U	2700U	6400U	780U	5.5U	430U
1,1-Dichloroethene	ug/kg	400	690U	1400U	2700U	6400U	780U	5.5U	430U
1,2-Dichloroethene (total)	ug/kg	100	**320J**	**580J**	**1,400J**	**220,000**	780U	**1.6J**	350J
Ethylbenzene	ug/kg	5500	690U	1400U	2700U	6400U	780U	5.5U	430U
Methylene chloride	ug/kg	100	690U	1400U	**920J**	6400U	780U	5.5U	430U
Tetrachloroethene	ug/kg	1400	**18J**	1400U	2700U	6400U	780U	5.5U	430U
Toluene	ug/kg	1500	**31JB**	**68JB**	2700U	6400U	**31JB**	**0.85J**	430U
Trichloroethene	ug/kg	700	**5,700**	**19,000**	**61,000**	**17,000**	**3,500U**	5.5U	17,000
Vinyl chloride	ug/kg	200	1400U	2800U	5400U	**18,000**	1600U	**1.9J**	870U
Xylenes (total)	ug/kg	1200	**70J**	**110J**	5400U	13000U	**110J**	11U	870U

Notes:
J = Estimated Value
U = Not Detected Above Stated Detection Limit
B = Identified in Blank

TABLE 1
Residual Source Area
Soil Analytical Results
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

SAMPLE ID SAMPLE DEPTH(ft) SAMPLE DATE		NYSDEC TAGM Soil Clean-up Objectives	GP4-8.7-9.7 8.7 - 9.7 9/17/2001	GP5-0-1 0 - 1 9/17/2001	GP5-11-12 11 - 12 9/17/2001	GP6-0-1 0 - 1 9/18/2001	GP6-8-9 8 - 9 9/18/2001	GP7-0-1 0 - 1 9/18/2001	GP7-5-6 5 - 6 9/18/2001	GP7-11-12 11 - 12 9/18/2001
PARAMETER	UNITS									
Volatile Organics										
Acetone	ug/kg	200	190000U	2600U	2600U	1100U	870U	1400U	18000U	1300U
2-Butanone	ug/kg	300	190000U	2600U	2600U	1100U	870U	1400U	18000U	1300U
1,2-Dichloroethane	ug/kg	100	49000U	660U	650U	270U	220U	360U	4500U	340U
1,1-Dichloroethene	ug/kg	400	49000U	660U	650U	270U	220U	360U	4500U	75J
1,2-Dichloroethene (total)	ug/kg	100	33,000J	59J	230J	270U	720	240J	100,000	11,000
Ethylbenzene	ug/kg	5500	49000U	20J	650U	270U	220U	360U	4500U	340U
Methylene chloride	ug/kg	100	49000U	660U	650U	270U	220U	360U	2,000J	340U
Tetrachloroethene	ug/kg	1400	49000U	660U	650U	270U	220U	360U	4500U	340U
Toluene	ug/kg	1500	49000U	37JB	41JB	270U	220U	14J	340J	23J
Trichloroethene	ug/kg	700	1,500,000	1,900	110	460	2,200	13,000	1,100J	2,000
Vinyl chloride	ug/kg	200	97000U	1300U	31J	540U	440U	710U	23,000	3,000
Xylenes (total)	ug/kg	1200	97000U	74J	110J	46JB	19JB	79JB	9000U	180JB

Notes:
J = Estimated Value
U = Not Detected Above Stated Detection Limit
B = Identified in Blank

TABLE 1
Residual Source Area
Soil Analytical Results
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

PARAMETER	UNITS	NYSDEC TAGM Soil Clean-up Objectives	GP8-0-1	GP8-8-9	GP9-0-1	GP9-5.5-6
SAMPLE DEPTH(ft)			0 - 1	8 - 9	0 - 1	5.5 - 6
SAMPLE DATE			9/18/2001	9/18/2001	9/18/2001	9/18/2001
Volatile Organics						
Acetone	ug/kg	200	**150J**	16000U	1000U	23U
2-Butanone	ug/kg	300	**3.8J**	16000U	1000U	23U
1,2-Dichloroethane	ug/kg	100	6.1U	4100U	260U	5.7U
1,1-Dichloroethene	ug/kg	400	6.1U	**1,100**	260U	5.7U
1,2-Dichloroethene (total)	ug/kg	100	**7.5**	**86,000**	260U	**4.3J**
Ethylbenzene	ug/kg	5500	6.1U	4100U	260U	5.7U
Methylene chloride	ug/kg	100	6.1U	**1,700J**	260U	5.7U
Tetrachloroethene	ug/kg	1400	6.1U	4100U	260U	5.7U
Toluene	ug/kg	1500	6.1U	**300J**	**11J**	5.7U
Trichloroethene	ug/kg	700	**11**	**690J**	**110J**	**13**
Vinyl chloride	ug/kg	200	**3.9J**	**4,400J**	520U	11U
Xylenes (total)	ug/kg	1200	12U	8100U	520U	11U

Notes:
J = Estimated Value
U = Not Detected Above Stated Detection Limit
B = Identified in Blank

TABLE 2
Confirmatory Borings
IRM COMPLETION REPORT

Confirmatory Boring Number	Total Depth	PID	Depth of Iron	Comments
CB-1	10'10"	0	Not Identified	Clay, West of Utility Trench
CB-2	10'2"	0	Not Identified	Clay, West of Utility Trench
CB-3	12 feet	0 from surface to 11.5 feet; 96 ppm at 12 feet	11'10"-12 feet	Iron near tip only.
CB-4	10'	0 from 0-4' 20-40 ppm from 4 to 10'	Iron disseminated from 9-10 feet. Minor iron from 4-8 feet.	
CB-5	9'8"	0 from surface to 7.5 feet. Max 11.8 ppm from 7.5-8 feet; 203 ppm in lower iron zone	Seam @ 7'3" Seam @ 8'-8'6"	
CB-6	9'	0, except at 7; feet; 6-16 ppm in iron seam	Iron Seam 4'-4'5" 7' 9-10 disseminated iron	
CB-7	8'10"	0 ppm	Seam at 5'3"	
CB-8	9'	0 ppm to 7 feet, 5.6-8 ppm from 7-9 feet	Seam at 7 feet	
CB-9	9'2"	0 ppm, except at base – 15.2 ppm	None identified	Dry
CB-10	7'8"	0 ppm	None Identified	
CB-11	11'4"	0 ppm	Iron Staining 0-4' Seam at 9'2"	
CB-12	11'8"	0 ppm, except at bedrock; 11.6 ppm at bedrock	Iron disseminated from 4'-11'8"	

Table 3
Groundwater Analytical Results - Residual Source Area
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

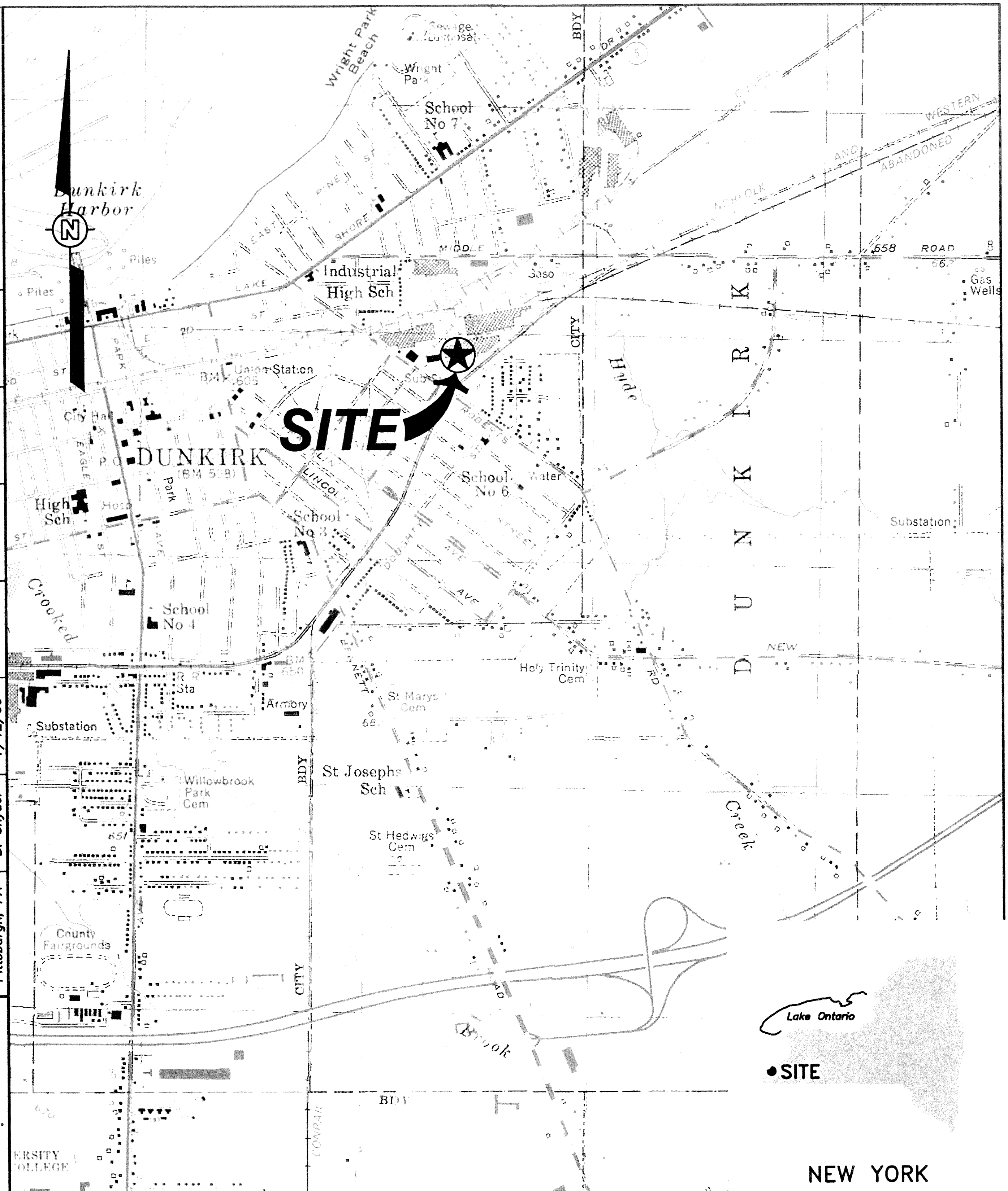
ClientSample LabSample DateSampled	AL-1 Jun-00		AL-1 A3054908 1/16/2003		AL-1 A4157901 2/25/2004		AL-1 Dup A417902 2/25/2004		AL-2 A3054907 1/16/2003		AL-2 A4157903 2/25/2004		AL-2 Jun-00	
Volatile Organic Compound (ug/l)														
1,1-Dichloroethene	NA		73		500	U	500	U	10	U	10	U	NA	
Benzene	NA		38		500	U	500	U	12		15		NA	
cis-1,2-Dichloroethene	1500		9400	D	12000	D	12000	D	10	U	10	U	4	U
Cyclohexane	NA		64		500	U	500	U	2	J	10	U	NA	
Ethylbenzene	NA		6	J	500	U	500	U	4	J	5	J	NA	
Isopropylbenzene	NA		10	U	500	U	500	U	10	U	10	U	NA	
Methylcyclohexane	NA		41		500	U	500	U	10	U	10	U	NA	
Toluene	NA		43		500	U	500	U	10	U	10	U	NA	
Total Xylenes	NA		13		500	U	500	U	10	U	10	U	NA	
trans-1,2-Dichloroethene	NA		39		500	U	500	U	10	U	10	U	NA	
Trichloroethene	2400		4600	D	2100		2800		10	U	10	U	4	U
Vinyl chloride	240		740	D	1400		1400		10	U	10	U	4	U
Total CVOCs	4140		14852		15500		16200		0		0		0	
TCE/DCE Ratio	1.60		0.49		0.18		0.23		Not Applicable		Not Applicable		Not Applicable	
TCE /VC Ratio	10.00		6.22		1.50		2.00		Not Applicable		Not Applicable		Not Applicable	

Table 3
Groundwater Analytical Results - Residual Source Area
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

ClientSample LabSample DateSampled	AL-7 A4157904 2/25/2004		TW-1 A3847201 9/4/2003		TW-2 A3847202 9/4/2003		TW-3 A3847203 9/4/2003		TANK-1 A3847204 9/4/2003	
Volatile Organic Compound (ug/l)										
1,1-Dichloroethene	30	J	10	U	4	J	10	U	2000	U
Benzene	100	U	10	U	10	U	10	U	2000	U
cis-1,2-Dichloroethene	**1100**		10	U	**540**		**13**		**18000**	
Cyclohexane	100	U	10	U	10	U	10	U	2000	U
Ethylbenzene	100	J	10	U	10	U	10	U	2000	U
Isopropylbenzene	100	U	10	U	10	U	10	U	2000	U
Methylcyclohexane	100	U	10	U	10	U	10	U	2000	U
Toluene	100	U	10	U	10	U	10	U	2000	U
Total Xylenes	**29**	J	10	U	10	U	10	U	2000	U
trans-1,2-Dichloroethene	100	U	10	U	10	U	10	U	2000	U
Trichloroethene	**3000**		10	U	**53**		**160**		**32000**	
Vinyl chloride	**160**		10	U	**950**		10	U	**8000**	
Total CVOCs	**4290**		**0**		**1547**		**193**		**58000**	
TCE/DCE Ratio	**2.73**		Not Applicable		**0.10**		**12.31**		**1.78**	
TCE /VC Ratio	**18.75**		Not Applicable		**0.06**		Not Applicable		**4.00**	

Notes:

Bolded Values Exceed the Published Standard; however, these may not necessarily apply to VCP sites
NA=Not Analyzed
U=Not Detected, shown with method detection limit
N/A=Not Available
J=Estimated Value,below method detection limit
B=Blank Contamination
D=Sample analyzed at second dilution factor
N=Indicates spike sample recovery is not within the quality control limits



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CHECKED BY

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OFFICE Pittsburgh, PA

SCALE

0 2000 4000 FEET

REFERENCE:

U.S.G.S. 7.5 MIN TOPOGRAPHIC MAP OF DUNKIRK, N.Y., DATED 1954, PHOTOREVISED 1979, SCALE: 1" = 2000'.

URS

THE CLOSED ALUMAX–DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

FIGURE 1

SITE LOCATION MAP

THE CLOSED ALUMAX–DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

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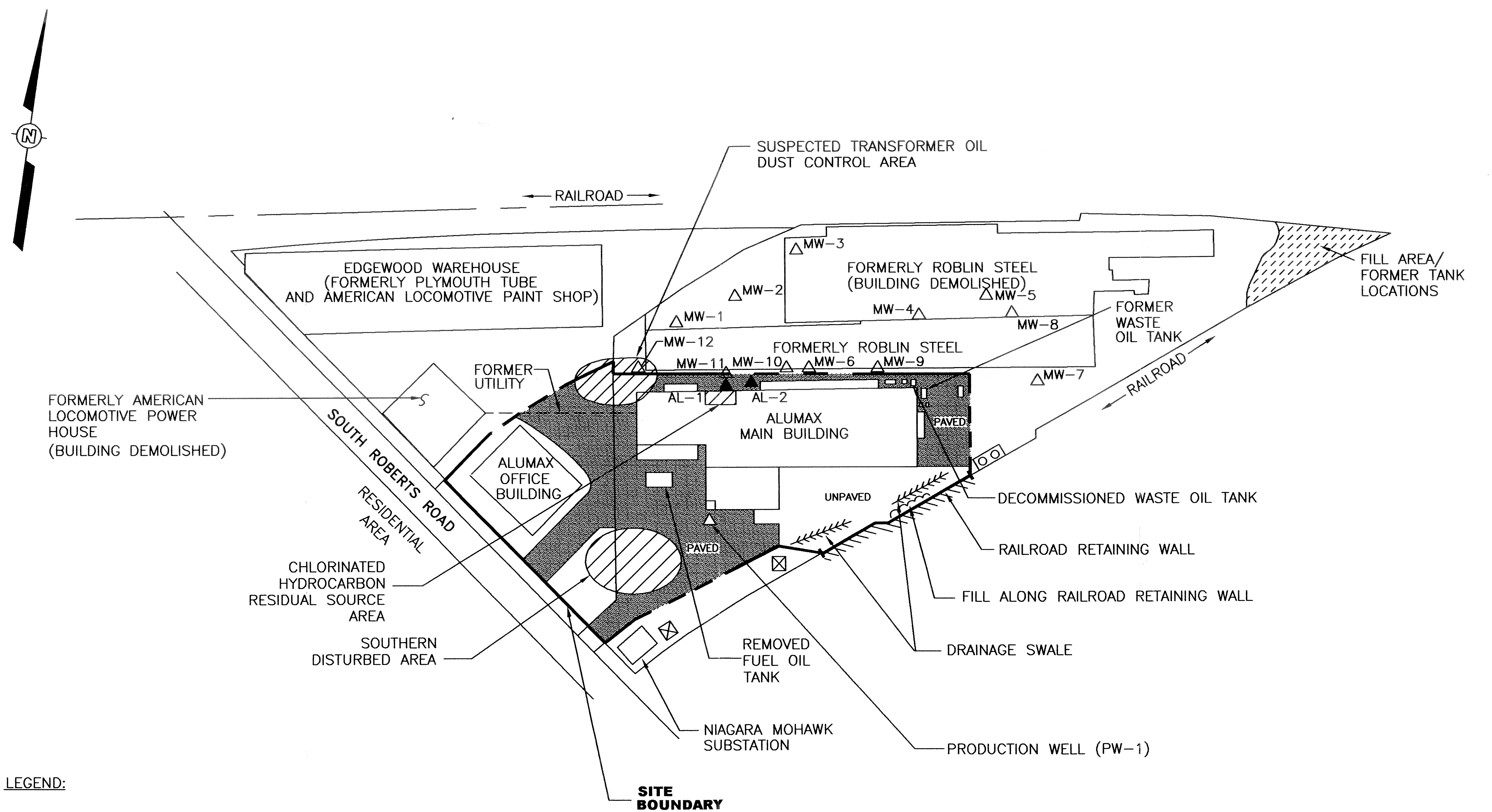
Pittsburgh, PA	JEP	4/9/03					



LEGEND:

- SITE BOUNDARY
- PAVED AREAS
- ▲AL-1 ON SITE WELL
- △MW-1 OFFSITE WELL

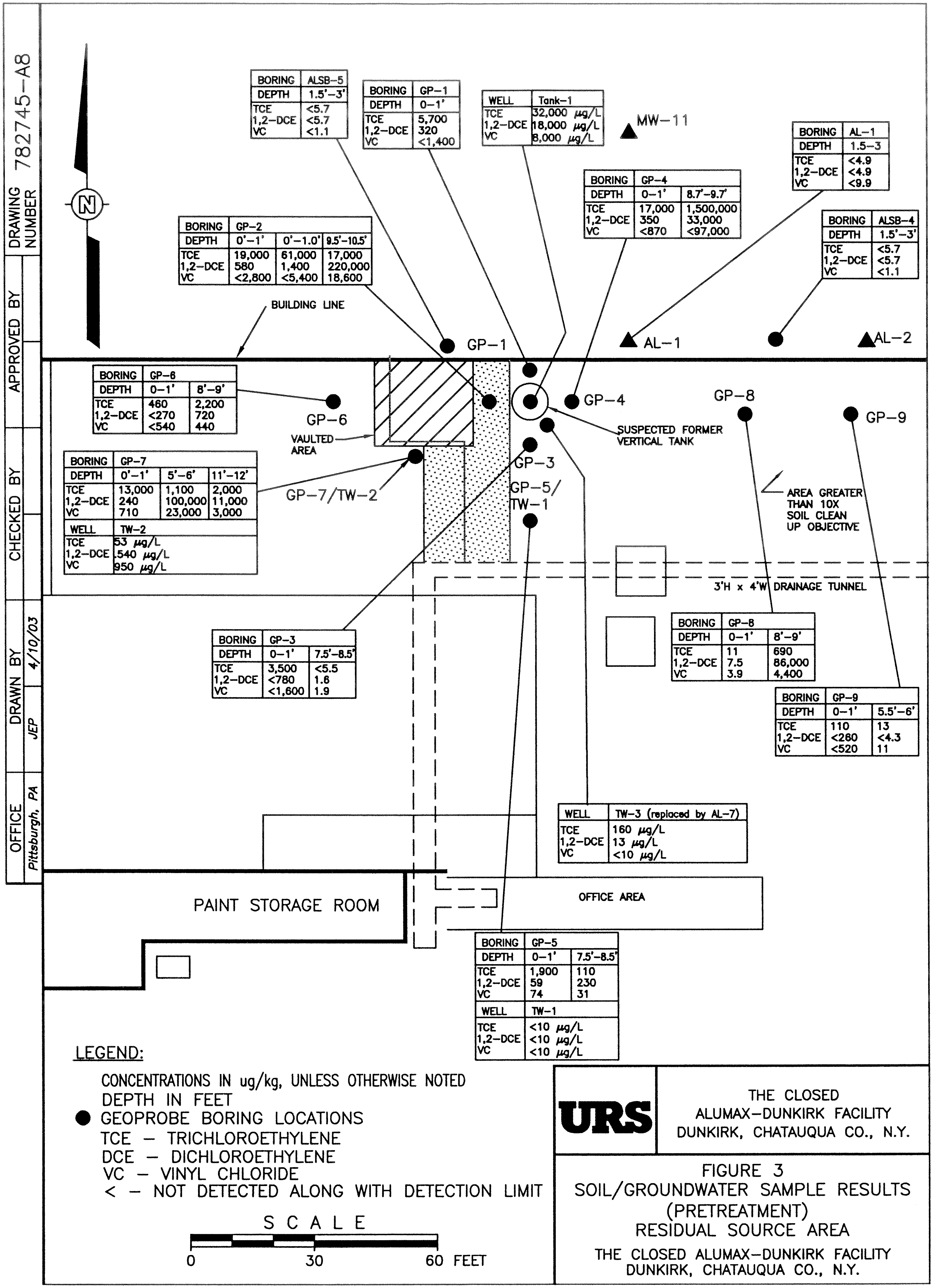
URS

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

FIGURE 2

GENERAL SITE LAYOUT

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.


DRAWING NUMBER 782745-A8
APPROVED BY
CHECKED BY
DRAWN BY JEP 4/10/03
OFFICE Pittsburgh, PA
N
BORING ALSB-5 DEPTH 1.5'-3' TCE <5.7 1,2-DCE <5.7 VC <1.1
BORING GP-1 DEPTH 0-1' TCE 5,700 1,2-DCE 320 VC <1,400
WELL Tank-1 TCE 32,000 µg/L 1,2-DCE 18,000 µg/L VC 8,000 µg/L
MW-11
BORING AL-1 DEPTH 1.5-3 TCE <4.9 1,2-DCE <4.9 VC <9.9
BORING GP-4 DEPTH 0-1' 8.7'-9.7' TCE 17,000 1,500,000 1,2-DCE 350 33,000 VC <870 <97,000
BORING ALSB-4 DEPTH 1.5'-3' TCE <5.7 1,2-DCE <5.7 VC <1.1
BORING GP-2 DEPTH 0'-1' 0'-1.0' 9.5'-10.5' TCE 19,000 61,000 17,000 1,2-DCE 580 1,400 220,000 VC <2,800 <5,400 18,600
BUILDING LINE
GP-1
AL-1
AL-2
BORING GP-6 DEPTH 0-1' 8'-9' TCE 460 2,200 1,2-DCE <270 720 VC <540 440
GP-6
VAULTED AREA
GP-4
GP-8
GP-9
SUSPECTED FORMER VERTICAL TANK
BORING GP-7 DEPTH 0'-1' 5'-6' 11'-12' TCE 13,000 1,100 2,000 1,2-DCE 240 100,000 11,000 VC 710 23,000 3,000
WELL TW-2 TCE 53 µg/L 1,2-DCE 540 µg/L VC 950 µg/L
GP-7/TW-2
GP-3
GP-5/ TW-1
AREA GREATER THAN 10X SOIL CLEAN UP OBJECTIVE
3'H x 4'W DRAINAGE TUNNEL
BORING GP-8 DEPTH 0-1' 8'-9' TCE 11 690 1,2-DCE 7.5 86,000 VC 3.9 4,400
BORING GP-3 DEPTH 0-1' 7.5'-8.5' TCE 3,500 <5.5 1,2-DCE <780 1.6 VC <1,600 1.9
BORING GP-9 DEPTH 0-1' 5.5'-6' TCE 110 13 1,2-DCE <260 <4.3 VC <520 11
WELL TW-3 (replaced by AL-7) TCE 160 µg/L 1,2-DCE 13 µg/L VC <10 µg/L
PAINT STORAGE ROOM
OFFICE AREA
BORING GP-5 DEPTH 0-1' 7.5'-8.5' TCE 1,900 110 1,2-DCE 59 230 VC 74 31
WELL TW-1 TCE <10 µg/L 1,2-DCE <10 µg/L VC <10 µg/L
LEGEND:
CONCENTRATIONS IN ug/kg, UNLESS OTHERWISE NOTED
DEPTH IN FEET
GEOPROBE BORING LOCATIONS
TCE – TRICHLOROETHYLENE
DCE – DICHLOROETHYLENE
VC – VINYL CHLORIDE
< – NOT DETECTED ALONG WITH DETECTION LIMIT
SCALE
0 30 60 FEET
URS
THE CLOSED ALUMAX-DUNKIRK FACILITY DUNKIRK, CHATAUQUA CO., N.Y.
FIGURE 3
SOIL/GROUNDWATER SAMPLE RESULTS (PRETREATMENT) RESIDUAL SOURCE AREA
THE CLOSED ALUMAX-DUNKIRK FACILITY DUNKIRK, CHATAUQUA CO., N.Y.

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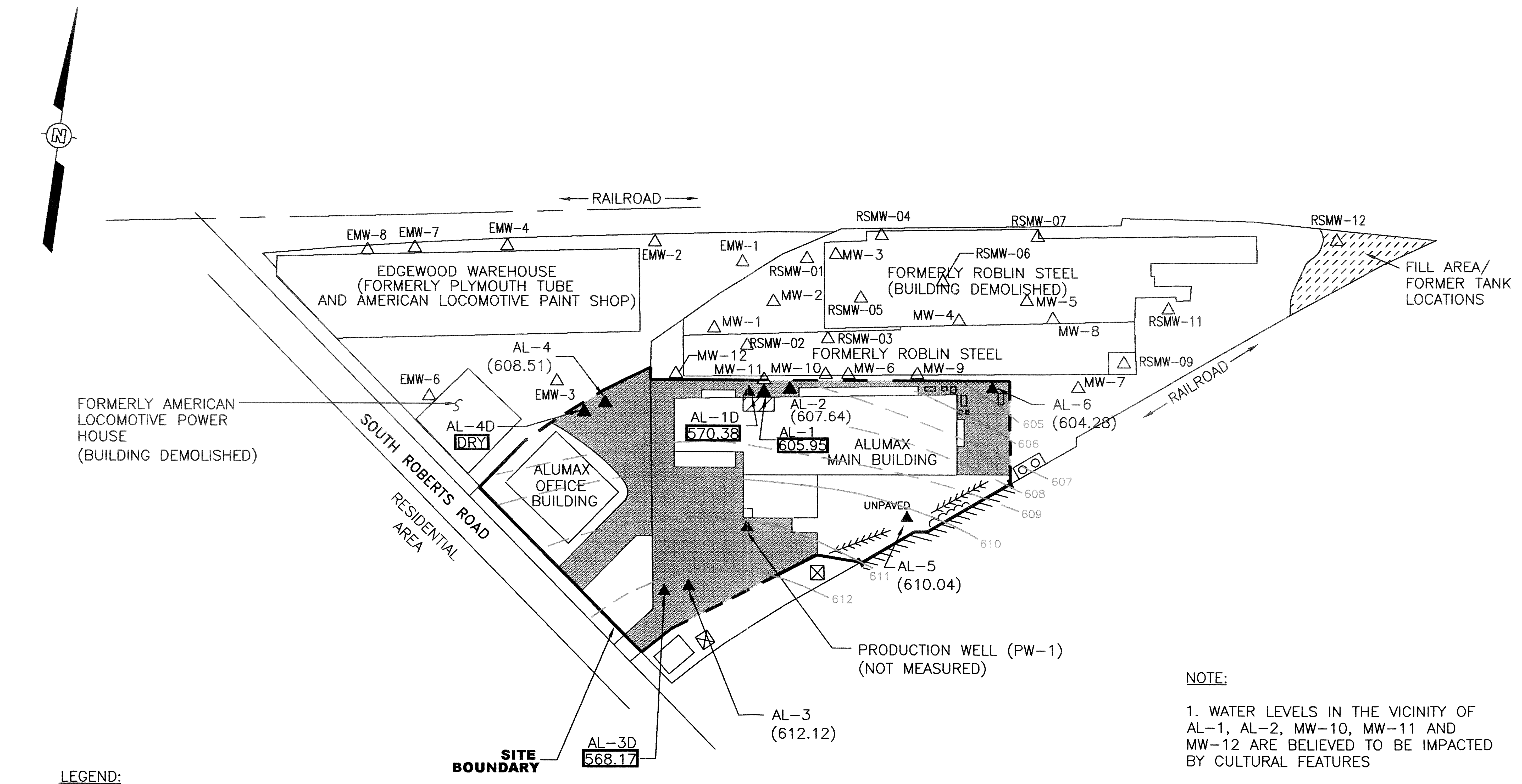


NOTE:

1. WATER LEVELS IN THE VICINITY OF AL-1, AL-2, MW-10, MW-11 AND MW-12 ARE BELIEVED TO BE IMPACTED BY CULTURAL FEATURES

LEGEND:

(607.64)	ELEVATION IN FEET ABOVE MSL	
(box)	ELEVATION NOT USED IN CONTOUR	
(shaded)	PAVED AREAS	EMW = EDGEWOOD WELL
▲AL-1	ON SITE WELL	RSMW = NEW ROBLIN STEEL WELLS
△MW-1	OFFSITE WELL	MW = EXISTING ROBLIN STEEL WELLS

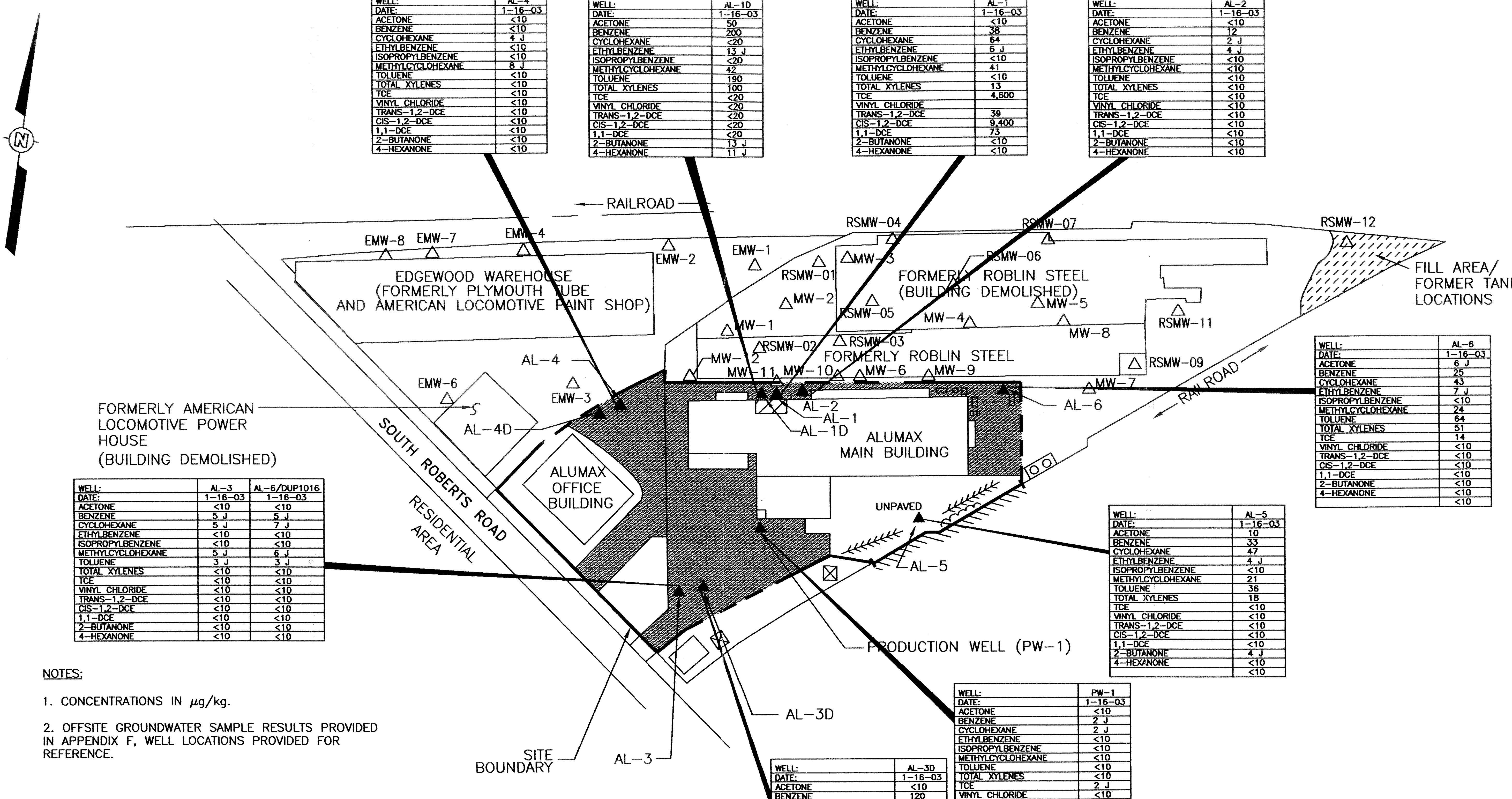
SCALE
0 50 100 FEET

URS

THE CLOSED
ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

FIGURE 4
SHALLOW GROUNDWATER SURFACE CONTOUR MAP
2/17/03
THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

OFFICE	DRAWN BY		CHECKED BY	APPROVED BY	DRAWING NUMBER 782745-B1
Pittsburgh, PA	JEP	3/25/02			



WELL:	AL-4
DATE:	1-16-03
ACETONE	<10
BENZENE	<10
CYCLOHEXANE	4 J
ETHYLBENZENE	<10
ISOPROPYLBENZENE	<10
METHYLCYCLOHEXANE	8 J
TOLUENE	<10
TOTAL XYLENES	<10
TCE	<10
VINYL CHLORIDE	<10
TRANS-1,2-DCE	<10
CIS-1,2-DCE	<10
1,1-DCE	<10
2-BUTANONE	<10
4-HEXANONE	<10

WELL:	AL-1D
DATE:	1-16-03
ACETONE	50
BENZENE	200
CYCLOHEXANE	<20
ETHYLBENZENE	13 J
ISOPROPYLBENZENE	<20
METHYLCYCLOHEXANE	42
TOLUENE	190
TOTAL XYLENES	100
TCE	<20
VINYL CHLORIDE	<20
TRANS-1,2-DCE	<20
CIS-1,2-DCE	<20
1,1-DCE	<20
2-BUTANONE	13 J
4-HEXANONE	11 J

WELL:	AL-1
DATE:	1-16-03
ACETONE	<10
BENZENE	38
CYCLOHEXANE	64
ETHYLBENZENE	6 J
ISOPROPYLBENZENE	<10
METHYLCYCLOHEXANE	41
TOLUENE	<10
TOTAL XYLENES	13
TCE	4,600
VINYL CHLORIDE	
TRANS-1,2-DCE	39
CIS-1,2-DCE	9,400
1,1-DCE	73
2-BUTANONE	<10
4-HEXANONE	<10

WELL:	AL-2
DATE:	1-16-03
ACETONE	<10
BENZENE	12
CYCLOHEXANE	2 J
ETHYLBENZENE	4 J
ISOPROPYLBENZENE	<10
METHYLCYCLOHEXANE	<10
TOLUENE	<10
TOTAL XYLENES	<10
TCE	<10
VINYL CHLORIDE	<10
TRANS-1,2-DCE	<10
CIS-1,2-DCE	<10
1,1-DCE	<10
2-BUTANONE	<10
4-HEXANONE	<10

WELL:	AL-6
DATE:	1-16-03
ACETONE	6 J
BENZENE	25
CYCLOHEXANE	43
ETHYLBENZENE	7 J
ISOPROPYLBENZENE	<10
METHYLCYCLOHEXANE	24
TOLUENE	64
TOTAL XYLENES	51
TCE	14
VINYL CHLORIDE	<10
TRANS-1,2-DCE	<10
CIS-1,2-DCE	<10
1,1-DCE	<10
2-BUTANONE	<10
4-HEXANONE	<10
	<10

WELL:	AL-3	AL-6/DUP1016
DATE:	1-16-03	1-16-03
ACETONE	<10	<10
BENZENE	5 J	5 J
CYCLOHEXANE	5 J	7 J
ETHYLBENZENE	<10	<10
ISOPROPYLBENZENE	<10	<10
METHYLCYCLOHEXANE	5 J	6 J
TOLUENE	3 J	3 J
TOTAL XYLENES	<10	<10
TCE	<10	<10
VINYL CHLORIDE	<10	<10
TRANS-1,2-DCE	<10	<10
CIS-1,2-DCE	<10	<10
1,1-DCE	<10	<10
2-BUTANONE	<10	<10
4-HEXANONE	<10	<10

WELL:	AL-5
DATE:	1-16-03
ACETONE	10
BENZENE	33
CYCLOHEXANE	47
ETHYLBENZENE	4 J
ISOPROPYLBENZENE	<10
METHYLCYCLOHEXANE	21
TOLUENE	36
TOTAL XYLENES	18
TCE	<10
VINYL CHLORIDE	<10
TRANS-1,2-DCE	<10
CIS-1,2-DCE	<10
1,1-DCE	<10
2-BUTANONE	4 J
4-HEXANONE	<10
	<10

WELL:	PW-1
DATE:	1-16-03
ACETONE	<10
BENZENE	2 J
CYCLOHEXANE	2 J
ETHYLBENZENE	<10
ISOPROPYLBENZENE	<10
METHYLCYCLOHEXANE	<10
TOLUENE	<10
TOTAL XYLENES	<10
TCE	2 J
VINYL CHLORIDE	<10
TRANS-1,2-DCE	<10
CIS-1,2-DCE	<10
1,1-DCE	<10
2-BUTANONE	<10
4-HEXANONE	<10
	<10

WELL:	AL-3D
DATE:	1-16-03
ACETONE	<10
BENZENE	120
CYCLOHEXANE	120
ETHYLBENZENE	18
ISOPROPYLBENZENE	2 J
METHYLCYCLOHEXANE	71
TOLUENE	150
TOTAL XYLENES	110
TCE	<10
VINYL CHLORIDE	<10
TRANS-1,2-DCE	<10
CIS-1,2-DCE	<10
1,1-DCE	<10
2-BUTANONE	5 J
4-HEXANONE	<10
	2 J

NOTES:

1. CONCENTRATIONS IN µg/kg.

2. OFFSITE GROUNDWATER SAMPLE RESULTS PROVIDED IN APPENDIX F, WELL LOCATIONS PROVIDED FOR REFERENCE.

LEGEND:

PAVED AREAS

▲AL-1 ON SITE WELL

▲AL-P PROPOSED SHALLOW ON SITE WELL

△MW-1 OFFSITE WELL

▲AL-PD PROPOSED DEEP ON SITE WELL

SCALE

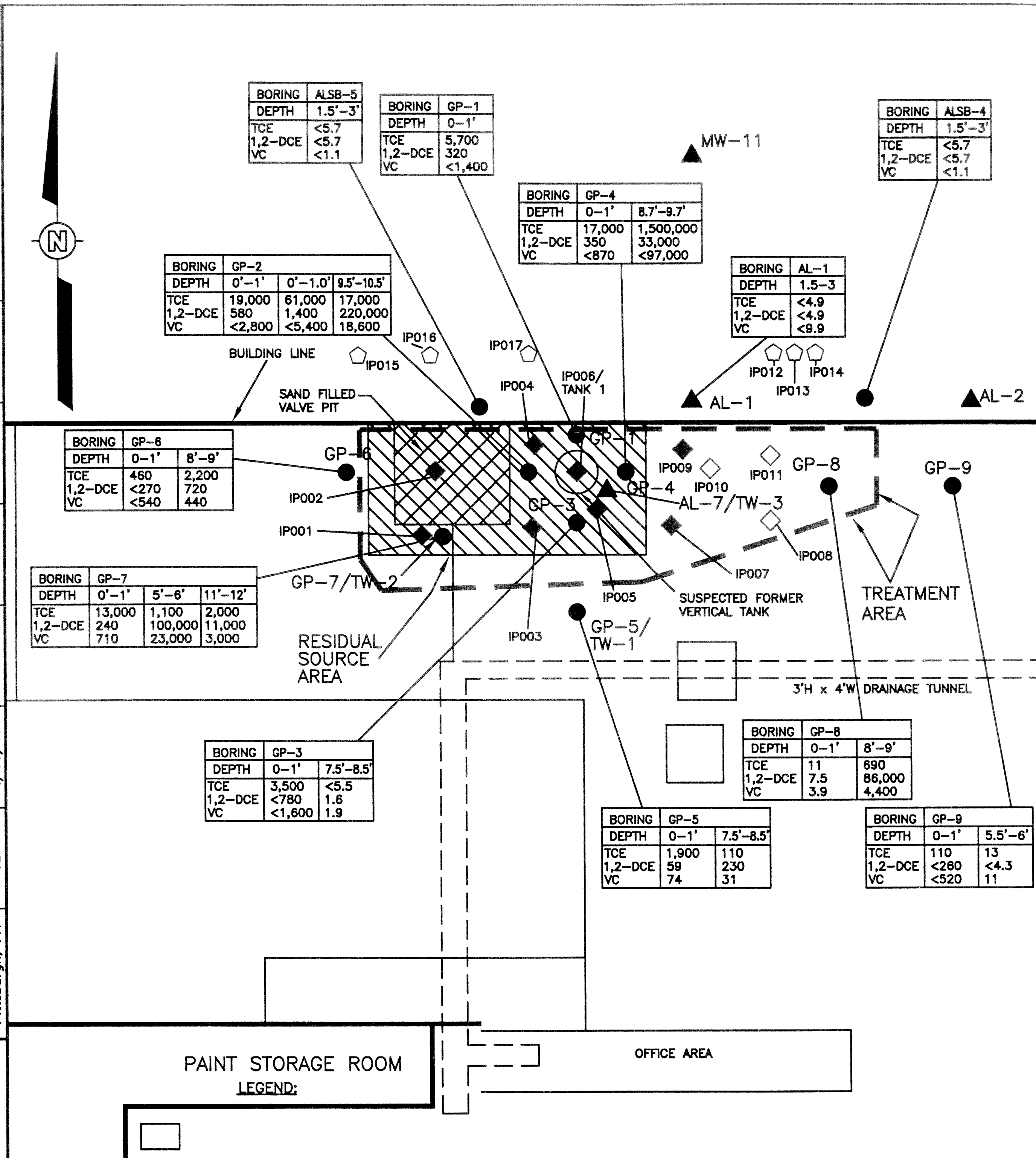
0 200 400 FEET

URS

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

FIGURE 5

GROUNDWATER ANALYTICAL RESULTS
VOLATILE ORGANIC COMPOUNDS
THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.



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LEGEND:

RESIDUAL SOURCE AREA

IP = INJECTION POINT

ZVI EMPLACEMENT POINT, OUTSIDE BUILDING

ZVI PRESSURE INJECTION EMPLACEMENT POINT, MULTIPLE DEPTHS

PRESSURE INJECTION POINT, BEDROCK INTERFACE ONLY

EXISTING WELL LOCATION

CONCENTRATIONS IN ug/kg

GEOPROBE BORING LOCATIONS

TCE – TRICHLOROETHYLENE

DCE – DICHLOROETHYLENE

VC – VINYL CHLORIDE

< – NOT DETECTED ALONG WITH DETECTION LIMIT

SCALE

0 30 60 FEET

URS

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

FIGURE 6
ZVI INJECTION POINTS
RESIDUAL SOURCE AREA

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

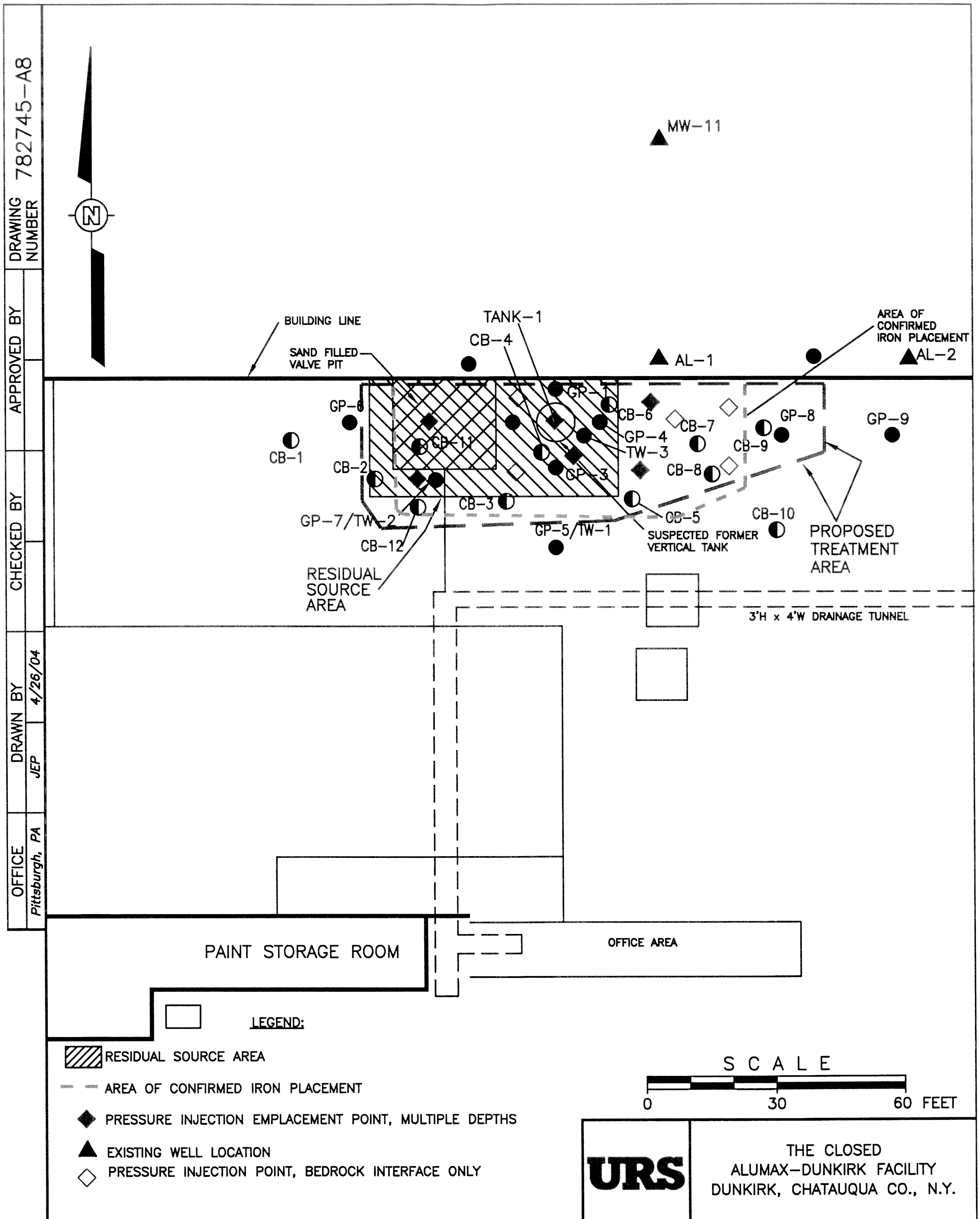
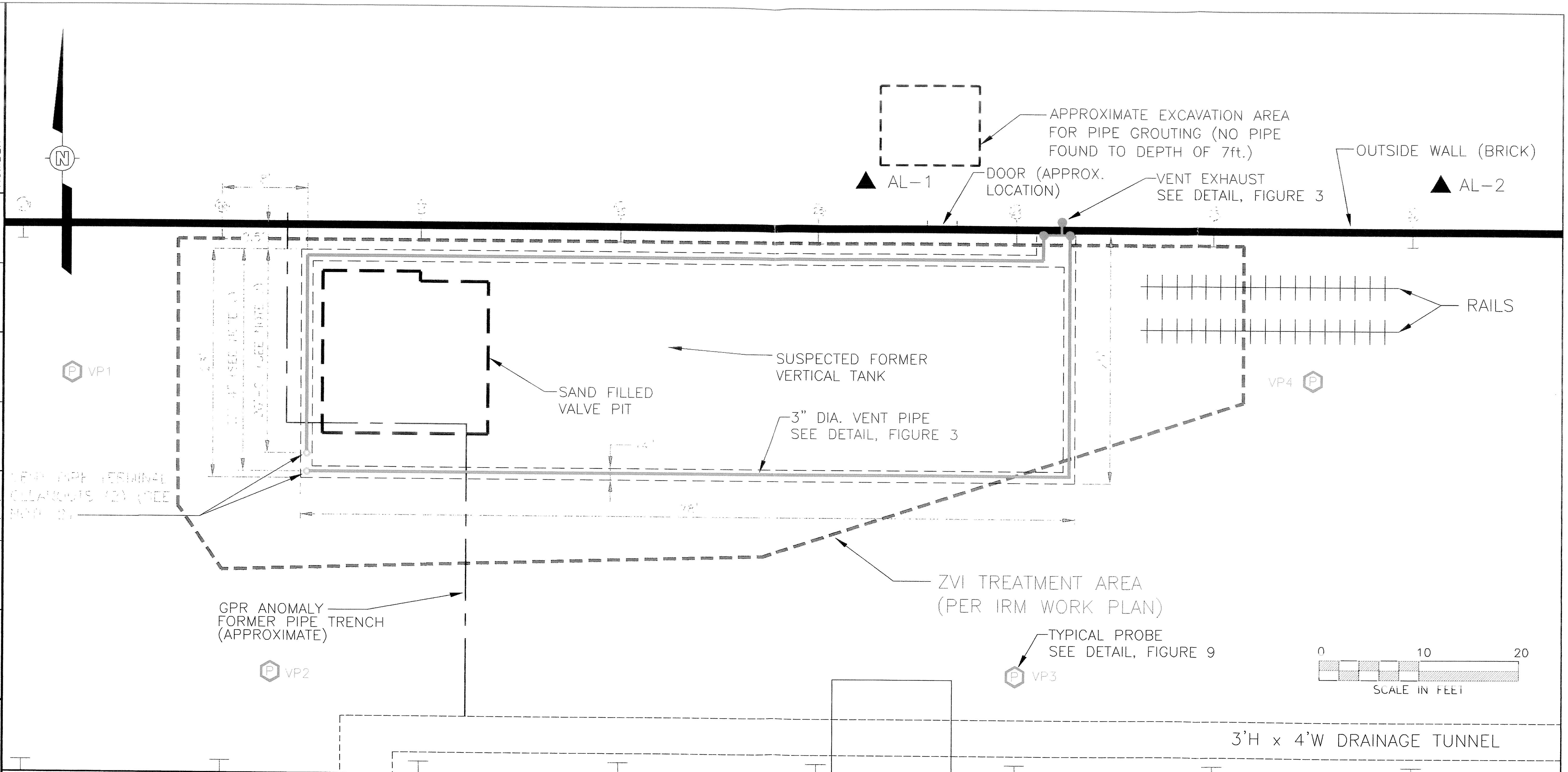


FIGURE 7
CONFIRMATORY BORING LOCATIONS

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.



OFFICE	DRAWN BY		CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	KG	03/23/04			VENTPLAN-BR

LEGEND

BUILDING COLUMN NUMBER

TREATMENT AREA

VENT PIPING

VAPOR PROBE (4)

PLAN OF VAPOR PROBES AND VENT PIPE

NOTES:

1. VENTING SYSTEM CONSTRUCTED DECEMBER 2003 BY URS ROS, PITTSBURGH, PA.

2. ACCESS/MONITORING WELL AT EACH VENT LINE TERMINUS (FLUSH-MOUNT MANHOLES).

3. SEE FIGURE 3 FOR DETAILS OF THE VAPOR PROBES, VENT PIPING IN TRENCH, AND THE VENT EXHAUST.

URS

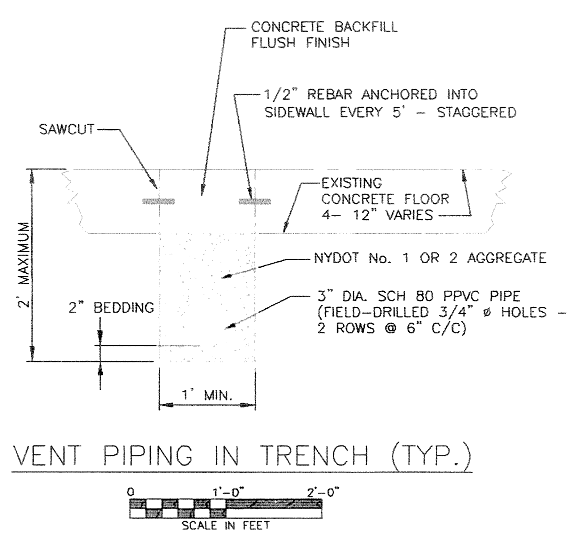
THE CLOSED ALUMAX-DUNKIRK FACILITY DUNKIRK, CHAUTAUQUA CO., N.Y.

FIGURE 8

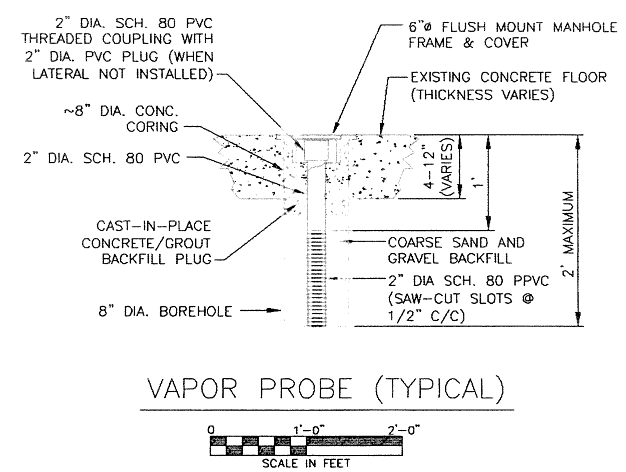
SUBFLOOR ZVI VENTING PLAN

THE CLOSED ALUMAX DUNKIRK FACILITY DUNKIRK, CHAUTAUQUA CO., N.Y.

OFFICE	DRAWN BY		CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	KG	03/23/04			VENTPLAN-BR

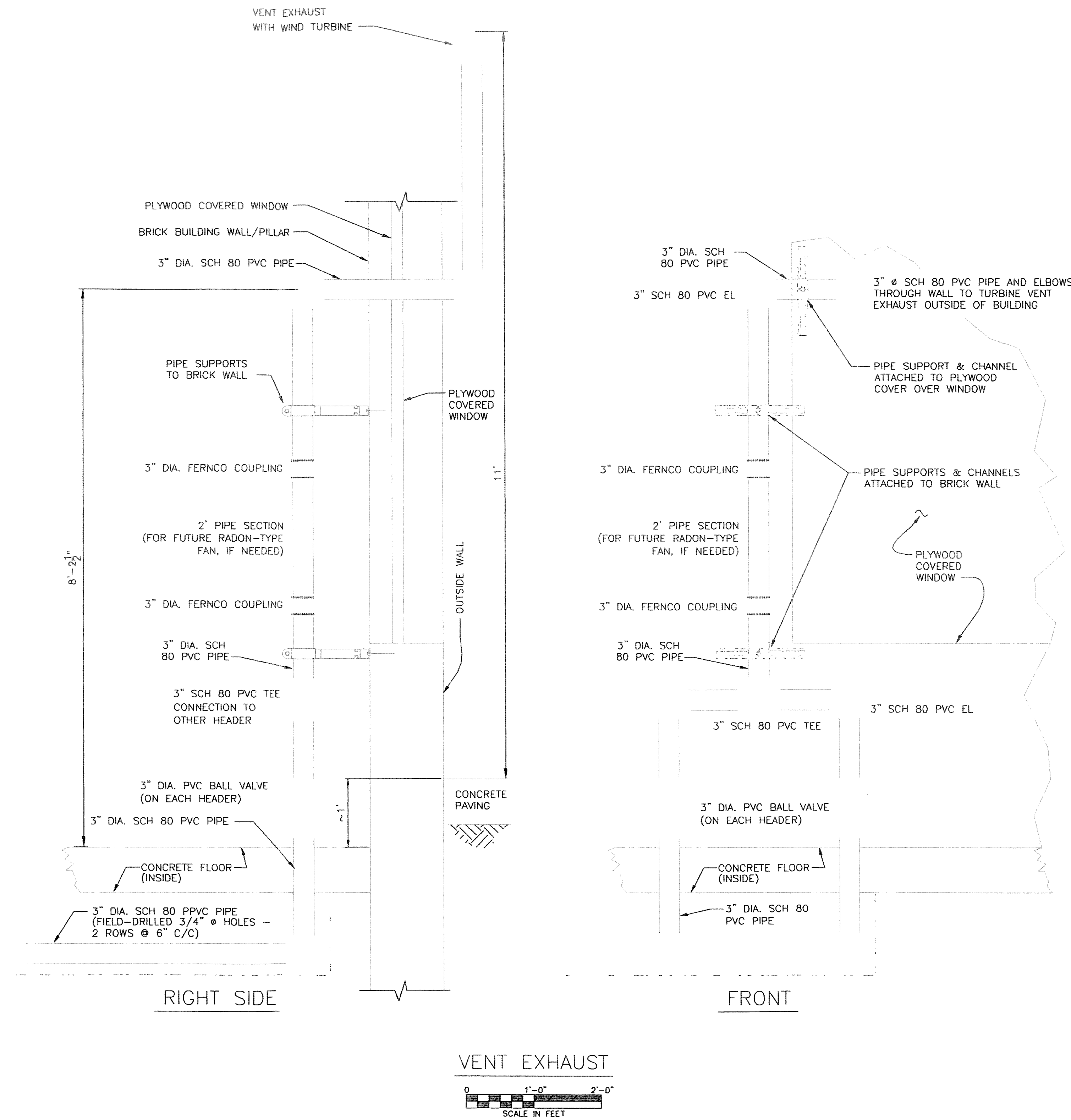


VENT PIPING IN TRENCH (TYP.)



VAPOR PROBE (TYPICAL)

NOTE:
MANHOLE FRAME REQUIRES MINIMUM 4" CONCRETE THICKNESS. IF CONCRETE SLAB < 4", FIELD MODIFICATION SHALL BE MADE AS APPROVED BY ENGINEER.



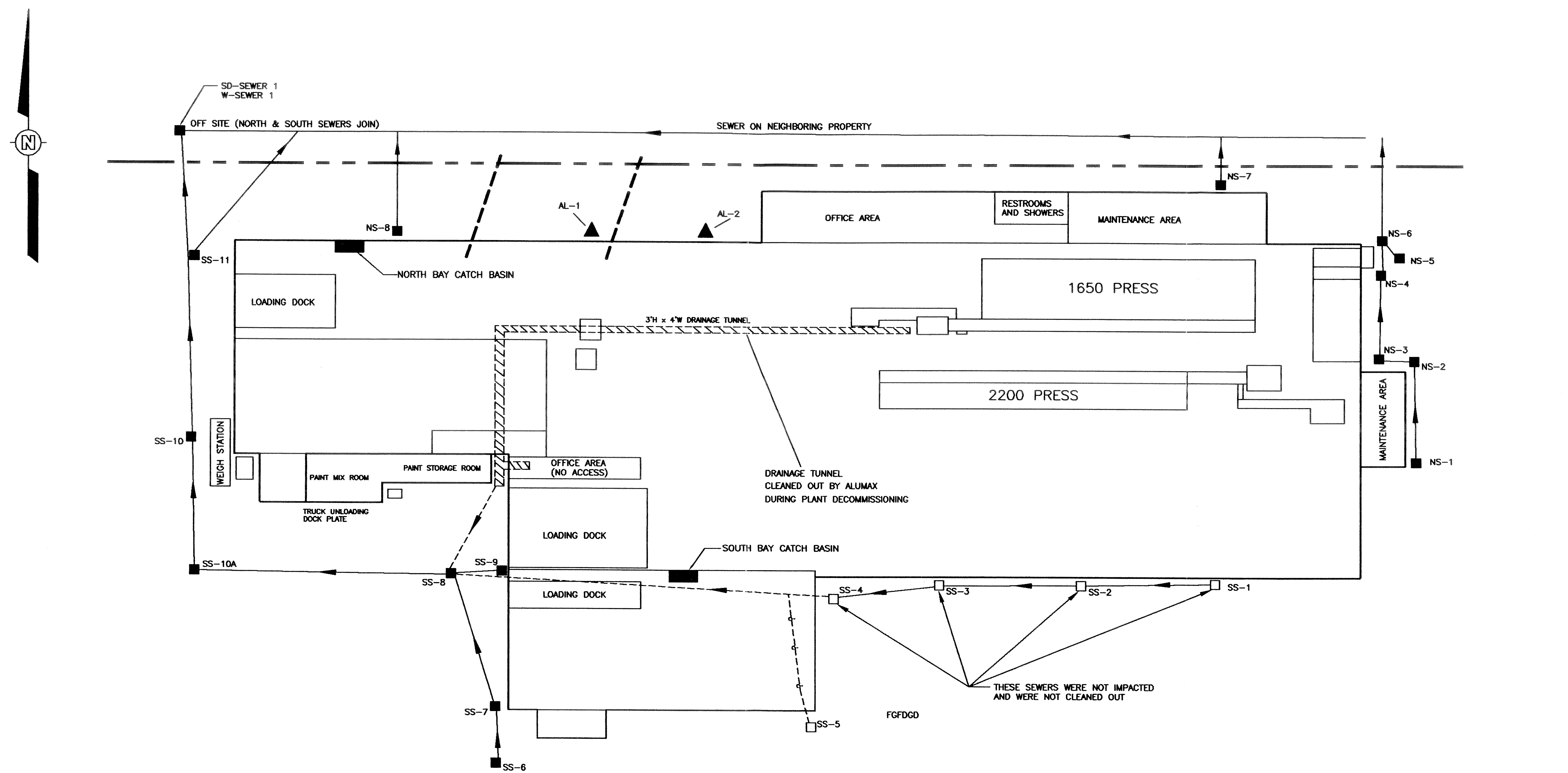
VENT EXHAUST

URS	THE CLOSED ALUMAX-DUNKIRK FACILITY DUNKIRK, CHAUTAUQUA CO., N.Y.

FIGURE 9

SUBFLOOR ZVI VENTING DETAILS

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHAUTAUQUA CO., N.Y.



LEGEND:

- NS-1 – NORTH SEWER CATCH BASIN #1
- SS-2 – SOUTH SEWER CATCH BASIN #2
- SEWER CATCH BASINS CLEANED OUT
- VCP BORING LOCATIONS

SCALE

0 60 120 FEET

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URS

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

FIGURE 10
SEWER CATCH BASINS
THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

Appendix A
Voluntary Clean-Up Program
Combined Institutional Control Plan/
Operations and Maintenance Plan

Alumax Extrusions Inc.
320 South Roberts Road
Dunkirk, New York

Prepared for:
Alcoa, Inc.

URS Corp. Project No: 19532-094-029
June 23, 2004
Revision: 1

2020 Ardmore Boulevard
Room 205
Pittsburgh, Pennsylvania 15221
Voice (412) 351-2006
Fax (412) 351-2203

Table of Contents

Tables

Figures

Attachment

1.0 Introduction

This Combined Institutional Control / Operations and Maintenance Plan (Combined Plan) is part of the New York State Voluntary Clean-Up Program (VCP) for the Closed Alumax Extrusion Property (Site) located at 320 South Roberts Road, Dunkirk New York. The property location is shown on Figure 1 and the Site plan is shown on Figure 2. This Combined Plan describes the following elements: 1) Summary of Environmental Conditions, 2) Contemplated Use, 3) Groundwater Use Restrictions, 4) Soil Excavation and Management Plan, 4) Soil and Cover Plan, and 5) Operations and Management Plan.

Alcoa Inc. (Alcoa), as the Volunteer, received correspondence dated 25 July 2002 from Mr. Glen Bailey, Senior Attorney with the New York State Department of Environmental Conservation (NYSDEC), indicating that their VCP application is complete and that they are eligible to participate in the VCP as a PRP Volunteer. The Site was assigned VCP Number V00589-9. Alcoa has submitted an executed copy of the VCP Agreement and performed a Site Investigation (SI) and Interim Remedial Measures (IRM) in accordance with NYSDEC approved work plans. The SI Report was submitted to NYSDEC and the New York State Department of Health (DOH) on May 9, 2003 with revisions dated October 8, 2003 and Alcoa subsequently received NYSDEC approval of the SI Report in a letter dated November 15, 2003. The Combined Plan is being submitted as an appendix to the IRM Completion Report; however, the Combined Plan is formatted to be a stand alone document for long term use at the facility. This Combined Plan provides guidance concerning Soil/Asphalt Cover, Soil Excavation and Management, Groundwater Use, and monitoring of the groundwater associated with the Residual Source Area. Additionally, amendments to the property deed identifying the property use restrictions are provided as Attachment A of this document. It is Alcoa's plan to divest of the property once a Release of Liability has been granted. Subsequent property owner's will be subject to this Combined Plan or a NYSDEC-approved modified plan.

Based on the VCP SI and previous work done at the Site, a "Residual Source Area" was identified that is amenable to source control treatment via zero valent iron (ZVI) injection. Additionally, residual materials identified in two catch basins located within the building were addressed as an IRM. To document the means by which these concerns were to be addressed, an IRM Work Plan was submitted and approved by the NYSDEC. As indicated in the NYSDEC's October 29, 2003 work plan approval letter, the final IRM scope of work is presented in the IRM Work Plan dated July 15, 2003 as revised in subsequent addendums dated October 6, 2003, and October 24, 2003. The completion of the IRM scope of work is documented in the IRM Completion Report.

The remainder of this section provides a brief history of the Site's involvement in the Voluntary Clean-up Program (VCP) and the Site's industrial use, which predates the Alcoa's acquisition of the property. This will provide background for the basis of this Combined Plan, including the nature of previous Site use and constituents of potential concern identified at the Site. The nature of impact at the Site is considered to be low, and is generally focused within the Residual Source Area. Coupled with ZVI treatment of the Residual Source Area and cleanout of accumulated sediments from the catch basins, the implementation of select institutional controls is seen as a precautionary measure to provide conservative controls that allow reuse of the property for most industrial and commercial applications.

1.1 Overview of Site History

Industrial development of the Site was initiated around 1920, when the American Locomotive Company expanded its Dunkirk operations. The Site use has varied over time and uses have included a foundry, a coal storage pile, finishing line for locomotives, and finned heat exchanger fabrication. In 1976, the facility was acquired by Alumax Inc. (Alumax), which operated an aluminum extrusion business at the Site until 1993, operating as Alumax Extrusions, Inc. Alcoa's acquisition of Alumax in 1998 included the idled Dunkirk facility. Alcoa has not conducted any operations at the facility since acquisition. Based on this long industrial history, future use is expected to be restricted-industrial or restricted-commercial as indicated in the VCP application.

1.2 Overview of Site Characterization

The SI Report indicated that an area identified as the Residual Source Area contained concentrations of trichloroethene (TCE) and its degradation products in soil that may be contributing constituents of concern identified in Site groundwater. This source of the TCE is believed to have been a former above ground storage tank, which was removed prior to Alumax's acquisition of the property. Groundwater impacted by the Residual Source Area is not currently utilized as a water supply. As indicated, an IRM in the form of *in-situ* treatment using zero valent iron (ZVI) was implemented to reduce the potential contribution to groundwater from the Residual Source Area. Additionally, institutional controls in the form of a soil excavation and management plan, a soil cover/paving plan, and groundwater and land use restrictions will be applied to the Site to address low concentration impacts to the Site soils and groundwater. The treatment of the Residual Source Area and the application of the institutional controls should effectively reduce contaminant mass, restrict the potential for movement of contaminants in ground water beyond the Residual Source Area and further off-Site, and eliminate casual exposure to constituents of potential concern based on the expected land use, which is "Restricted Industrial" or potentially "Restricted Commercial," as defined by the "Draft - Voluntary Cleanup Program Guide" (NYSDEC, 2002), and further discussed in Section 1.5 below.

1.3 Site Description

The Site consists of two buildings, the Main Building constructed in 1921 and the Office Building constructed in 1990. The Main Building is approximate 140,000 square feet and the office building is approximately 7,200 square feet. The Site also consists of two parcels, which in aggregate comprise approximately 12 acres. A surveyed Site plan was provided as part of the VCP application. The Site location and Site plan are shown on Figures 1 and 2, respectively.

1.4 Site History

The purpose of this brief summary is to provide an introduction to the history and potential concerns associated with the property located at 320 South Roberts Road, Dunkirk, NY.

In July 1998, Alcoa acquired the assets of Alumax, including the subject property in Dunkirk, New York. However, Alumax Inc., a Delaware Corporation, is still currently the legal owner of the property. At the time of the acquisition, the Alumax property had been idled and Alcoa has conducted no operations at the Site since the acquisition. The property had been used for heavy industrial purposes for about 73 years, prior to acquisition by Alcoa. Alcoa has undertaken five phases of Site investigation including cleanup of some Site soils, a former oil storage tank Site, and storm drain sediments. The investigation results and cleanup activities are summarized in "Voluntary Clean-up Program, Site Investigation Report, Alumax Extrusions Inc., 320 South Roberts Road, Dunkirk, New York, NYS VCP Site #V00589-9", prepared by URS Corporation. (May 6, 2003). The exposure assessment indicated that on-Site constituents could, for the most part, be addressed via institutional controls. The previously identified chlorinated hydrocarbon Residual Source Area was identified as a subject for an IRM, with an *in-situ* approach preferred. The Residual Source Area was addressed via the injection of iron, installation of a sub-floor venting system, and the implementation of this Combined Plan. The analytical results for the soil samples are presented on Figure 3 and Table 1; and the analytical results for groundwater are presented on Figure 4 and Table 2. These samples represent conditions prior to the completion of the IRM.

1.4.1 Property History

The Site has a long industrial history that has included the manufacture of locomotives and heat exchangers by American Locomotive (1918-1962), unkown use by Allegheny Ludlum (a specialty steel manufacturer, 1969-1972), aluminum extrusion by a small business (1972-1976) and Alumax, Inc. (1976-1993). The property has been idle since 1993, with the exception of trailer storage and plant decommissioning.

1.5 Land Use

The Site use is to remain "Restricted Industrial" and "Restricted Commercial," as defined by "Draft - Voluntary Cleanup Program Guide" (NYSDEC, 2002).

> **Restricted Commercial** – Residential Uses are not allowed in this category. Commercial uses are allowed but require engineering controls and/or institutional controls. Some types of "commercial" uses that could create "residential" types of

exposures are excluded, such as day-care and health care facilities. Retail stores, warehouse/distribution centers, service facilities, and office complexes would be included in the commercial definition.

Restricted Industrial – Residential and commercial uses are not allowed. Industrial uses are allowed but they require the use of engineering controls and/or institutional controls. Metalworking, manufacturing, and other industrial uses are included in this category.

The measures indicated in Institutional Controls portion of this Combined Plan allow either Restricted Commercial or Restricted Industrial use.

1.6 Summary of Environmental Conditions

The summary of environmental conditions is divided into: 1) Residual Source Area (which was the primary subject of the IRM Work Plan and has been treated using *in situ* technology), 2) Groundwater, and 3) Sitewide Soils.

Residual Source Area – Soils

A total of 19 samples were collected from nine soil boring locations within the building. The boring locations were selected to radiate outward from a metal ring, suspected to be a former aboveground storage tank (AST) location (identified while performing a ground penetrating radar survey), and were also selected based on the results of a passive soil gas survey discussed in the SI Report. These samples were analyzed for volatile chlorinated hydrocarbons. This investigation was previously summarized in the "Chlorinated Hydrocarbon Investigation" (IT, 2002) and the "Site Investigation Report" (URS, 2003). During the recent SI, soil samples collected from an additional 11 locations north of the building, indicated that soils outside the building are not significantly impacted by chlorinated hydrocarbons and are not considered to be part of the Residual Source Area. However deep soil samples collected just above bedrock in this area do show some impact, presumably from impacted groundwater. The building footer is believed to be situated on or keyed into bedrock, acting as a barrier for lateral migration of groundwater and contaminants. Based on Site observations, a gap in the building footer may be present in the vicinity of monitoring well AL-1, accounting for the elevated chlorinated hydrocarbon concentrations in this area in contrast to other nearby wells.

The pre-treatment sample analytical results for the Residual Source Area are provided in Table 3 and Figure 5. The results indicated a maximum concentration of TCE in GP-4 (1,500 mg/kg). The highest concentrations were detected at a depth of 8.7-9.7 feet below ground surface (ft – bgs).

Boring logs indicated ash and sand fill in the vicinity of the suspect former AST location (GP-1, -2, -3, -5, -6, and –7, with the fill being present only near the surface of GP-6). Moving outward the materials encountered were predominantly clay [GP-6 (ash/sand near surface), GP-8, and GP-9]. Bedrock was generally encountered at a depth of 10-12 ft - bgs.

This area has been treated by injecting ZVI. Zero valent iron has been proven to dramatically reduce the concentrations of chlorinated hydrocarbons upon application. Additionally, the ZVI continues to be effective for years after applications; therefore remaining organics that may remain in soils should be treated if they become mobile. A full discussion of the application is provided in the IRM Work Plan and Completion Report. A sub-slab vent system was also placed in this area to prevent build-up of vapors beneath the slab, thereby, reducing the potential for vapor intrusion into the building.

Groundwater

Nine groundwater monitoring wells were installed at the Site as part of the VCP and earlier investigations. These included 6 shallow wells and three deep wells. Additionally, one former production well (PW-1) is located on the property and was also used for monitoring purposes. The former production well was reportedly never used during active plant operations due to poor production rates. The shallow monitoring wells are installed to a nominal depth of approximately 17 ft - bgs and were installed in this manner initially to mirror similarly installed wells on the former Roblin property. These wells have screens 10-feet in length and are screened across both the top of bedrock and the groundwater surface. Groundwater was not encountered in the soils during the installation of the well; however, the static water levels in the wells were within the soil horizon. The shallow wells include AL-1, AL-2, AL-3, AL-4, AL-5, and AL-6. Three deep wells were installed to a maximum depth of approximately 60 ft - bgs. Because the main purpose of these wells is to determine the vertical extent of groundwater contamination, care was taken to limit the length of screen and also to construct the wells in such a way as to ensure that the cross contamination from the upper zone did not impact the water quality of the lower zone. Therefore, AL-1D was constructed with double casing, with steel upper casing used to seal the shallow weathered zone of bedrock. Once the wells were installed, the new wells were developed by purging a minimum of five (5) well volumes. Due to the poor recharge rates, this development took approximately a week to complete. The turbidity in each of the wells remained above 100 nephelometric turbidity units (NTUs). Monitoring wells were sampled by purging with a bailer and waiting for sufficient recovery to allow sampling. All monitoring wells were readily bailed dry. The production well was purged using the low flow technique and was sampled after stabilization of parameters.

The shallow wells and the production well were sampled for Target Compound List (TCL) volatile organic compounds (VOCs), TCL semivolatile organic compounds (SVOCs), and Target Analyte List (TAL) metals. However, NYSDEC was informed that the deep wells did not produce sufficient water to sample for a complete suite of constituents. After consultation with

NYSDEC, it was agreed that the deep wells would be sampled for TCL VOCs only, and additional analysis would be performed if the sample results from the shallow wells indicated that additional parameters should be added. AL-4D did not contain sufficient water to sample and AL-6 had poor recharge that resulted in excessive sampling time. A field decision was made to eliminate the total metals from this well due to insufficient sample volume; however, a dissolved metals sample was collected and analyzed. Results from the other wells at the Site did not indicate a significant metals issue that would require the collection of a total metals sample from AL-6.

Existing off-Site well data were acquired via public sources to incorporate into the groundwater analysis for delineation purposes. The off-Site data quality was not validated during this investigation and some of the information is considered preliminary. Therefore, it is recommended that caution be used when considering the off-Site data and that the original source of the data be referenced for interpretation. Based on a limited review by URS, the off-Site data appears to be of sufficient quality to be used for the delineation purposes.

Field Observations

Groundwater was generally not encountered in the soils and is primarily derived from the shallow weathered bedrock. However, water was encountered at a depth of approximately 4 feet below the surface in the sand/ash fill portion of the residual source area and groundwater in the shallow bedrock is believed to be under artesian pressure in the shallow bedrock. Core samples indicated that bedrock at the Site is a dark-gray to black, finely laminated shale. Fractures were rarely encountered below a depth of 24 feet below the top of bedrock. The fractures encountered below that depth were generally near horizontal bedding plane partings with little or no indications of weathering, filling, or staining along the fractures. Other fractures appeared to terminate within a few inches along bedding plane partings. The shallow fractures showed limited iron staining and clay infilling, suggesting water movement. Organic vapors generally were not encountered in the borings. However, they were encountered in the soils in the borings for AL-1 and AL-1D, with the highest readings (50 parts per million by volume [ppmv]) being encountered near the top of rock in AL-1D. These wells are located in the vicinity of the Residual Source Area.

Hydrogeology

The Site is primarily paved and low conductivity clayey soil covers most of the Site; therefore, groundwater recharge areas at the Site are believed to be fairly limited. The existing hydrogeologic investigation at the Site and the neighboring Sites has indicated a fairly complex groundwater flow pattern in the shallow bedrock and is believed to be impacted by bedrock fractures, utilities, and building foundations. The effect of the utilities (sewers and water lines) and building foundations is aided by the low conductivity of both the soils and bedrock, which allows for greater contrasts in the groundwater levels than would be expected from higher conductivity material.

Water levels in the on-Site shallow wells indicate that the groundwater generally flows north at the Site. However, it is believed that the water levels from wells located between the closed Alumax and former Roblin buildings are unreliable due to the influence of the building foundations and utilities, and these wells were not considered in determining the overall flow direction. The water levels from these wells actually indicate localized flow to the southwest in the vicinity of AL-1. It is believed that these water levels, if accurate, depict only a very localized flow pattern and that the overall flow is to the north.

The fracture patterns identified in the core samples indicated few fractures below a depth of 24 feet in any of the three cored locations (AL-1D, AL-3D, and AL-4D) and there is believed to be very little interconnection between the deep wells; therefore, a groundwater contour map was not developed for this unit. It is also believed that there is very little interconnection between the deep wells and the shallow wells. Although near vertical fractures may exist in the bedrock, they were not encountered at depth and the fracture patterns in the shallow bedrock seem to indicate that fractures typically terminate along bedding planes.

Slug tests were performed on each of the on-Site monitoring wells, with the exception of AL-4D. AL-4D was dry at the time of the testing. Test data from AL-5 appeared to be impacted by recharge from snowmelt and the results of the slug test was questionable and therefore excluded. The slug test data was interpreted using the Bouwer-Rice method. The results indicated that most on-Site wells had a hydraulic conductivity of between 10^{-5} and 10^{-6} ft/min (10^{-5} to 10^{-7} cm/sec).

Groundwater flow velocity was calculated using the gradient developed in the groundwater flow map and the range of hydraulic conductivities derived from the slug tests. The resulting flow velocity was determined to range from approximately 0.2 to 2 feet per year. However, this is based on the Sitewide hydraulic gradient and localized artificial hydraulic gradients appear to exist. This slow flow rate is supported by what appears to be the limited migration of the chlorinated hydrocarbon plume from the Residual Source Area.

Based on the on-Site groundwater analytical results, the area impacted with TCE and its degradation products is fairly isolated. The groundwater analytical results are shown on Figure 4. Additionally, the residual source area has been treated by injecting zero valent iron and groundwater should show continued improvement as a result of the source area treatment.

Based on the data collected at the Site and the available data from the adjacent Roblin Steel Site, contaminant migration appears limited to the respective properties, both of which are unlikely to use groundwater. Potential impacts of the groundwater to the sewer were also evaluated, indicating that concentrations of TCE were present in the off-Site sewer at concentrations below the drinking water standards. This sewer is a combination sanitary and storm water, which also received permitted industrial discharges from the Site and adjacent properties. This sewer flows to the City of Dunkirk treatment system prior to discharge. The sewer sample was collected just prior to the influent of another water source where additional dilution is expected. Therefore, the potential exposure routes via the groundwater pathway are believed to be limited and the IRM activities should further reduce this potential exposure.

2.0 Institutional Control Plan

2.1 Groundwater Use Restrictions

As indicated by the Site Investigation, groundwater resources are limited at the Site and groundwater is not generally used in the Site area, nor would it be expected to be used in the future, given the industrial character of the Site and the availability of municipal water supply in the area. The clayey soils and shale bedrock have low hydraulic conductivity and produce limited quantities of water. The most productive zone is the top 5 feet of the shale bedrock, which is fractured and weathered. This zone is also considered to be perched and may be laterally limited. Groundwater in the north central portion of the Site (i.e., Residual Source Area) is impacted with chlorinated hydrocarbons. Low concentrations of petroleum related constituents were encountered in other wells. The Residual Source Area was addressed via *in situ* treatment technology; however, low-level impact to groundwater may linger due to the low conductivity and the potential dissolution of chlorinated constituents adsorbed to the clayey soils. Therefore, groundwater use restrictions are being implemented at the Site as a conservative approach to limit potential exposure to impacted groundwater and are to be indicated in a deed restriction which will be recorded with property deed. Because of the poor groundwater production from Site wells and the availability of potable water from the municipality, the implications of these groundwater use restrictions to future property use and development are believed to be limited.

It should be understood that groundwater use is not prohibited, just restricted. However due to the low groundwater yield and a readily available potable water supply via the municipal system, it is unlikely that groundwater will be used. Should a future owner or operator decide that groundwater use is beneficial to their operations, an evaluation of suitability for the potential use and definition of the ultimate point of discharge (e.g., sanitary sewer, surface water, or re-injection) for any once-through water or blowdown from any recirculation system(s) shall be required. Groundwater use is prohibited per this Institutional Control Plan unless this evaluation is performed. Use of groundwater may require appropriate treatment to meet water quality requirements for use and discharge. Groundwater extracted for testing, monitoring, and remediation, while excluded from the provisions of this groundwater use restriction, must still meet local, state and federal disposal requirements.

2.2 Soils Management Plan

2.2.1 Overview and objectives

The site is an approximate 12-acre, vacant industrial property currently owned by Alumax Extrusions, Inc. The location of the property is shown on Figure 1. The site has been characterized during several previous investigations. The user should refer to the previous investigation reports listed in Section 5 for more detail, as needed. The VCP Site Investigation Report (URS, 2003) is comprehensive of the previous phases of the investigation.

The objective of this Soils Management Plan (SMP) is to set guidelines for management of soil material during any future activities which would breach the cover system at the site. This SMP addresses environmental concerns related to soil management and was reviewed and approved by the New York State Department of Environmental Conservation (NYSDEC).

2.2.2 Nature and extent of contamination

Based on data obtained from previous investigations and the remediation done at the site, a "Site Investigation Report for Alumax Extrusion, Inc. (May 6, 2003, revised October 2003)" was developed by URS.

The constituents of potential concern (COPCs) for soil consist primarily of chlorinated hydrocarbons, metals, and PAHs and are discussed fully in Section 1.6. Results of groundwater sampling indicate that chlorinated hydrocarbons in the soil/fill material have impacted groundwater in an isolated area of the site. This area has been treated *in-situ* and groundwater concentrations of chlorinated hydrocarbons are showing reductions in concentrations. With the exception of the chlorinated hydrocarbons, groundwater has not shown impact from COPCs identified in soils.

The Sitewide soils have been evaluated for a full range of organic and inorganic compounds. Analytical results for Site soils and groundwater are presented in Table 1, 2, and 3 and on Figures 4,and 5. Soil sample locations corresponding to sample results provided in Table 1 are shown on Figure 3. These results generally do not exceed the allowable direct exposure for a construction worker limits based on published USEPA guidance. However, soil reuse may be restricted. Constituents of potential concern in soils identified in the analytical results are: PAHs, Chlorinated Hydrocarbons (specifically trichloroethene and its degradation products), PCBs, and metals. Table 4 identifies all of the constituents detected in on-Site soil samples and provides a comparison to available regulatory criteria. The regulatory criteria presented are generally the NYSDEC TAGM recommended soil clean-up limits, which are based on potential to impact groundwater at levels exceeding the drinking water standards and are not direct contact values. Threshold concentrations that are protective of dermal contact pathways are generally much greater). With the exception of the Residual Source Area, these residual impacts were generally identified as low concentrations with no specific source(s), the apparent result of the long industrial Site use. Additionally, toxic characteristics leaching procedure (TCLP) analysis of the soils indicated that the constituents in soils were not mobile at concentrations that may impact groundwater, with the exception of chlorinated hydrocarbons in the identified Residual Source Area. These results were supported by the analytical results from the groundwater samples, which did not indicate impact associated with the constituents identified in Site soils.

Chlorinated hydrocarbons impact within the Residual Source Area was addressed via *in situ* treatment to reduce mass and the potential for ongoing release to groundwater. However, residual trichloroethene and its daughter products are expected to remain at detectable levels in the soils in this limited area of the Site. The IRM undertaken in this area (i.e., placement of ZVI) has the dual effect of 1) treating the source; and 2) creating long-term residual treatment of dissolved phase ground water contamination to prevent migration of volatile compounds to the surrounding groundwater.

Based on the sample results and NYSDEC TAGM guidance values, the volatile organic compounds of potential concern are: acetone, trichloroethene, 1,2-dichloroethene, vinyl chloride and xylenes. Based on the sample results and NYSDEC TAGM guidance values, the semi-volatile organic compounds of potential concern are: acenaphthene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, fluoranthene,fluorine, ideno(1,2,3-cd)pyrene, phenanthrene, phenol, and pyrene. Based on the sample results and NYSDEC TAGM guidance values, the metals of potential concern are: arsenic, beryllium, cadmium, calcium, chromium, lead, magnesium, mercury, nickel, selenium, silver, and zinc. PCBs were also identified on-site at levels exceeding TAGM and the known areas of impact have been remediated; however, there is the potential that PCBs may be encountered on the property during excavation. It should be noted that these constituents were identified as constituents of potential concern based on one or more exceedence of the associated TAGM guidance levels derived for the protection of groundwater and that the concentrations remaining on-site generally do not exceed direct contact values established by the USEPA for direct contact. All of the constituents exceeding TAGM values are included as potential constituents of concern as a conservative approach. Based on TCLP analyses these constituents do not appear to be mobile in the soils and that the primary potential exposure routes would be dermal, inhalation, and ingestion during site disturbance activities.

2.2.3 Contemplated use
As part of the redevelopment project, the property has been identified for restricted industrial and commercial uses. Specific uses for these zoning categories are discussed in Section 1.5. The designated use specifically prohibits residential uses.

2.2.4 Purpose and description of surface cover system
The purpose of the surface cover system is to eliminate the potential for human contact with fill material and eliminate the potential for contaminated runoff from the property. The cover system will consist of one of the following types of clean material:

- Soil: 12 inches of vegetated soil cover underlain by a demarcation layer, in outdoor vegetated areas.

- Asphalt: a minimum of 6 inches of material (asphalt and subbase material) in areas that will become roads, sidewalks, and parking lots. Actual cross sections will be determined based on the intended use of the area.

- Concrete: a minimum of 6 inches of material (concrete and subbase material) in areas that will become slab-on-grade structures or for roads, sidewalks, and parking lots in lieu of asphalt. For slab-on-grade structures, an 8-mil polyethylene vapor barrier will be placed beneath the concrete (for sites impacted by VOC contamination only). Actual cross sections will be determined based on the intended use of the area.

2.2.5 Management of soils/fill and long term maintenance of cover system

The purpose of this section is to provide environmental guidelines for management of subsurface soils/fill and the long-term maintenance of the cover system during any future intrusive work which breaches the cover system.

The SMP includes the following conditions:

- Any breach of the cover system, including for the purposes of construction or utilities work, must be replaced or repaired using an acceptable borrow source free of industrial and/or other potential sources of chemical or petroleum contamination. The repaired area must be covered with clean soil and reseeded or covered with impervious product such as concrete or asphalt, as described in Section 2.2.4, to prevent erosion in the future.

- Control of surface erosion and run-off of the entire property at all times, including during construction activities. This includes proper maintenance of the vegetative cover established on the property.

- Site soil that is excavated and is intended to be removed from the property must be managed, characterized, and properly disposed of in accordance with NYSDEC regulations and directives. Characterization requirements are described in Section 2.2.6.

- Soil excavated at the site may be reused as backfill material on-site provided it contains no visual or olfactory evidence of contamination, and it is placed beneath a cover system component as described in Section 2.2.4.

- Any off-site fill material brought to the site for filling and grading purposes shall be from an acceptable borrow source free of industrial and/or other potential sources of chemical or petroleum contamination. Off-site borrow sources should be subject to collection of one representative composite sample per source. The sample should be analyzed for TCL VOCs, SVOCs, pesticides, PCBs, and TAL metals plus cyanide. The soil will be acceptable for use as cover material provided that all parameters meet the NYSDEC recommended soil cleanup objectives included in TAGM 4046.

- Prior to any construction activities, workers are to be notified of the site conditions with clear instructions regarding how the work is to proceed. Invasive work performed at the property will be performed in accordance with all applicable local, state, and federal regulations to protect worker health and safety.

- The Owner shall complete and submit to the Department an annual report by January 15th of each year. Such annual report shall contain certification (Attachment B) that the institutional controls put in place, pursuant to Voluntary Clean-up Program as outlined in this Combined Plan, are still in place, have not been altered and are still effective; that the remedy and protective cover have been maintained; and that the conditions at the site are fully protective of public health and the environment.

If the cover system has been breached during the year covered by that Annual Report, the owner of the property shall include the following in that annual report:

- A certification that all work was performed in conformance with this SMP.

In addition, deed restrictions have been implemented in accordance with the requirements of the Voluntary Clean-up Program, limiting the future use of the property to restricted commercial, or industrial development.

2.2.6 Excavated and stockpiled soil/fill

Soil/fill that is excavated as part of development which cannot be used as fill below the cover system will be further characterized prior to transportation off-site for disposal at a permitted facility. For excavated soil/fill with visual evidence of contamination (i.e., staining or elevated PID measurements), one composite sample and a duplicate sample will be collected for each 100 cubic yards of stockpiled soil/fill. For excavated soil/fill that does not exhibit visual evidence of contamination but must be sent for off-site disposal, one composite sample and a duplicate sample will be collected for 2000 cubic yards of stockpiled soil, and a minimum of 1 sample will be collected for volumes less than 2000 cubic yards.

The composite sample will be collected from five locations within each stockpile. A duplicate composite sample will also be collected. PID measurements will be recorded for each of the five individual locations. One grab sample will be collected from the individual location with the highest PID measurement. If none of the five individual sample locations exhibit PID readings, one location will be selected at random. The composite sample will be analyzed by a NYSDOH ELAP-certified laboratory for pH (EPA Method 9045C), Target Compound List (TCL) SVOCs, pesticides, and PCBs, and TAL metals, and cyanide. The grab sample will be analyzed for TCL VOCs.

Soil samples will be composited by placing equal portions of fill/soil from each of the five composite sample locations into a pre-cleaned, stainless steel (or Pyrex glass) mixing bowl. The soil/fill will be thoroughly homogenized using a stainless steel scope or trowel and transferred to pre-cleaned jars provided by the laboratory. Sample jars will then be labeled and a chain-of-custody form will be prepared.

Additional characterization sampling for off-site disposal may be required by the disposal facility. To potentially reduce off-site disposal requirements/costs, the owner or site developer may also choose to characterize each stockpile individually. If the analytical results indicate that concentrations exceed the standards for RCRA characteristics, the material will be considered a hazardous waste and must be properly disposed off-site at a permitted disposal facility within 90 days of excavation. If the analytical results indicate that the soil is not a hazardous waste, the material will be properly disposed off-site at a non-hazardous waste facility. Stockpiled soil cannot be transported on or off-site until the analytical results are received.

2.2.7 Subgrade material

Subgrade material used to backfill excavations or placed to increase site grades or elevation shall meet the following criteria.

- Excavated on-site soil/fill which appears to be visually impacted shall be sampled and analyzed. If analytical results indicate that the contaminants, if any, are present at concentrations below the Site Specific Action Levels (SSALs) shown in Table 5, the soil/fill can be used as backfill on-site.

- Any off-site fill material brought to the site for filling and grading purposes shall be from an acceptable borrow source free of industrial and/or other potential sources of chemical or petroleum contamination.

- Off-site soils intended for use as site backfill cannot otherwise be defined as a solid waste in accordance with 6 NYCRR Part 360-1.2(a).

- If the contractor designates a source as "virgin" soil, it shall be further documented in writing to be native soil material from areas not having supported any known prior industrial or commercial development or agricultural use.

- Virgin soils should be subject to collection of one representative composite sample per source. The sample should be analyzed for TCL VOCs, SVOCs, pesticides, PCBs, arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, and cyanide. The soil will be acceptable for use as backfill provided that all parameters meet the SSALs.

- Non-virgin soils will be tested via collection of one composite sample per 500 cubic yards of material from each source area. If more than 1,000 cubic yards of soil are borrowed from a given off-site non-virgin soil source area and both samples of the first 1,000 cubic yards meet SSALs, the sample collection frequency will be reduced to one composite for every 2,500 cubic yards of additional soils from the same source, up to

5,000 cubic yards. For borrow sources greater than 5,000 cubic yards, sampling frequency may be reduced to one sample per 5,000 cubic yards, provided all earlier samples met the SSALs.

2.2.8 Soil Excavation Safety Review

Soil excavation procedures at the Site will proceed under a health and safety plan approved by a health and safety professional familiar with the requirements for working at Sites which are impacted with potentially hazardous chemicals. Because each contractor is responsible for the safety of their employees the appropriate safeguards will change based on the exact scope of work, each contractor is responsible for reviewing conditions and identifying the appropriate level of personal protection and the monitoring requirements.

2.3 Soil Cover and Paving Plan

As indicated, the long history of industrial Site use has resulted in widespread, low level impact to Sitewide soils. To limit casual exposure to Site soils, a soil cover and paving program will be implemented at the Site. Because the Site is currently vacant and the property reuse is to be determined, the Soil Cover and Paving Program will be implemented during Site development. This will allow flexibility to the future owner and also allow this program to be implemented in the most cost effective manner.

The cover system will consist of one of the following types of clean material:

- Soil: 12 inches of vegetated soil cover underlain by a demarcation layer, in outdoor vegetated areas.
- Asphalt: a minimum of 6 inches of material (asphalt and subbase material) in areas that will become roads, sidewalks, and parking lots. Actual cross sections will be determined based on the intended use of the area.
- Concrete: a minimum of 6 inches of material (concrete and subbase material) in areas that will become slab-on-grade structures or for roads, sidewalks, and parking lots in lieu of asphalt. For slab-on-grade structures, an 8-mil polyethylene vapor barrier will be placed beneath the concrete for new structures built in the portion of the site identified as the residual source area. The vapor barrier requirement is not required in areas other than the residual source area because volatile organic compounds were not found in significant quantities on any other portions of the site. Actual cross sections will be determined based on the intended use of the area.

Most of the Site is currently paved with concrete and/or asphalt (Figure 6). This area is to be maintained, as necessary to prevent exposure to Site soils. Pavement or a minimum of 12 inches of clean soil will be placed in areas of the Site that are currently unpaved. Asphalt pavement is inspected annually and sealed as necessary to maintain the integrity of the cover. Maintenance of existing vegetation cover is required in the unpaved area to reduce erosion. This will consist of grass or other suitable ground cover. To allow future landowners and developers flexibility, existing paved areas may be allowed to revert to soil cover. In this event, six inches of clean soil cover and vegetation will still be required. Breakup of any pavement left beneath the clean soil will also be recovered to promote drainage.

It is conceivable that a future Site owner may wish to remove the soil cover/paving requirement from portions of the Site. This could certainly be achieved through soil excavation and management and potentially more extensive sampling and evaluation in some areas of the Site. Such actions are required to be discussed with NYSDEC prior to implementation to ensure that the intent of the institutional controls is maintained and may also require certification by a NYS-licensed Professional Engineer. Implementation and maintenance of the Soil Cover and Paving Plan will be subject to annual certification by the Site owner, which is discussed further in Section 4.0.

3.0 - Operations and Maintenance Plan

This operations and maintenance plan includes groundwater monitoring requirements associated with the performance monitoring of the in situ remedial measures for the chlorinated hydrocarbons, the maintenance of the sub-slab vent system, and the annual certification of the implementation of the Institutional Control Plan.

3.1 Groundwater Monitoring

As indicated in the approved NYSDEC IRM Workplan and the October 24, 2003 addendum, the groundwater monitoring is required for evaluating the effectiveness of ZVI application in the Residual Source Area. This monitoring is to consist of sampling and analysis of groundwater collected from monitoring wells AL-1, AL-2 and AL-7 on a quarterly basis for a 1-year period. The samples will be analyzed for volatile organic compounds (NYSDEC Method OLM 04.2). After the initial year of monitoring, the need and frequency for additional monitoring will be evaluated in a report summarizing the groundwater results. Once significant constituent reductions are documented, annual monitoring performed in conjunction with the annual review of the institutional control plan is likely to be proposed until a Site clean-up standard of 100 μg/L total concentrations of chlorinated volatile organic compounds is attained in AL-1 and AL-7. (All other Site wells currently meet this Site clean-up standard.) Once the clean-up standard is attained, NYSDEC will be notified and permission to abandon all Site monitoring wells will be requested.

Due to the low recharge rates, wells will be sampled by purging with a bailer until a minimum of three well volumes of groundwater are purged or the well is purged dry. If the well is purged dry then the well will be sampled once sufficient volume has recovered in the well. One duplicate and one field rinseate sample will be collected and analyzed during each sampling event.

Sample results will be provided with the annual institutional controls certifications letter. This certifications letter is required under the VCP to confirm that institutional controls are being implemented. Inclusion of the sample results with the annual review is proposed to streamline the required submittals to NYSDEC.

3.2 Sub-Slab Vent System

The sub-slab venting system is shown on Figure 7 and 8 will be inspected as part of the annual review of the Site. The inspection will document that the visible portions of the vent are in good condition and functioning as designed. The appropriate repairs are to be made as needed. The continued maintenance and operation of this vent system is included as part of the annual certification, discussed further in Section 4.0. The subslab vent system is currently a passive system, utilizing a wind turbine vent. The system will be modified to an active system utilizing a an in-line blower prior to building occupation.

4.0 Annual Certification

Annual certification of the Combined Plan is required under the VCP and requires an inspection and certification by the property owner stating that the institutional and engineering controls as specified for the Site are in place and functioning as designed for the property. The format of the certification will include certification text similar to the example provided in Attachment B.

5.0 References

Phase I Environmental Site Assessment of 320 Roberts Road, Dunkirk, New York. Prepared by ICF Kaiser Engineers, December 15, 1998.

Phase II Environmental Site Assessment of the Closed Alumax Extrusion Facility, 320 South Roberts Road, Dunkirk, New York. Prepared by IT Corporation, July 19, 1999.

Phase III Environmental Site Assessment, The Closed Alumax Extrusions, Inc. Facility, 320 South Roberts Road, Dunkirk, New York. Prepared by IT Corporation, October 2000.

Chlorinated Hydrocarbon Source Investigation, The Closed Alumax Extrusions, Inc. Facility, 320 South Roberts Road, Dunkirk, New York. Prepared by IT Corporation, January 2002.

Voluntary Clean-Up Program, Site Investigation Report, Alumax Extrusions, Inc, 320 South Roberts Road, Dunkirk, New York NYS VCP Site #V00589-9. Prepared by URS Corporation, May 2003, revised, October 2003.

Voluntary Clean-Up Program, Interim Remedial Measures Completion Report, Alumax Extrusions Inc., 320 South Roberts Road, Dunkirk, New York. Prepared by URS Corporation, April 30, 2004.

TABLE 1
Residual Source Area
Soil Analytical Results
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

PARAMETER	UNITS	NYSDEC TAGM Soil Clean-up Objectives	GP1-0-1	GP2-0-1	GP2-0-1D	GP2-9.5-10.5	GP3-0-1	GP3-7.5-8.5	GP4-0-1
SAMPLE DEPTH(ft)			0 - 1	0 - 1	0 - 1	9.5 - 10.5	0 - 1	7.5 - 8.5	0 - 1
SAMPLE DATE			9/17/01	9/17/01	9/17/01	9/17/01	9/17/01	9/17/01	9/17/01
Volatile Organics									
Acetone	ug/kg	200	2800U	5600U	11000U	26000U	3100U	**7.7J**	1700U
2-Butanone	ug/kg	300	2800U	5600U	11000U	26000U	3100U	**3.2J**	1700U
1,2-Dichloroethane	ug/kg	100	**13J**	1400U	2700U	6400U	780U	5.5U	430U
1,1-Dichloroethene	ug/kg	400	690U	1400U	2700U	6400U	780U	5.5U	430U
1,2-Dichloroethene (total)	ug/kg	100	**320J**	**580J**	**1,400J**	**220,000**	780U	**1.6J**	**350J**
Ethylbenzene	ug/kg	5500	690U	1400U	2700U	6400U	780U	5.5U	430U
Methylene chloride	ug/kg	100	690U	1400U	**920J**	6400U	780U	5.5U	430U
Tetrachloroethene	ug/kg	1400	**18J**	1400U	2700U	6400U	780U	5.5U	430U
Toluene	ug/kg	1500	**31JB**	**68JB**	2700U	6400U	**31JB**	**0.85J**	430U
Trichloroethene	ug/kg	700	**5,700**	**19,000**	**61,000**	**17,000**	**3,500U**	5.5U	**17,000**
Vinyl chloride	ug/kg	200	1400U	2800U	5400U	**18,000**	1600U	**1.9J**	870U
Xylenes (total)	ug/kg	1200	**70J**	**110J**	5400U	13000U	**110J**	11U	870U

Notes:
J = Estimated Value
U = Not Detected Above Stated Detection Limit
B = Identified in Blank

TABLE 1
Residual Source Area
Soil Analytical Results
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

SAMPLE ID SAMPLE DEPTH(ft) SAMPLE DATE		NYSDEC TAGM Soil Clean-up Objectives	GP4-8.7-9.7	GP5-0-1	GP5-11-12	GP6-0-1	GP6-8-9	GP7-0-1	GP7-5-6	GP7-11-12
			8.7 - 9.7	0 - 1	11 - 12	0 - 1	8 - 9	0 - 1	5 - 6	11 - 12
			9/17/01	9/17/01	9/17/01	9/18/01	9/18/01	9/18/01	9/18/01	9/18/01
PARAMETER	UNITS									
Volatile Organics										
Acetone	ug/kg	200	190000U	2600U	2600U	1100U	870U	1400U	18000U	1300U
2-Butanone	ug/kg	300	190000U	2600U	2600U	1100U	870U	1400U	18000U	1300U
1,2-Dichloroethane	ug/kg	100	49000U	660U	650U	270U	220U	360U	4500U	340U
1,1-Dichloroethene	ug/kg	400	49000U	660U	650U	270U	220U	360U	4500U	**75J**
1,2-Dichloroethene (total)	ug/kg	100	**33,000J**	**59J**	**230J**	270U	**720**	**240J**	**100,000**	**11,000**
Ethylbenzene	ug/kg	5500	49000U	**20J**	650U	270U	220U	360U	4500U	340U
Methylene chloride	ug/kg	100	49000U	660U	650U	270U	220U	360U	**2,000J**	340U
Tetrachloroethene	ug/kg	1400	49000U	660U	650U	270U	220U	360U	4500U	340U
Toluene	ug/kg	1500	49000U	**37JB**	**41JB**	270U	220U	**14J**	**340J**	**23J**
Trichloroethene	ug/kg	700	**1,500,000**	**1,900**	**110**	**460**	**2,200**	**13,000**	**1,100J**	**2,000**
Vinyl chloride	ug/kg	200	97000U	1300U	**31J**	540U	440U	710U	**23,000**	**3,000**
Xylenes (total)	ug/kg	1200	97000U	**74J**	**110J**	**46JB**	**19JB**	**79JB**	9000U	**180JB**

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TABLE 1
Residual Source Area
Soil Analytical Results
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

SAMPLE ID SAMPLE DEPTH(ft) SAMPLE DATE PARAMETER	UNITS	NYSDEC TAGM Soil Clean-up Objectives	GP8-0-1 0 - 1 9/18/01	GP8-8-9 8 - 9 9/18/01	GP9-0-1 0 - 1 9/18/01	GP9-5.5-6 5.5 - 6 9/18/01
Volatile Organics						
Acetone	ug/kg	200	**150J**	16000U	1000U	23U
2-Butanone	ug/kg	300	**3.8J**	16000U	1000U	23U
1,2-Dichloroethane	ug/kg	100	6.1U	4100U	260U	5.7U
1,1-Dichloroethene	ug/kg	400	6.1U	**1,100**	260U	5.7U
1,2-Dichloroethene (total)	ug/kg	100	**7.5**	**86,000**	260U	**4.3J**
Ethylbenzene	ug/kg	5500	6.1U	4100U	260U	5.7U
Methylene chloride	ug/kg	100	6.1U	**1,700J**	260U	5.7U
Tetrachloroethene	ug/kg	1400	6.1U	4100U	260U	5.7U
Toluene	ug/kg	1500	6.1U	**300J**	**11J**	5.7U
Trichloroethene	ug/kg	700	**11**	**690J**	**110J**	**13**
Vinyl chloride	ug/kg	200	**3.9J**	**4,400J**	520U	11U
Xylenes (total)	ug/kg	1200	12U	8100U	520U	11U

Notes:
J = Estimated Value
U = Not Detected Above Stated Detection Limit
B = Identified in Blank

Table 2
Sitewide Groundwater
Detected Constituents - January 2003 Sampling Event
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

ClientSample LabSample DateSampled	Groundwater Standards (ug/l)	AL-1 A3054908 1/16/03	AL-1D A3054909 1/16/03	AL-2 A3054907 1/16/03	AL-3 A3054903 1/16/03	AL-3D A3054901 1/16/03
Volatile Organic Compound (ug/l)						
1,1-Dichloroethene	5	**73**	20U	10U	10U	10U
Acetone	5	10U	**50**	10U	10U	10U
Benzene	1	**38**	**200**	**12**	**5J**	**120**
cis-1,2-Dichloroethene	5	**9,400**	20U	10U	10U	10U
Cyclohexane	5	**64**	**93**	**2**	**5J**	**120**
Ethylbenzene	5	**6J**	**13J**	**4**	10U	**18**
Isopropylbenzene	5	10U	20U	10U	10U	**2J**
Methylcyclohexane	5	**41**	**42**	10U	**4J**	**71**
Toluene	5	**43**	**190**	10U	**3J**	**150**
Total Xylenes	5	**13**	**100**	10U	10U	**110**
trans-1,2-Dichloroethene	5	**39**	20U	10U	10U	10U
Trichloroethene	5	**4,600**	20U	10U	10U	10U
Vinyl chloride	2	**740**	20U	10U	10U	10U
Semivolatile Organic Compounds (ug/l)						
2-Methylphenol		10U	NA	10U	10U	NA
4-Methylphenol		10U	NA	10U	10U	NA
Bis(2-ethylhexyl)phthalate	5	**2BJ**	NA	**1BJ**	**7BJ**	NA
Di-n-octylphthalate		**0.4BJ**	NA	**1BJ**	**0.5J**	NA
Fluoranthene		**0.6J**	NA	10U	10U	NA
Phenanthrene		**0.4J**	NA	10U	10U	NA
Phenol		10U	NA	10U	10U	NA
Pyrene		**0.5J**	NA	10U	10U	NA
Total Metals (ug/l)						
Aluminum-Total		628R	NA	1070R	363R	NA
Antimony-Total	3	**5.8B**	NA	**12.4B**	5.4U	NA
Arsenic-Total	25	**6.2B**	NA	**8.9B**	4U	NA
Barium-Total	1000	**837**	NA	**630**	**35B**	NA
Beryllium-Total		0.2U	NA	**0.23BJ**	0.2U	NA
Cadmium-Total	5	0.3U	NA	0.3U	**0.34B**	NA
Calcium-Total		**126,000**	NA	**86,800**	**62,800**	NA
Chromium-Total	50	**1.5B**	NA	**2.6B**	**0.84B**	NA
Cobalt-Total		**0.51B**	NA	**1.1B**	**1B**	NA
Copper-Total	200	**3.2B**	NA	**4.5B**	**2.8B**	NA
Iron-Total		**1,170**	NA	**1,550**	**761**	NA
Lead-Total	25	2.3U	NA	2.3U	2.3U	NA
Magnesium-Total		**64,600**	NA	**35,700**	**14,100**	NA
Manganese-Total		**75.6**	NA	41.3R	**559**	NA

Table 2
Sitewide Groundwater
Detected Constituents - January 2003 Sampling Event
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

ClientSample LabSample DateSampled	Groundwater Standards (ug/l)	AL-1 A3054908 1/16/03	AL-1D A3054909 1/16/03	AL-2 A3054907 1/16/03	AL-3 A3054903 1/16/03	AL-3D A3054901 1/16/03
Mercury-Total	0.7	0.158U	NA	0.158U	0.158U	NA
Nickel-Total	100	**1.1B**	NA	**2.5B**	**2B**	NA
Potassium-Total		**4,300B**	NA	3250BR	**5,450B**	NA
Selenium-Total	10	4U	NA	4U	4U	NA
Silver-Total	50	0.5U	NA	0.5U	0.5U	NA
Sodium-Total	20000	**87,300**	NA	**96,300**	**216,000**	NA
Thallium-Total		3.9U	NA	3.9U	3.9U	NA
Vanadium-Total		**16.6B**	NA	**13.4B**	0.7U	NA
Zinc-Total		**7.6B**	NA	**9.7B**	**8.7B**	NA
Dissolved Metals (ug/l)						
Aluminum-Soluble		**67.1B**	NA	**45B**	**37.3B**	NA
Antimony-Soluble	3	**14.9B**	NA	**7B**	4U	NA
Arsenic-Soluble	25	**3.7B**	NA	**4B**	3U	NA
Barium-Soluble	1000	**847**	NA	**80.2B**	**29.4B**	NA
Beryllium-Soluble		0.8U	NA	0.8U	0.8U	NA
Cadmium-Soluble	5	0.9U	NA	0.9U	0.9U	NA
Calcium-Soluble		**123,000**	NA	**120,000**	**59,900**	NA
Chromium-Soluble	50	1U	NA	1U	1U	NA
Cobalt-Soluble		1U	NA	1U	1U	NA
Copper-Soluble	200	1U	NA	1U	**1.2B**	NA
Iron-Soluble		**136**	NA	20U	20U	NA
Lead-Soluble	25	2U	NA	2U	2U	NA
Magnesium-Soluble		**61,500**	NA	**30,900**	**13,200**	NA
Manganese-Soluble		**70**	NA	1540R	**528**	NA
Mercury-Soluble	0.7	0.158U	NA	0.158U	0.158U	NA
Nickel-Soluble	100	**2B**	NA	**1.9B**	**2.2B**	NA
Potassium-Soluble		**4,190B**	NA	6400R	**5,850B**	NA
Selenium-Soluble	10	**9.8**	NA	**8.2**	**7.5**	NA
Silver-Soluble	50	1U	NA	1U	1U	NA
Sodium-Soluble	20000	**80,400**	NA	**75,900**	**218,000**	NA
Thallium-Soluble		7U	NA	7U	7U	NA
Vanadium-Soluble		**15.2B**	NA	**1.2B**	1U	NA
Zinc-Soluble		**5.7B**	NA	**2.6B**	**2.7B**	NA

Notes:
NA=Not Analyzed
U=Not Detected, shown with method detection limit
J=Estimated Value
B=Blank Contamination
D=Sample analyzed at second dilution factor
R=Rejected, explanation provided in DUSR
Groundwater standards from:
http://www.dec.state.ny.us/website/regs/703.htm

Table 2
Sitewide Groundwater
Detected Constituents - January 2003 Sampling Event
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

ClientSample LabSample DateSampled	Groundwater Standards (ug/l)	AL-4 A3054906 1/16/03	AL-5 A3054904 1/16/03	AL-6 A3054905 1/16/03	AL-3 DUP1016 A3054903FD 1/16/03	PW-1 A3054910 1/16/03
Volatile Organic Compound (ug/l)						
1,1-Dichloroethene	5	10U	10U	10U	10U	10U
Acetone	5	10U	**10**	**65**	10U	10U
Benzene	1	10U	**33**	**25**	**5J**	**2J**
cis-1,2-Dichloroethene	5	10U	10U	**2J**	10U	10U
Cyclohexane	5	**4J**	**47**	**43**	**7J**	**2J**
Ethylbenzene	5	10U	**4J**	**7J**	10U	10U
Isopropylbenzene	5	10U	10U	10U	10U	10U
Methylcyclohexane	5	**8J**	**21**	**24**	**6J**	10U
Toluene	5	10U	**36**	**64**	**3J**	10U
Total Xylenes	5	10U	**18**	**51**	10U	10U
trans-1,2-Dichloroethene	5	10U	10U	10U	10U	10U
Trichloroethene	5	10U	10U	**14**	10U	**2J**
Vinyl chloride	2	10U	10U	10U	10U	10U
Semivolatile Organic Compounds (ug/l)						
2-Methylphenol		10U	**0.8J**	19U	10U	10U
4-Methylphenol		10U	**0.4J**	19U	10U	10U
Bis(2-ethylhexyl)phthalate	5	**0.4BJ**	**2J**	**2BJ**	**0.4BJ**	**0.7BJ**
Di-n-octylphthalate		**1BJ**	**2J**	**1BJ**	10U	**0.8BJ**
Fluoranthene		10U	10U	19U	10U	10U
Phenanthrene		10U	10U	19U	10U	10U
Phenol		10U	10U	19U	10U	10U
Pyrene		10U	10U	19U	10U	10U
Total Metals (ug/l)						
Aluminum-Total		7340R	1570R	NA	630R	32.5UR
Antimony-Total	3	5.4U	5.4U	NA	5.4U	5.4U
Arsenic-Total	25	**8.2B**	4U	NA	4U	4U
Barium-Total	1000	**167B**	**21B**	NA	**36.6B**	**118B**
Beryllium-Total		**0.67B**	0.2U	NA	0.2U	0.2U
Cadmium-Total	5	**0.31B**	0.3U	NA	**0.38B**	0.3U
Calcium-Total		**135,000**	**16,200**	NA	**61,200**	**95,500**
Chromium-Total	50	**12.2**	**2.4B**	NA	**0.91B**	**0.78B**
Cobalt-Total		**7.8B**	**2.5B**	NA	**0.76B**	0.5U
Copper-Total	200	**21.2B**	**4.4B**	NA	**3.5B**	**0.7B**
Iron-Total		**15,300**	**2,190**	NA	**1310**	**1,470**
Lead-Total	25	**10.4J**	**2.3BJ**	NA	2.3U	2.3U
Magnesium-Total		**36,900**	**3,880B**	NA	**13,800**	**24,900**
Manganese-Total		**1,800**	**101**	NA	**550**	**176**

Table 2
Sitewide Groundwater
Detected Constituents - January 2003 Sampling Event
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

ClientSample LabSample DateSampled	Groundwater Standards (ug/l)	AL-4 A3054906 1/16/03	AL-5 A3054904 1/16/03	AL-6 A3054905 1/16/03	AL-3 DUP1016 A3054903FD 1/16/03	PW-1 A3054910 1/16/03
Mercury-Total	0.7	0.158U	0.158U	NA	0.158U	0.158U
Nickel-Total	100	**20.6B**	**4.6B**	NA	**2B**	1U
Potassium-Total		**7,850**	**4,810B**	NA	**5,950B**	**5,510B**
Selenium-Total	10	4U	4U	NA	4U	**7.39B**
Silver-Total	50	0.5U	0.5U	NA	0.5U	0.5U
Sodium-Total	20000	**78,600**	**253,000**	NA	**213,000**	**343,000**
Thallium-Total		3.9U	3.9U	NA	3.9U	3.9U
Vanadium-Total		**14.7**	**3.4B**	NA	**0.96B**	0.7U
Zinc-Total		**48.8**	**13.5B**	NA	**5.9B**	4.1U
Dissolved Metals (ug/l)						
Aluminum-Soluble		**38B**	**33.1B**	**70.8B**	**38.8**	**39B**
Antimony-Soluble	3	4U	4U	**6.6B**	4U	4U
Arsenic-Soluble	25	3U	3U	**4.2B**	3U	3U
Barium-Soluble	1000	**80.9B**	**10.3B**	**44B**	**29.2**	**114B**
Beryllium-Soluble		0.8U	0.8U	0.8U	0.8U	0.8U
Cadmium-Soluble	5	0.9U	0.9U	0.9U	0.9U	0.9U
Calcium-Soluble		**120,000**	**18,000**	**37,700**	**61,300**	**91,800**
Chromium-Soluble	50	1U	1U	1U	1U	1U
Cobalt-Soluble		1U	**2B**	1U	1U	1U
Copper-Soluble	200	1U	**1.6B**	**4.3B**	1U	1U
Iron-Soluble		20U	**25.8B**	**35.7B**	20U	**897**
Lead-Soluble	25	2U	2U	2U	2U	**2.6B**
Magnesium-Soluble		**31,000**	**3,740B**	**5,030**	**13,300**	**23,200**
Manganese-Soluble		**1,580**	**81.5**	**131**	**543**	**170**
Mercury-Soluble	0.7	0.158U	0.158U	0.158U	0.158U	0.158U
Nickel-Soluble	100	**2.3B**	**3B**	**3.3B**	**2.2B**	1U
Potassium-Soluble		**6,390**	**5,690B**	**4,280B**	**5,250B**	**6,220B**
Selenium-Soluble	10	**9.1**	**9.8**	**11**	**11.4**	**6.43B**
Silver-Soluble	50	1U	1U	1U	1U	1U
Sodium-Soluble	20000	**76,300**	**215,000**	**213,000**	**225,000**	**283,000**
Thallium-Soluble		7U	7U	7U	7U	7U
Vanadium-Soluble		1U	1U	**2.6B**	1U	1U
Zinc-Soluble		**2.1B**	**3.6B**	**7.7B**	**5.4B**	**1B**

Notes:
NA=Not Analyzed
U=Not Detected, shown with method detection limit
J=Estimated Value
B=Blank Contamination
D=Sample analyzed at second dilution factor
R=Rejected, explanation provided in DUSR
Groundwater standards from:
http://www.dec.state.ny.us/website/regs/703.htm

TABLE 3
Residual Source Area
Soil Analytical Results
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

SAMPLE ID SAMPLE DEPTH(ft) SAMPLE DATE		NYSDEC TAGM Soil Clean-up Objectives	GP1-0-1 0 - 1 9/17/01	GP2-0-1 0 - 1 9/17/01	GP2-0-1D 0 - 1 9/17/01	GP2-9.5-10.5 9.5 - 10.5 9/17/01	GP3-0-1 0 - 1 9/17/01	GP3-7.5-8.5 7.5 - 8.5 9/17/01	GP4-0-1 0 - 1 9/17/01
PARAMETER	**UNITS**								
Volatile Organics									
Acetone	ug/kg	200	2800U	5600U	11000U	26000U	3100U	**7.7J**	1700U
2-Butanone	ug/kg	300	2800U	5600U	11000U	26000U	3100U	**3.2J**	1700U
1,2-Dichloroethane	ug/kg	100	**13J**	1400U	2700U	6400U	780U	5.5U	430U
1,1-Dichloroethene	ug/kg	400	690U	1400U	2700U	6400U	780U	5.5U	430U
1,2-Dichloroethene (total)	ug/kg	100	**320J**	**580J**	**1,400J**	**220,000**	780U	**1.6J**	**350J**
Ethylbenzene	ug/kg	5500	690U	1400U	2700U	6400U	780U	5.5U	430U
Methylene chloride	ug/kg	100	690U	1400U	**920J**	6400U	780U	5.5U	430U
Tetrachloroethene	ug/kg	1400	**18J**	1400U	2700U	6400U	780U	5.5U	430U
Toluene	ug/kg	1500	**31JB**	**68JB**	2700U	6400U	**31JB**	**0.85J**	430U
Trichloroethene	ug/kg	700	**5,700**	**19,000**	**61,000**	**17,000**	**3,500U**	5.5U	**17,000**
Vinyl chloride	ug/kg	200	1400U	2800U	5400U	**18,000**	1600U	**1.9J**	870U
Xylenes (total)	ug/kg	1200	**70J**	**110J**	5400U	13000U	**110J**	11U	870U

Notes:
J = Estimated Value
U = Not Detected Above Stated Detection Limit
B = Identified in Blank

TABLE 3
Residual Source Area
Soil Analytical Results
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

SAMPLE ID / SAMPLE DEPTH(ft) / SAMPLE DATE		NYSDEC TAGM Soil Clean-up Objectives	GP4-8.7-9.7 8.7 - 9.7 9/17/01	GP5-0-1 0 - 1 9/17/01	GP5-11-12 11 - 12 9/17/01	GP6-0-1 0 - 1 9/18/01	GP6-8-9 8 - 9 9/18/01	GP7-0-1 0 - 1 9/18/01	GP7-5-6 5 - 6 9/18/01	GP7-11-12 11 - 12 9/18/01
PARAMETER	UNITS									
Volatile Organics										
Acetone	ug/kg	200	190000U	2600U	2600U	1100U	870U	1400U	18000U	1300U
2-Butanone	ug/kg	300	190000U	2600U	2600U	1100U	870U	1400U	18000U	1300U
1,2-Dichloroethane	ug/kg	100	49000U	660U	650U	270U	220U	360U	4500U	340U
1,1-Dichloroethene	ug/kg	400	49000U	660U	650U	270U	220U	360U	4500U	**75J**
1,2-Dichloroethene (total)	ug/kg	100	**33,000J**	**59J**	**230J**	270U	**720**	**240J**	**100,000**	**11,000**
Ethylbenzene	ug/kg	5500	49000U	**20J**	650U	270U	220U	360U	4500U	340U
Methylene chloride	ug/kg	100	49000U	660U	650U	270U	220U	360U	**2,000J**	340U
Tetrachloroethene	ug/kg	1400	49000U	660U	650U	270U	220U	360U	4500U	340U
Toluene	ug/kg	1500	49000U	**37JB**	**41JB**	270U	220U	**14J**	**340J**	**23J**
Trichloroethene	ug/kg	700	**1,500,000**	**1,900**	**110**	**460**	**2,200**	**13,000**	**1,100J**	**2,000**
Vinyl chloride	ug/kg	200	97000U	1300U	**31J**	540U	440U	710U	**23,000**	**3,000**
Xylenes (total)	ug/kg	1200	97000U	**74J**	**110J**	**46JB**	**19JB**	**79JB**	9000U	**180JB**

Notes:
J = Estimated Value
U = Not Detected Above Stated Detection Limit
B = Identified in Blank

TABLE 3
Residual Source Area
Soil Analytical Results
The Closed Alumax Extrusions, Inc. Facility
Dunkirk, New York

SAMPLE ID SAMPLE DEPTH(ft) SAMPLE DATE		NYSDEC TAGM Soil Clean-up Objectives	GP8-0-1	GP8-8-9	GP9-0-1	GP9-5.5-6
			0 - 1	8 - 9	0 - 1	5.5 - 6
			9/18/01	9/18/01	9/18/01	9/18/01
PARAMETER	UNITS					
Volatile Organics						
Acetone	ug/kg	200	**150J**	16000U	1000U	23U
2-Butanone	ug/kg	300	**3.8J**	16000U	1000U	23U
1,2-Dichloroethane	ug/kg	100	6.1U	4100U	260U	5.7U
1,1-Dichloroethene	ug/kg	400	6.1U	**1,100**	260U	5.7U
1,2-Dichloroethene (total)	ug/kg	100	**7.5**	**86,000**	260U	**4.3J**
Ethylbenzene	ug/kg	5500	6.1U	4100U	260U	5.7U
Methylene chloride	ug/kg	100	6.1U	**1,700J**	260U	5.7U
Tetrachloroethene	ug/kg	1400	6.1U	4100U	260U	5.7U
Toluene	ug/kg	1500	6.1U	**300J**	**11J**	5.7U
Trichloroethene	ug/kg	700	**11**	**690J**	**110J**	**13**
Vinyl chloride	ug/kg	200	**3.9J**	**4,400J**	520U	11U
Xylenes (total)	ug/kg	1200	12U	8100U	520U	11U

Notes:
J = Estimated Value
U = Not Detected Above Stated Detection Limit
B = Identified in Blank

TABLE 4a
CONSTITUENTS OF POTENTIAL CONCERN
THE CLOSED ALUMAX EXTRUSIONS INC. FACILITY
DUNKIRK, NEW YORK

Detected Constituents in Sitewide Soils	Regulatory Guidance Value (TAGM)	Maximum Detected Concentration	Maximum Detected Concentration Surface Soils	Minimum Detected Concentration	Regulatory Criteria Exceeded (Y/N)	Number of Samples w/Detections	Number of Samples Exceeding Criteria	Total Number of Analyses
Volatile Organic Compounds (ug/kg)								
1,1-Dichloroethane	200	19	ND	19	NO	1	0	35
1,1-Dichloroethene	400	3J	ND	3J	NO	1	0	35
2-Butanone	300	190J	14J (Paved)	3J	NO	6	0	35
4-Methyl-2-pentanone	1000	38	ND	38	NO	1	0	35
Acetone	200	620	17B (Paved)	4J	**YES**	12	3	35
Benzene (included based on GW analysis)	60	ND	ND	ND	NO	0	0	35
Carbon Disulfide	2700	2J	2J (Paved)	2J	NO	1	0	35
Chloromethane	NA	6J	ND	6J	NA	1	NA	35
cis-1,2-Dichloroethene	NA	3400	ND	3400	NA	1	NA	35
Cyclohexane	NA	2J	ND	2J	NA	1	NA	21
Dichlorodifluoromethane	NA	54J	54J	6J	NA	16	NA	21
Ethylbenzene	5500	380	380	2J	NO	2	0	35
Methylcyclohexane	NA	2J	1J	1J	NA	2	NA	21
Methylene chloride	100	24BJ	10BJ	5J	NO	18	0	35
Toluene	1500	6J	ND	6J	NO	1	0	35
Total Xylenes	1200	1700	46J	46J	**YES**	2	1	35
Trichloroethene	700	670	2J (Paved)	2J	NO	3	0	35
Vinyl chloride	200	ND	ND	17	NO	1	0	35
Semi-Volatile Organic Compounds (ug/kg)								
2-Methylnaphthalene	36400	3600J	3600J(Paved)	51J	NO	14	0	29
4-Methylphenol	900	78J	78J	11J	NO	2	0	29
Acenaphthene	50000	120000	120000 (Paved)	20J	**YES**	13	1	29
Acenaphthylene	41000	460	460	22J	NO	10	0	29
Acetophenone	NA	150BJ	79BJ	48BJ	NA	9	NA	16
Anthracene	50000	240000	240000(Paved)	10J	**YES**	15	1	29
Benzaldehyde	NA	30J	30J	30J	NA	2	NA	16
Benzo(a)anthracene	224	600000	600000(Paved)	18J	**YES**	21	20	29
Benzo(a)pyrene	61	600000	600000(Paved)	18J	**YES**	22	22	29
Benzo(b)fluoranthene	1100	470000	470000(Paved)	34J	**YES**	22	18	29
Benzo(ghi)perylene	50000	11000	11000(Paved)	22J	**YES**	19	1	29
Benzo(k)fluoranthene	1100	180000	180000(Paved)	16J	**YES**	19	7	29
Biphenyl	NA	1800J	1800J(Paved)	12J	NA	7	NA	16
Bis(2-ethylhexyl) phthalate	50000	1200J	1200J(Paved)	27J	NO	11	0	29
Butyl benzyl phthalate	50000	19J	19J	19J	NO	1	0	29
Carbazole	NA	110000	110000(Paved)	54J	NA	11	NA	29
Chrysene	400	530000	530000(Paved)	32J	**YES**	20	18	29
Di-n-butyl phthalate	2000	710J	710J	31J	NO	9	0	16
Di-n-octyl phthalate	50000	51J	51J	35J	NO	8	0	29
Dibenzo(a,h)anthracene	14 or MDL	74000	74000(Paved)	110J	**YES**	14	13	29
Dibenzofuran	6200	57000	57000(Paved)	14J	NO	12	1	29
Fluoranthene	50000	1600000	1600000(Paved)	40J	**YES**	24	1	29
Fluorene	50000	100000	100000(Paved)	31J	**YES**	12	1	29
Indeno(1,2,3-cd)pyrene	3200	150000	150000(Paved)	12J	**YES**	19	4	29
Naphthalene	13000	6200J	6200J(Paved)	34J	NO	12	0	29

TABLE 4a
CONSTITUENTS OF POTENTIAL CONCERN
THE CLOSED ALUMAX EXTRUSIONS INC. FACILITY
DUNKIRK, NEW YORK

Detected Constituents in Sitewide Soils	Regulatory Guidance Value (TAGM)	Maximum Detected Concentration	Maximum Detected Concentration Surface Soils	Minimum Detected Concentration	Regulatory Criteria Exceeded (Y/N)	Number of Samples w/Detections	Number of Samples Exceeding Criteria	Total Number of Analyses
Phenanthrene	50000	1200000	1200000(Paved)	24J	**YES**	21	1	29
Phenol	30 or MDL	47J	47J	15J	**YES**	3	2	29
Pyrene	50000	1300000	1300000(Paved)	30J	**YES**	24	1	29
PCBs(ug/kg)	**TAGM**							
Total PCBs	1000/10000*	1700J	600	57J	NO	10	0	19
Pesticides/Herbicides (ug/kg)	**TAGM**							
4,4'-DDT	2100	6.2	6.2	4.4	NO	3	0	4
Endrin aldehyde	NA	2.3J	2.3J	2.3J	NA	1	0	4
Methoxychlor	10000	8.6J	8.6J	8.6J	NO	1	0	4
PH and Total Metals (ug/kg)	**TAGM/BKG.**							
Aluminum - Total	bkg.(33,000,000)	24,500,000	24,500,000	5,930,000	NO	18	0	18
Antimony - Total	bkg.	ND	ND	ND	NO	0	0	18
Arsenic - Total	7,500 or bkg (3,000-12,000)	45,700J	45,700J	5,300	**YES**	23	15	23
Barium - Total	300,000 or bkg(15,000-600,000)	261,000	255,000	37,400	NO	18	0	18
Beryllium - Total	160 or bkg (0-1,750)	3,600	3,600	550B	**YES**	12	14	17
Cadmium - Total	1,000 or bkg (100-1,000)	1,500	1,500	250B	**YES**	12	5	20
Calcium - Total	bkg (130,000-35,000,000)	140,000,000	140,000,000	3,560,000	**YES**	18	7	18
Chromium - Total	10,000 or bkg(1,500-40,000)	308,000J	308,000J	11,800J	**YES**	16	12	20
Cobalt - Total	30,000 or bkg.(2,500-60,000)	13,700J	13,700J	400BJ	NO	16	0	18
Copper - Total	25,000 or bkg (1,000-50,000)	R	R	R	NA	18	NA	18
Iron - Total	2,000,000 pr bkg (2,000,000-550,000,000)	55,800,000	55,800,000	9,990,000	NO	18	0	18
Lead - Total	bkg.(4,000-500,000)	1,150,000J	1,150,000J	19,200J	**YES****	20	16	20
Magnesium - Total	bkg.(100,000-5,000,000)	15,600,000	15,600,000	1,490,000	**YES****	18	19	18
Manganese - Total	bkg.(50,000-5,000,000)	4,650,000	4,650,000	254,000	NO	18	0	18
Mercury - Total	100(1-200)	777	777(Paved)	35B	**YES**	15	13	19
Nickel - Total	13,000 or bkg (500-25,000)	115,000	97,100	30,100	**YES****	6	8	8
Potassium - Total	bkg.(8,500,000-43,000,000)	1,950,000J	1,950,000J	740,000	NO	16	0	18
Selenium - Total	2,000 or bkg (100-3,900)	3,800	3,800(Paved)	650	**YES****	16	5	20
Silver - Total	bkg.	2,200	2,200	80B	**YES****	8	1	20
Sodium - Total	bkg.(6,000,000-8,000,000)	421,000B	421,000B	113,000	NO	10	0	18
Thallium - Total	bkg.	ND	ND	ND	NO	18	0	18
Vanadium - Total	150,000 or bkg (1,000-300,000)	23,400J	23,400J	8,100	NO	18	0	18
Zinc - Total	20,000 or bkg (9,000-50,000)	2,120,000J	2,120,000J(Paved)	28,500	**YES****	18	17	18

Notes:
NA=Not Analyzed
U=Not Detected, shown with method detection limit
SB(No.)=Site Background, published Eastern US background values in parentheses
J=Estimated Value
B = Blank Contamination
P=Beneath Pavement
* = PCBs 1000 Surface/10,000 Subsurface
**=Site Background Value Is Believed to Be Elevated; However, It Has Not Been Established

TABLE 4B
CONSTITUENTS OF POTENTIAL CONCERN
THE CLOSED ALUMAX EXTRUSIONS INC. FACILITY
DUNKIRK, NEW YORK

Detected Constituents in Sitewide Groundwater	Groundwater Standards (ug/l)	Maximum Detected Concentration	Minimum Detected Concentration	Regulatory Criteria Exceeded (Y/N)	Number of Wells w/ Detections	Number of Wells Exceeding Criteria	Total Number of Wells Analyzed
Volatile Organic Compound (ug/l)							
1,1-Dichloroethene	5	73	73	**Yes**	1	1	9
Acetone	5	50	6J	**Yes**	3	3	9
Benzene	1	200	2J	**Yes**	8	8	9
cis-1,2-Dichloroethene	5	9400	9400	**Yes**	2	1	9
Cyclohexane	5	120	2	**Yes**	9	6	9
Ethylbenzene	5	18	4	**Yes**	6	4	9
Isopropylbenzene	5	2J	2J	NO	1	0	9
Methylcyclohexane	5	71	4J	**Yes**	7	6	9
Toluene	5	190	3J	**Yes**	6	5	9
Total Xylenes	5	110	13	**Yes**	5	5	9
trans-1,2-Dichloroethene	5	39	39	**Yes**	1	1	9
Trichloroethene	5	4600	2J	**Yes**	3	2	9
Vinyl chloride	2	740	740	**Yes**	1	1	9
Semivolatile Organic Compounds (ug/l)							
2-Methylphenol		0.8J	0.8J	NA	1	NA	7
4-Methylphenol		0.4J	0.4J	NA	1	NA	7
Bis(2-ethylhexyl)phthalate	5	3.7BJ	0.4BJ	NO	7	0	7
Di-n-octylphthalate		2BJ	0.4BJ	NA	7	NA	7
Fluoranthene		0.6J	0.6J	NA	1	NA	7
Phenanthrene		0.4J	0.4J	NA	1	NA	7
Pyrene		0.5J	0.5J	NA	1	NA	7
Total Metals (ug/l)							
Aluminum-Total		R	R	NA	NA	NA	6
Antimony-Total	3	12.4B	5.8B	**YES**	2	2	6
Arsenic-Total	25	8.9B	3.7B	NO	3	0	6
Barium-Total	1000	837	21B	NO	6	0	6
Beryllium-Total		0.67B	0.23BJ	NA	2	NA	6
Cadmium-Total	5	0.38B	0.31B	NO	3	0	6
Calcium-Total		135,000	16,200	NA	6	NA	6
Chromium-Total	50	12.2	0.78B	NO	5	0	6
Cobalt-Total		7.8B	0.51B	NA	4	NA	6
Copper-Total	200	21.2B	0.28B	NO	6	0	6
Iron-Total		15300	761	NA	6	NA	6
Lead-Total	25	10.4	2.3BJ	NO	2	0	6
Magnesium-Total		64,600	13,800	NA	6	NA	6
Manganese-Total		1,800	75.6	NO	6	NA	6
Mercury-Total	0.7	ND	ND	NO	0	0	6
Nickel-Total	100	20.6B	1.1B	NO	5	0	6

TABLE 4B
CONSTITUENTS OF POTENTIAL CONCERN
THE CLOSED ALUMAX EXTRUSIONS INC. FACILITY
DUNKIRK, NEW YORK

Detected Constituents in Sitewide Groundwater	Groundwater Standards (ug/l)	Maximum Detected Concentration	Minimum Detected Concentration	Regulatory Criteria Exceeded (Y/N)	Number of Wells w/ Detections	Number of Wells Exceeding Criteria	Total Number of Wells Analyzed
Potassium-Total		7,850	4,300B	NA	6	NA	6
Selenium-Total	10	7.39B	7.39B	NO	1	0	6
Sodium-Total	20000	343,000	75,900	**YES****	6	6	6
Vanadium-Total		16.6B	1.2B	NA	5	NA	6
Zinc-Total		48.8	5.9B	NA	6	NA	6
Dissolved Metals (ug/l)							
Aluminum-Soluble		70.8B	33.1B	NA	7	NA	7
Antimony-Soluble	3	14.9B	6.6B	**Yes**	3	3	7
Arsenic-Soluble	25	4.2B	3.7B	NO	3	0	7
Barium-Soluble	1000	847	10.3B	NO	7	0	7
Beryllium-Soluble		ND	ND	NA	0	NA	7
Cadmium-Soluble	5	ND	ND	NA	0	0	7
Calcium-Soluble		123,000	18,000	NA	7	NA	7
Chromium-Soluble	50	ND	ND	NO	0	0	7
Cobalt-Soluble		2B	2B	NA	1	NA	7
Copper-Soluble	200	4.3B	1.2B	NO	3	0	7
Iron-Soluble		891	25.8B	NA	4	NA	7
Lead-Soluble	25	2.6B	2.6B	NO	1	0	7
Magnesium-Soluble		61,500	3,740B	NA	7	NA	7
Manganese-Soluble		1,580	70	NA	7	NA	7
Mercury-Soluble	0.7	ND	ND	NA	0	0	7
Nickel-Soluble	100	3.3B	1.9B	NO	6	0	7
Potassium-Soluble		6,390	4,190B	NA	6	NA	7
Selenium-Soluble	10	11.4	6.43B	**Yes**	7	1	7
Sodium-Soluble	20000	283,000	75,900	**Yes**	7	7	7
Vanadium-Soluble		15.2B	1.2B	NO	3	0	7
Zinc-Soluble		7.7B	1B	NA	7	NA	7

Notes:
NA=Not Analyzed
U=Not Detected, shown with method detection limit
N/A=Not Available
J=Estimated Value,below method detection limit
B=Blank Contamination
D=Sample analyzed at second dilution factor
R=Rejected, explanation provided in DUSR
Groundwater standards from:
http://www.dec.state.ny.us/website/regs/703.htm

TABLE 5
SITE SPECIFIC ACTION LEVELS

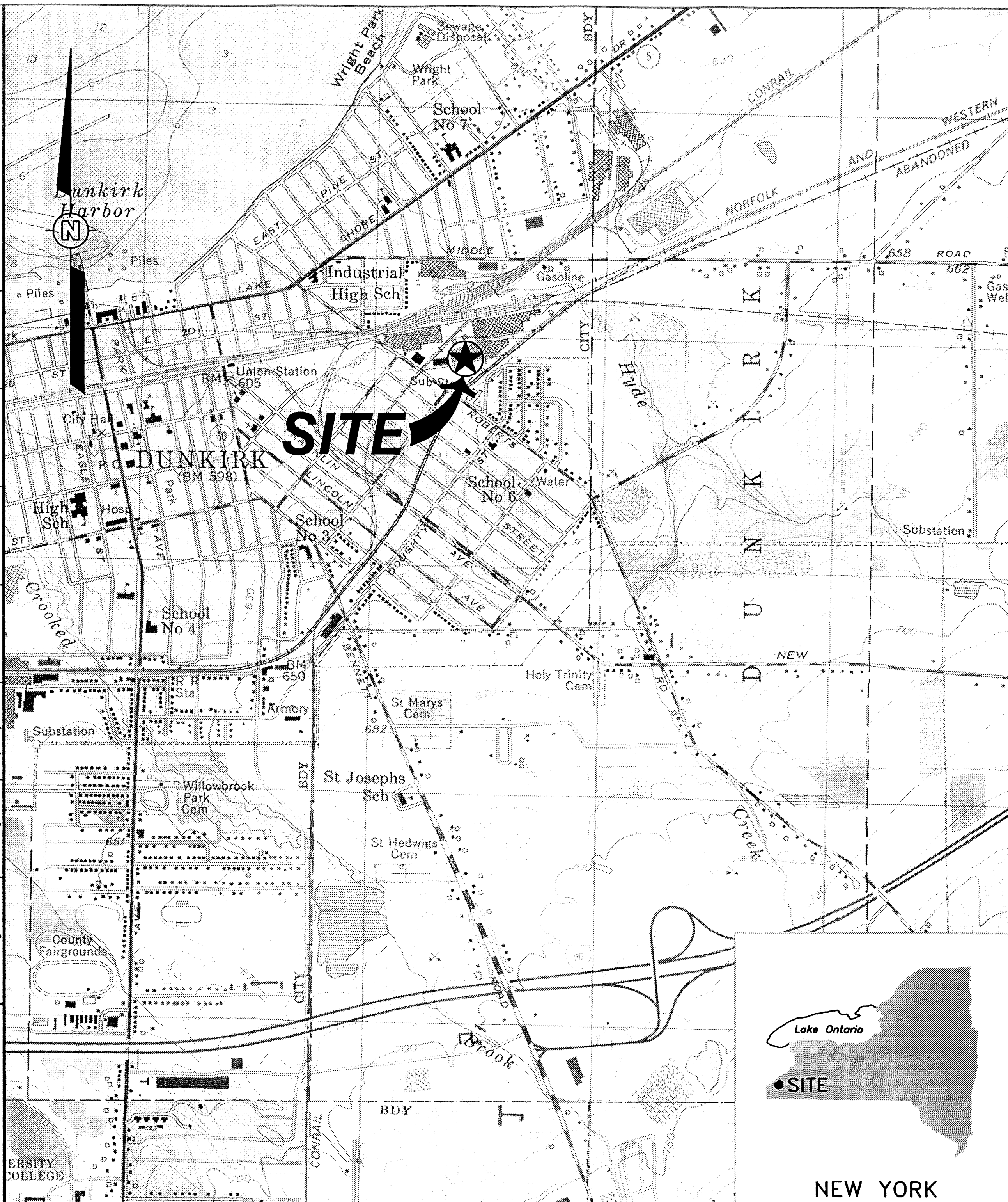
Parameter	**Maximum Concentration in Soil/Fill (mg/kg) [1,2]**
Individual VOC	1
Total VOCs	10
Individual SVOC	50
Total SVOCs[3]	500
Total cPAHs[4]	10
Arsenic	50
Barium	100
Beryllium	5
Cadmium	20
Chromium	1,000
Copper	250
Lead	1,000
Selenium	50
Silver	10
PCBs	10 [5]

Notes:

Use of these limits require the utilization of a site specific soil management plan and the application of a proper cover system (ie: "clean" soil, pavement, building slab, etc.) to minimize direct contact.

1. Off-site backfill material will also meet recommended soil cleanup objectives of organic pesticides/herbicides and PCBs as defined in TAGM 4046.
2. Analyses will be performed per NYSDEC Analytical Services Protocol (ASP), October 1995 methodology or other methods acceptable to NYSDEC.
3. Target Compound List (TCL) SVOCs per USEPA Method 8270
4. Carcinogenic polycyclic aromatic hydrocarbons (i.e., benzo(a)anthracene, benzo(a)pyrene, dibenzo(b)fluoranthene, benzo(k)flouranthene, chrysene, dibenzo(a,h)anthrancene, and ideno(1,2,3-c,d)pyrene.
5. Subsurface soil limit set in TAGM 4046.

DRAWING NUMBER	782745-A1
APPROVED BY	
CHECKED BY	
DRAWN BY	B. Snyder 7/12/00
OFFICE	Pittsburgh, PA



SCALE

0 2000 4000 FEET

REFERENCE:

U.S.G.S. 7.5 MIN TOPOGRAPHIC MAP OF DUNKIRK, N.Y., DATED 1954, PHOTOREVISED 1979, SCALE: 1" = 2000'.

URS

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

FIGURE 1

SITE LOCATION MAP

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

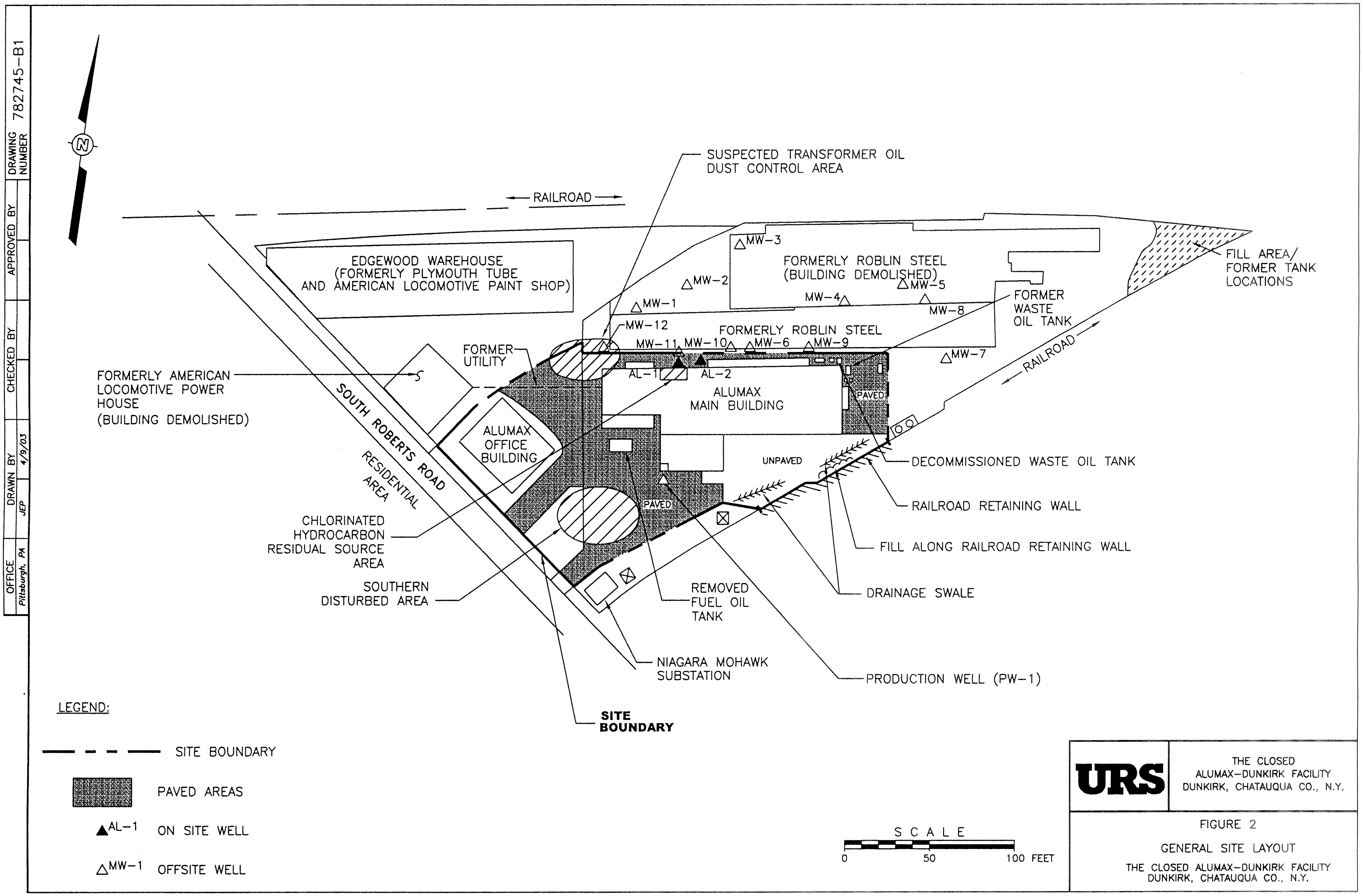
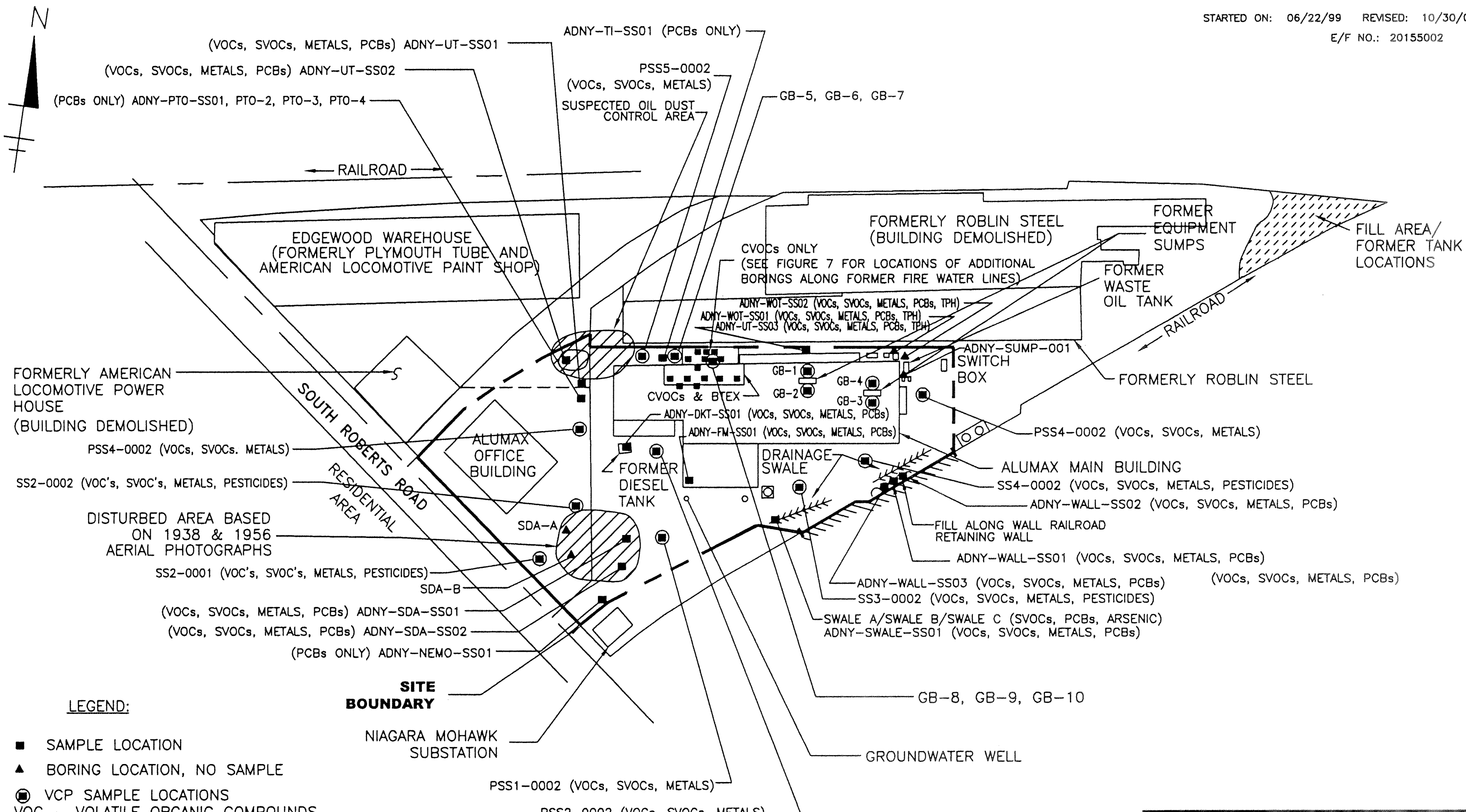


FIGURE 2

GENERAL SITE LAYOUT

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

JOB NO.: 78274500100000 PLOT SCALE: 1=1
STARTED ON: 06/22/99 REVISED: 10/30/02
E/F NO.: 20155002



LEGEND:

- ■ SAMPLE LOCATION
- ▲ BORING LOCATION, NO SAMPLE
- ◉ VCP SAMPLE LOCATIONS

VOC – VOLATILE ORGANIC COMPOUNDS
SVOC – SEMIVOLATILE ORGANIC COMPOUNDS
CVOC – CHLORINATED VOLATILE ORGANIC COMPOUNDS
PCBs – POLYCHLORINATED BIPHENYLS
BTEX – BENZENE, TOLUENE, ETHELBENZENE & XYLENES
PAHs – POLYNUCLEAR AROMATIC HYDROCARBONS
TCLP – TOXIC CHARACTERISTIC LEACHING PROCEDURE

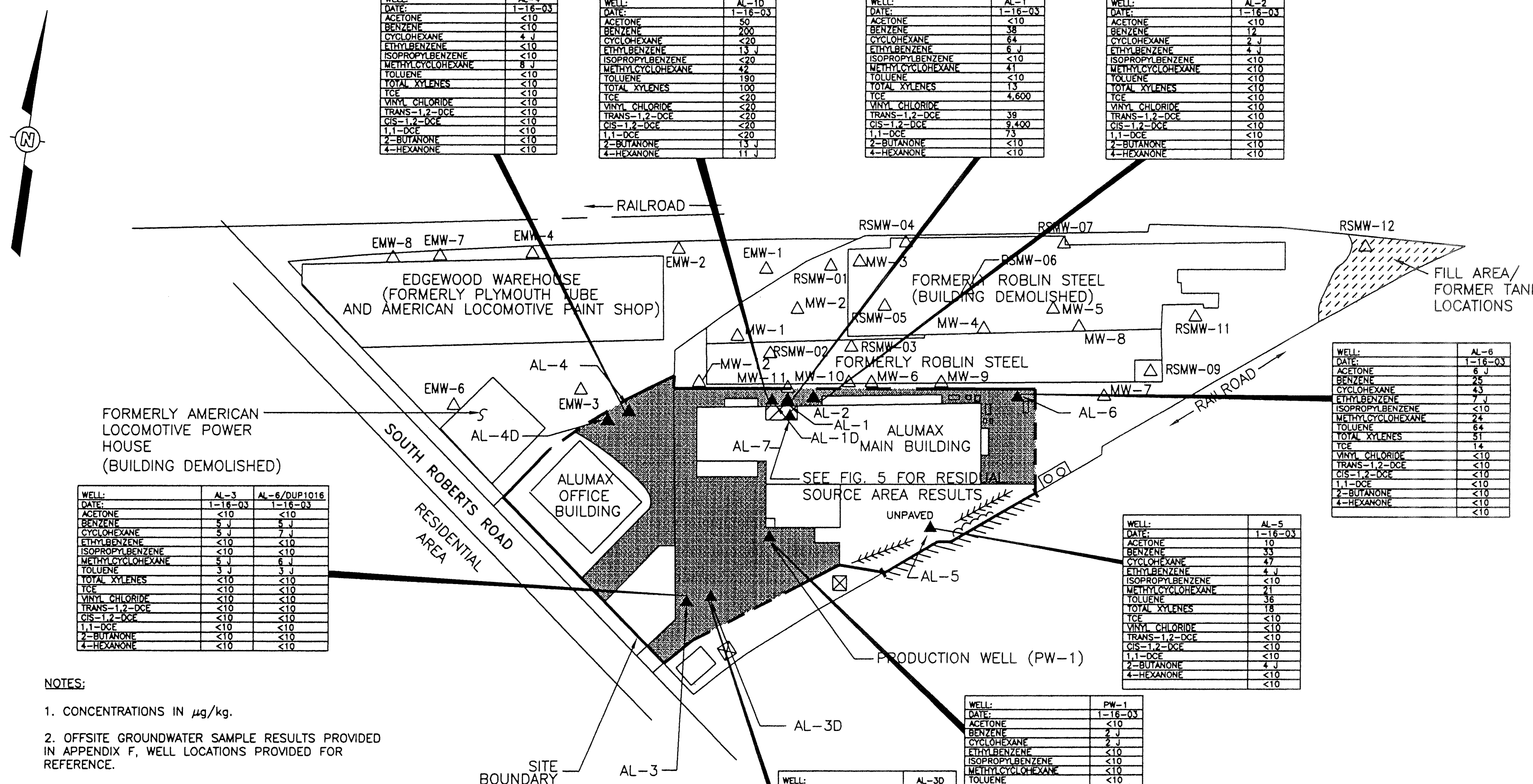
SCALE: 0 — 200 — 400 FEET

URS

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

FIGURE 3
SAMPLE LOCATIONS

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.



WELL:	AL-4
DATE:	1-16-03
ACETONE	<10
BENZENE	<10
CYCLOHEXANE	4 J
ETHYLBENZENE	<10
ISOPROPYLBENZENE	<10
METHYLCYCLOHEXANE	8 J
TOLUENE	<10
TOTAL XYLENES	<10
TCE	<10
VINYL CHLORIDE	<10
TRANS-1,2-DCE	<10
CIS-1,2-DCE	<10
1,1-DCE	<10
2-BUTANONE	<10
4-HEXANONE	<10

WELL:	AL-1D
DATE:	1-16-03
ACETONE	50
BENZENE	200
CYCLOHEXANE	<20
ETHYLBENZENE	13 J
ISOPROPYLBENZENE	<20
METHYLCYCLOHEXANE	42
TOLUENE	190
TOTAL XYLENES	100
TCE	<20
VINYL CHLORIDE	<20
TRANS-1,2-DCE	<20
CIS-1,2-DCE	<20
1,1-DCE	<20
2-BUTANONE	13 J
4-HEXANONE	11 J

WELL:	AL-1
DATE:	1-16-03
ACETONE	<10
BENZENE	38
CYCLOHEXANE	64
ETHYLBENZENE	6 J
ISOPROPYLBENZENE	<10
METHYLCYCLOHEXANE	41
TOLUENE	<10
TOTAL XYLENES	13
TCE	4,600
VINYL CHLORIDE	
TRANS-1,2-DCE	39
CIS-1,2-DCE	9,400
1,1-DCE	73
2-BUTANONE	<10
4-HEXANONE	<10

WELL:	AL-2
DATE:	1-16-03
ACETONE	<10
BENZENE	12
CYCLOHEXANE	2 J
ETHYLBENZENE	4 J
ISOPROPYLBENZENE	<10
METHYLCYCLOHEXANE	<10
TOLUENE	<10
TOTAL XYLENES	<10
TCE	<10
VINYL CHLORIDE	<10
TRANS-1,2-DCE	<10
CIS-1,2-DCE	<10
1,1-DCE	<10
2-BUTANONE	<10
4-HEXANONE	<10

WELL:	AL-6
DATE:	1-16-03
ACETONE	6 J
BENZENE	25
CYCLOHEXANE	43
ETHYLBENZENE	7 J
ISOPROPYLBENZENE	<10
METHYLCYCLOHEXANE	24
TOLUENE	64
TOTAL XYLENES	51
TCE	14
VINYL CHLORIDE	<10
TRANS-1,2-DCE	<10
CIS-1,2-DCE	<10
1,1-DCE	<10
2-BUTANONE	<10
4-HEXANONE	<10
	<10

WELL:	AL-3	AL-6/DUP1016
DATE:	1-16-03	1-16-03
ACETONE	<10	<10
BENZENE	5 J	5 J
CYCLOHEXANE	5 J	7 J
ETHYLBENZENE	<10	<10
ISOPROPYLBENZENE	<10	<10
METHYLCYCLOHEXANE	5 J	6 J
TOLUENE	3 J	3 J
TOTAL XYLENES	<10	<10
TCE	<10	<10
VINYL CHLORIDE	<10	<10
TRANS-1,2-DCE	<10	<10
CIS-1,2-DCE	<10	<10
1,1-DCE	<10	<10
2-BUTANONE	<10	<10
4-HEXANONE	<10	<10

WELL:	AL-5
DATE:	1-16-03
ACETONE	10
BENZENE	33
CYCLOHEXANE	47
ETHYLBENZENE	4 J
ISOPROPYLBENZENE	<10
METHYLCYCLOHEXANE	21
TOLUENE	36
TOTAL XYLENES	18
TCE	<10
VINYL CHLORIDE	<10
TRANS-1,2-DCE	<10
CIS-1,2-DCE	<10
1,1-DCE	<10
2-BUTANONE	4 J
4-HEXANONE	<10
	<10

WELL:	PW-1
DATE:	1-16-03
ACETONE	<10
BENZENE	2 J
CYCLOHEXANE	2 J
ETHYLBENZENE	<10
ISOPROPYLBENZENE	<10
METHYLCYCLOHEXANE	<10
TOLUENE	<10
TOTAL XYLENES	<10
TCE	2 J
VINYL CHLORIDE	<10
TRANS-1,2-DCE	<10
CIS-1,2-DCE	<10
1,1-DCE	<10
2-BUTANONE	<10
4-HEXANONE	<10
	<10

WELL:	AL-3D
DATE:	1-16-03
ACETONE	<10
BENZENE	120
CYCLOHEXANE	120
ETHYLBENZENE	18
ISOPROPYLBENZENE	2 J
METHYLCYCLOHEXANE	71
TOLUENE	150
TOTAL XYLENES	110
TCE	<10
VINYL CHLORIDE	<10
TRANS-1,2-DCE	<10
CIS-1,2-DCE	<10
1,1-DCE	<10
2-BUTANONE	5 J
4-HEXANONE	<10
	2 J

NOTES:

1. CONCENTRATIONS IN μg/kg.

2. OFFSITE GROUNDWATER SAMPLE RESULTS PROVIDED IN APPENDIX F, WELL LOCATIONS PROVIDED FOR REFERENCE.

LEGEND:

PAVED AREAS

▲AL-1 ON SITE WELL

△MW-1 OFFSITE WELL

SCALE

0 200 400 FEET

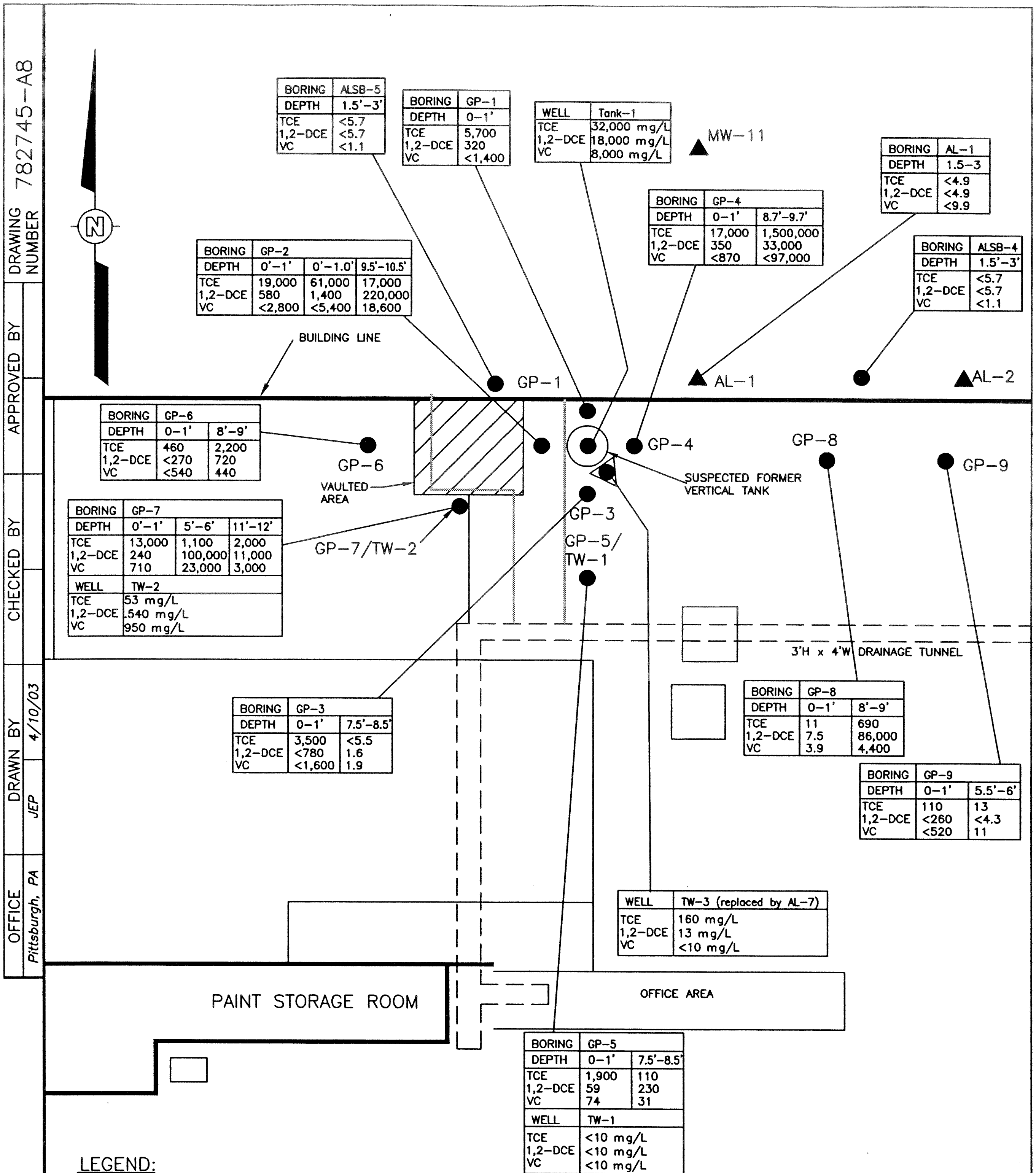
URS

THE CLOSED
ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

FIGURE 4

GROUNDWATER ANALYTICAL RESULTS
VOLATILE ORGANIC COMPOUNDS
THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

OFFICE	DRAWN BY		CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	JEP	3/25/02			782745-B1



BORING	ALSB-5
DEPTH	1.5'-3'
TCE	<5.7
1,2-DCE	<5.7
VC	<1.1

BORING	GP-1
DEPTH	0-1'
TCE	5,700
1,2-DCE	320
VC	<1,400

WELL	Tank-1
TCE	32,000 mg/L
1,2-DCE	18,000 mg/L
VC	8,000 mg/L

BORING	AL-1
DEPTH	1.5-3
TCE	<4.9
1,2-DCE	<4.9
VC	<9.9

BORING	GP-4	
DEPTH	0-1'	8.7'-9.7'
TCE	17,000	1,500,000
1,2-DCE	350	33,000
VC	<870	<97,000

BORING	ALSB-4
DEPTH	1.5'-3'
TCE	<5.7
1,2-DCE	<5.7
VC	<1.1

BORING	GP-2		
DEPTH	0'-1'	0'-1.0'	9.5'-10.5'
TCE	19,000	61,000	17,000
1,2-DCE	580	1,400	220,000
VC	<2,800	<5,400	18,600

BORING	GP-6	
DEPTH	0-1'	8'-9'
TCE	460	2,200
1,2-DCE	<270	720
VC	<540	440

BORING	GP-7		
DEPTH	0'-1'	5'-6'	11'-12'
TCE	13,000	1,100	2,000
1,2-DCE	240	100,000	11,000
VC	710	23,000	3,000
WELL	TW-2		
TCE	53 mg/L		
1,2-DCE	540 mg/L		
VC	950 mg/L		

BORING	GP-3	
DEPTH	0-1'	7.5'-8.5'
TCE	3,500	<5.5
1,2-DCE	<780	1.6
VC	<1,600	1.9

BORING	GP-8	
DEPTH	0-1'	8'-9'
TCE	11	690
1,2-DCE	7.5	86,000
VC	3.9	4,400

BORING	GP-9	
DEPTH	0-1'	5.5'-6'
TCE	110	13
1,2-DCE	<260	<4.3
VC	<520	11

WELL	TW-3 (replaced by AL-7)
TCE	160 mg/L
1,2-DCE	13 mg/L
VC	<10 mg/L

BORING	GP-5	
DEPTH	0-1'	7.5'-8.5'
TCE	1,900	110
1,2-DCE	59	230
VC	74	31
WELL	TW-1	
TCE	<10 mg/L	
1,2-DCE	<10 mg/L	
VC	<10 mg/L	

LEGEND:

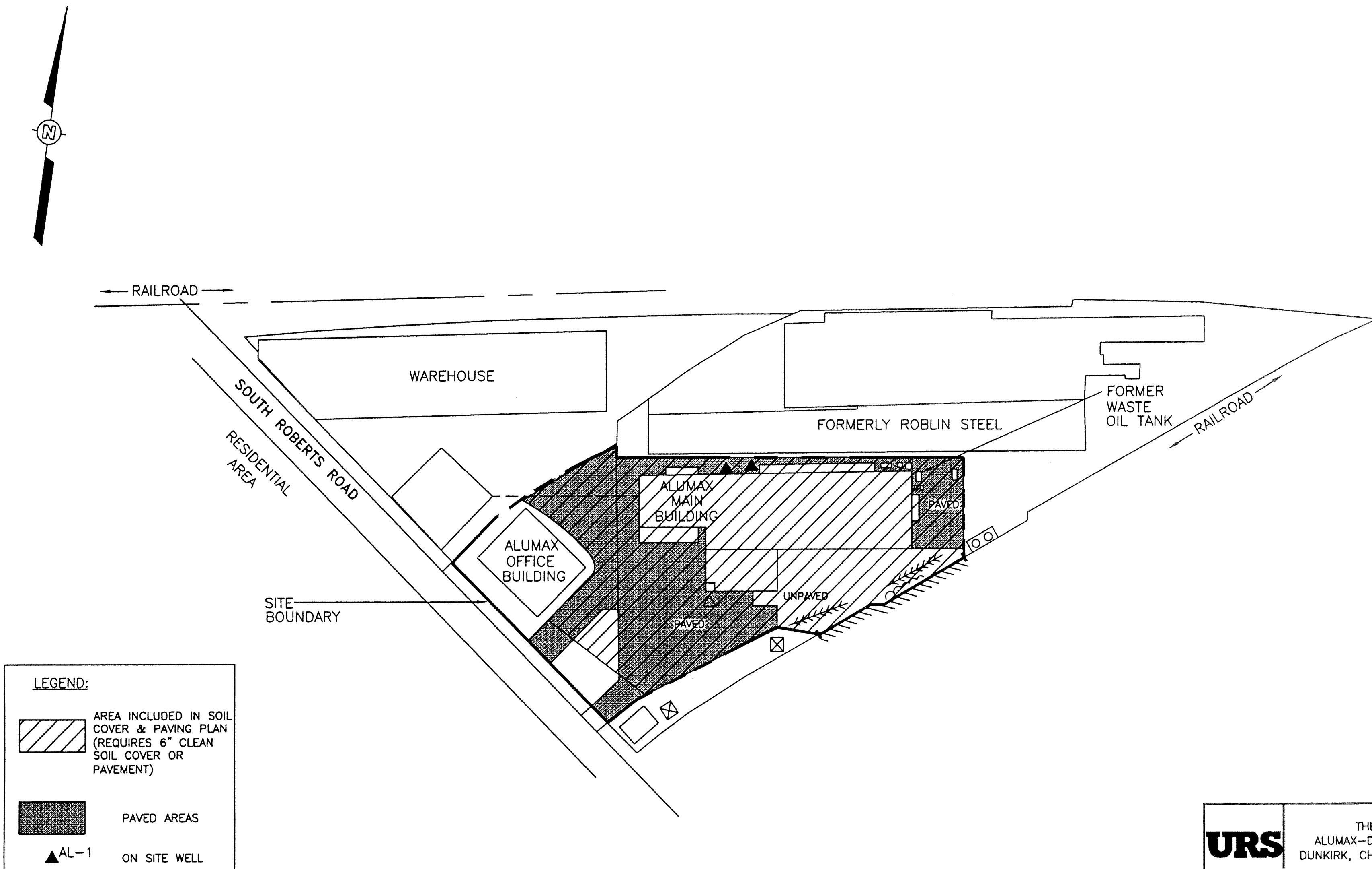
CONCENTRATIONS IN ug/kg, UNLESS OTHERWISE NOTED
DEPTH IN FEET
● GEOPROBE BORING LOCATIONS
TCE – TRICHLOROETHYLENE
DCE – DICHLOROETHYLENE
VC – VINYL CHLORIDE
< – NOT DETECTED ALONG WITH DETECTION LIMIT

SCALE
0 30 60 FEET

URS

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

FIGURE 5
SOIL/GROUNDWATER SAMPLE RESULTS (PRETREATMENT)
RESIDUAL SOURCE AREA
THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

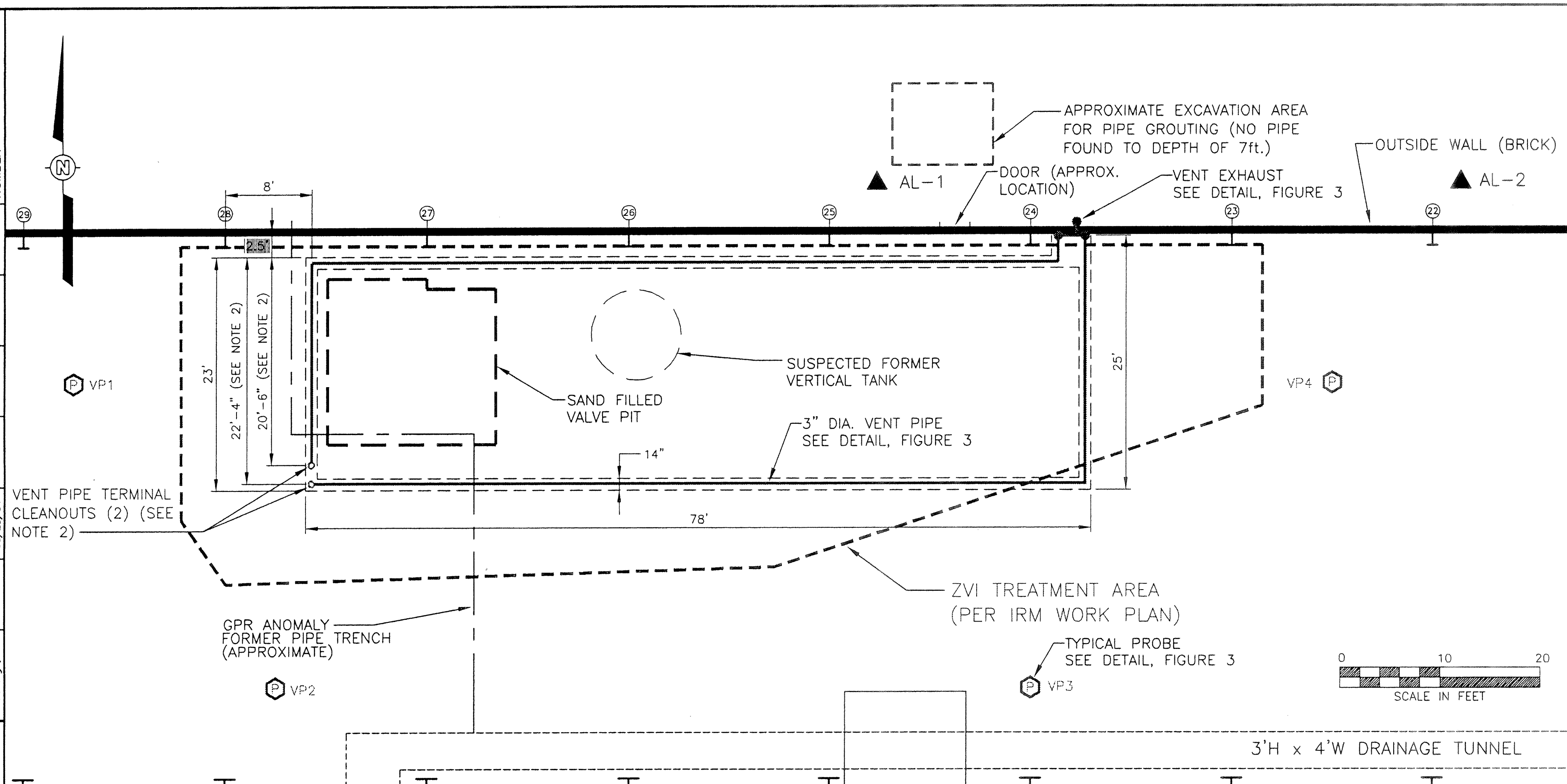


URS — THE CLOSED ALUMAX-DUNKIRK FACILITY, DUNKIRK, CHATAUQUA CO., N.Y.

FIGURE 6
SOIL COVER & PAVING PLAN

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHATAUQUA CO., N.Y.

OFFICE	DRAWN BY		CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	B. Snyder	7/10/00			782745-B8



LEGEND

- (25) BUILDING COLUMN NUMBER
- - - - TREATMENT AREA
- —— VENT PIPING
- (P) VAPOR PROBE (4)

PLAN OF VAPOR PROBES AND VENT PIPE

NOTES:

1. VENTING SYSTEM CONSTRUCTED DECEMBER 2003 BY URS ROS, PITTSBURGH, PA.
2. ACCESS/MONITORING WELL AT EACH VENT LINE TERMINUS (FLUSH-MOUNT MANHOLES).
3. SEE FIGURE 3 FOR DETAILS OF THE VAPOR PROBES, VENT PIPING IN TRENCH, AND THE VENT EXHAUST.

URS

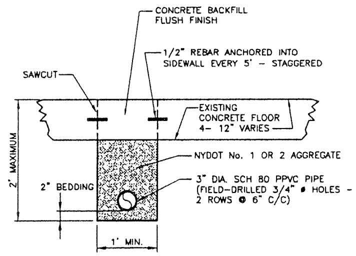
THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHAUTAUQUA CO., N.Y.

FIGURE 7

SUBFLOOR ZVI VENTING PLAN

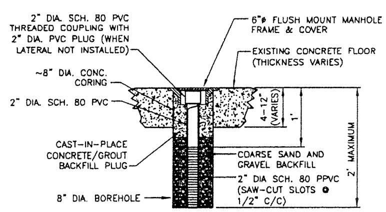
THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHAUTAUQUA CO., N.Y.

OFFICE	DRAWN BY		CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	KG	03/23/04			VENTPLAN-BR



VENT PIPING IN TRENCH (TYP.)

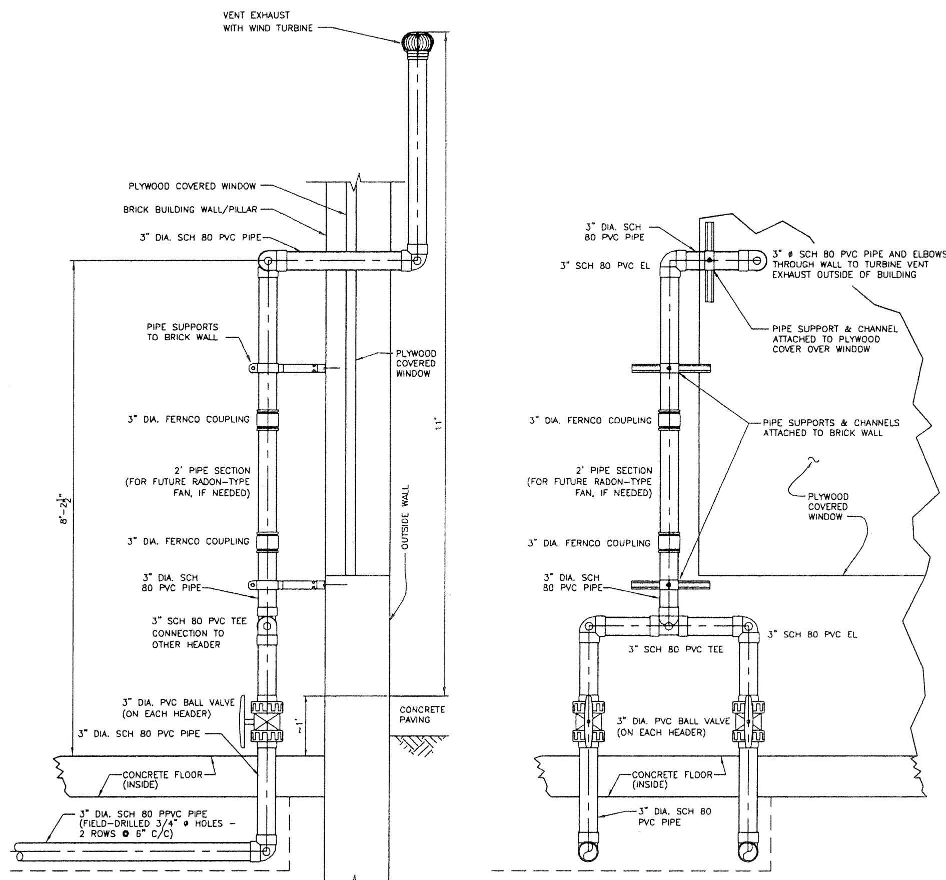
0 1'-0" 2'-0" SCALE IN FEET



VAPOR PROBE (TYPICAL)

0 1'-0" 2'-0" SCALE IN FEET

NOTE:
MANHOLE FRAME REQUIRES MINIMUM 4" CONCRETE THICKNESS. IF CONCRETE SLAB < 4", FIELD MODIFICATION SHALL BE MADE AS APPROVED BY ENGINEER.



VENT EXHAUST

0 1'-0" 2'-0" SCALE IN FEET

URS

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHAUTAUQUA CO., N.Y.

FIGURE 8

SUBFLOOR ZVI VENTING DETAILS

THE CLOSED ALUMAX-DUNKIRK FACILITY
DUNKIRK, CHAUTAUQUA CO., N.Y.

OFFICE	DRAWN BY		CHECKED BY	APPROVED BY	DRAWING NUMBER
Pittsburgh, PA	KG	03/23/04			VENTPLAN-BR

ATTACHMENT A
Deed Amendments/Restrictions

DECLARATION of COVENANTS and RESTRICTIONS

THIS COVENANT is made the __ day of ___________ 2004, by ALUMAX INC., a Delaware corporation, as successor in interest to Alumax Extrusions, Inc., a New York corporation, whose address is Alcoa Corporate Center, 201 Isabella Street, Pittsburgh, Pennsylvania 15212-5858 ("Alumax").

WHEREAS Alcoa Inc. (Alcoa) is the subject of Voluntary Agreement Index No. B9-0616-02-06, dated 08 August 2002 (the "Agreement") executed by Robert S. Bear (on behalf of Alcoa Inc.) and Susan I. Taluto, Deputy Commissioner – NYSDEC Water Quality and Environmental Remediation as part of the New York State Department of Environmental Conservation's (the "Department's) Voluntary Cleanup Program, namely that parcel of real property located at 320 South Roberts Road in the City of Dunkirk, County of Chautauqua, State of New York, which is part of lands conveyed by:

Warranty Deed made by Edgewood Investments, Inc to Alumax Extrusions, Inc, dated March 2, 1989 and recorded March 17, 1989 in Liber 2168 of Deeds at page 513; and,

Warranty Deed made by Edgewood investments, Inc to Alumax Extrusions, Inc, dated April 7, 1989 and recorded April 12, 1989 in Liber 2189 of Deeds at page 6; and,

Warranty Deed made by County of Chautauqua Industrial Development Agency to Alumax Extrusions, Inc, dated August 25, 1995 and recorded July 30, 1996 in Liber 2351 of Deeds at page 874;

and being more particularly described in Appendix "A," attached to this declaration and made a part hereof, and hereinafter referred to as "the Property"; and

WHEREAS, the Department approved a remedy to eliminate or mitigate all significant threats to the environment presented by the contamination disposed at the Property and such remedy requires that the Property be subject to restrictive covenants.

NOW, THEREFORE, Alcoa, for itself and its successors and/or assigns, covenants that:

First, the Property subject to this Declaration of Covenants and Restrictions is as shown on a map attached to this declaration as Appendix "B" and made a part hereof, and consists of:
PARCEL A

ALL THAT TRACT OR PARCEL OF LAND, situate in the City of Dunkirk, County of Chautauqua and State of New York and more particularly described as follows:

BEGINNING on the centerline of Roberts Road at the point located 601.13 feet northwesterly along said centerline from the northerly line of lands of the Norfolk and Western Railroad, (former New York, Chicago and St. Louis Railroad); thence north 40° 28' east (assumed bearing) a distance of 396.0 feet to a point; thence north 81° 31' east a distance of 95.9 feet to a point; thence south 8° 39' east a distance of 514.37 feet to an iron pin; thence south 38° 16' west a distance of 114.28 feet to said centerline of Roberts Road; thence north 51° 44' west a distance of 456.6 feet along said centerline to the point or place of beginning.

PARCEL B

ALL THAT TRACT OR PARCEL OF LAND, situate in the City of Dunkirk, County of Chautauqua and State of New York and more particularly described as follows:

BEGINNING in the center line of the existing 30.3 foot pavement in Roberts

Road at a point located 94.53 feet northwesterly along said centerline from the northwesterly line of lands of the New York, Chicago & St. Louis Railroad Company; thence north 51° 44' west along said centerline a distance of 50 feet to a point on line of lands now or formerly of Plymouth Tube Company; thence north 38° 16' east a distance of 114.28 feet to an iron pin and passing through an iron pin located 33 feet northeasterly along the last described course from the centerline of Roberts Road; thence north 8° 39' west a distance of 514.37 feet to an iron pin on point of lands now or formerly of Roblin Industries, Inc.; thence continuing along line of lands of Roblin Industries, north 81° 31' east a distance of 822 feet to an iron pin and south 8° 29' east 251.95 feet to a point on line of lands now or formerly of said Railroad Company; thence south 53° 33' west 219.15 feet to a monument; thence north 87° 18' west 24.88 feet to a monument; thence south 53° 33' west 137.59 feet to an iron pin; thence north 88° 30' west 111.6 feet to an iron pin; thence south 56° 19' 32" west 381.7 feet to a monument; thence south 38° 16' west, 102.49 feet to the point or place of beginning, and passing through an iron pin located 33 feet northeasterly along the last described course from the place of beginning.

Second, unless prior written approval by the Department or, if the Department shall no longer exist, any New York State agency or agencies subsequently created to protect the environment of the State and the health of the State's citizens, hereinafter referred to as "the Relevant Agency," is first obtained, there shall be no construction, use or occupancy; disturbance or excavation of the Property that is inconsistent with the approved "Combined Institutional Control Plan and Operations and Maintenance Plan – Former Alumax Extrusions Site" (Combined Plan) and that results in unacceptable human exposure to contaminated soils.

Third, the owner of the Property shall be responsible to implement the Combined Plan or implementing any modifications to the Combined Plan after obtaining the written approval of the Relevant Agency.

Fourth, the owner of the Property shall prohibit the Property from ever being used for purposes other than for restricted industrial or restricted commercial use without the express written waiver of such prohibition by the Relevant Agency.

Fifth, the owner of the Property shall prohibit the use of the groundwater underlying the Property without treatment rendering it safe for drinking water or industrial purposes, as appropriate, unless the user first obtains permission to do so from the Relevant Agency.

Sixth, the owner of the Property shall continue in full force and effect the prohibition against uses other than restricted commercial and/or industrial uses, and shall assure that any construction, use, occupancy, disturbance or excavation on the property shall be in conformance with the "Combined Plan" as institutional and engineering controls required under the Agreement, and shall continue to implement and annually report on the status, results and effectiveness of the operation, monitoring and maintenance requirements to the Relevant Agency unless the owner first obtains permission to discontinue to do so.

Seventh, this Declaration is and shall be deemed a covenant that shall run with the land and shall be binding upon all future owners of the Property, and shall provide that the owner and its successors and assigns consent to enforcement by the Relevant Agency of the prohibitions, restrictions and requirements set out in this Covenant, the Agreement, and the Combined Plan, and hereby covenant not to contest the authority of the Relevant Agency to seek enforcement.

Eighth, any deed of conveyance of the Property, or any portion thereof, shall recite, unless the Relevant Agency has consented to the termination of such covenants and restrictions, that said conveyance is subject to this Declaration of Covenants and Restrictions.

IN WITNESS WHEREOF, the undersigned has executed this instrument the day written below.

[acknowledgment]

APPENDIX "A"

PARCEL A

ALL THAT TRACT OR PARCEL OF LAND, situate in the City of Dunkirk, County of Chautauqua and State of New York and more particularly described as follows:

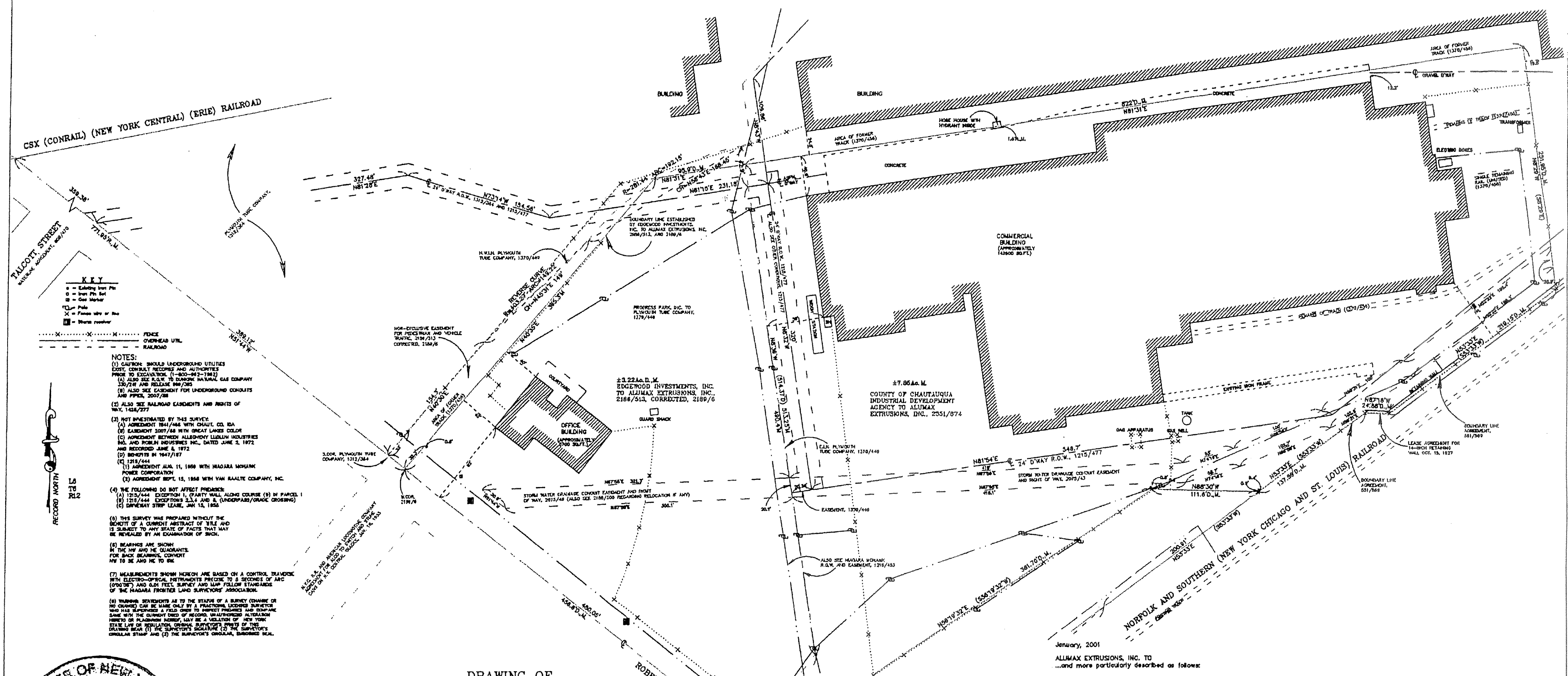
BEGINNING on the centerline of Roberts Road at the point located 601.13 feet northwesterly along said centerline from the northerly line of lands of the Norfolk and Western Railroad, (former New York, Chicago and St. Louis Railroad); thence north 40° 28' east (assumed bearing) a distance of 396.0 feet to a point; thence north 81° 31' east a distance of 95.9 feet to a point; thence south 8° 39' east a distance of 514.37 feet to an iron pin; thence south 38° 16' west a distance of 114.28 feet to said centerline of Roberts Road; thence north 51° 44' west a distance of 456.6 feet along said centerline to the point or place of beginning.

PARCEL B

ALL THAT TRACT OR PARCEL OF LAND, situate in the City of Dunkirk, County of Chautauqua and State of New York and more particularly described as follows:

BEGINNING in the center line of the existing 30.3 foot pavement in Roberts Road at a point located 94.53 feet northwesterly along said centerline from the northwesterly line of lands of the New York, Chicago & St. Louis Railroad Company; thence north 51° 44' west along said centerline a distance of 50 feet to a point on line of lands now or formerly of Plymouth Tube Company; thence north 38° 16' east a distance of 114.28 feet to an iron pin and passing through an iron pin located 33 feet northeasterly along the last described course from the centerline of Roberts Road; thence north 8° 39' west a distance of 514.37 feet to an iron pin on point of lands now or formerly of Roblin Industries, Inc.; thence continuing along line of lands of Roblin Industries, north 81° 31' east a distance of 822 feet to an iron pin and south 8° 29' east 251.95 feet to a point on line of lands now or formerly of said Railroad Company; thence south 53° 33' west 219.15 feet to a monument; thence north 87° 18' west 24.88 feet to a monument; thence south 53° 33' west 137.59 feet to an iron pin; thence north 88° 30' west 111.6 feet to an iron pin; thence south 56° 19' 32" west 381.7 feet to a monument; thence south 38° 16' west, 102.49 feet to the point or place of beginning, and passing through an iron pin located 33 feet northeasterly along the last described course from the place of beginning.

APPENDIX "B"



DRAWING OF
BOUNDARY SURVEY
PROPERTY OF
ALUMAX EXTRUSIONS, INC.
City of Dunkirk
Chautauqua County New York
Scale: 1" = 100' January 22, 2001
Land Surveyor, NYS Lic. No. 49520 (GROUND SNOW COVERED)
R1 (REDUCES SCALE)

KEY
- Existing Iron Pin
- Iron Pin Set
- Gas Marker
- Pole
- Fence wire or line
- Storm receiver

FENCE
OVERHEAD UTIL.
RAILROAD

L8
T6
R12

NOTES:
(1) CAUTION: SHOULD UNDERGROUND UTILITIES EXIST, CONSULT RECORDS AND AUTHORITIES PRIOR TO EXCAVATION (1-800-962-7962)
(A) ALSO SEE R.O.W. TO DUNKIRK NATURAL GAS COMPANY 330/241 AND RELEASE 966/365
(B) ALSO SEE EASEMENT FOR UNDERGROUND CONDUITS AND PIPES, 2007/88
(2) ALSO SEE RAILROAD EASEMENTS AND RIGHTS OF WAY, 1426/277
(3) NOT INVESTIGATED BY THIS SURVEY:
(A) AGREEMENT 1941/446 WITH CHAUT. CO. IDA
(B) EASEMENT 2007/88 WITH GREAT LAKES COLOR
(C) AGREEMENT BETWEEN ALLEGHENY LUDLUM INDUSTRIES INC. AND ROBLIN INDUSTRIES INC., DATED JUNE 2, 1972 AND RECORDED JUNE 8, 1972
(D) BENEFITS IN 1647/187
(E) 1215/444
(1) AGREEMENT AUG. 11, 1950 WITH NIAGARA MOHAWK POWER CORPORATION
(2) AGREEMENT SEPT. 15, 1958 WITH VAN RAALTE COMPANY, INC.
(4) THE FOLLOWING DO NOT AFFECT PREMISES:
(A) 1215/444 EXCEPTION 1, (PARTY WALL ALONG COURSE (9) IN PARCEL I
(B) 1215/444 EXCEPTIONS 2,3,4 AND 8, (UNDERPASS/GRADE CROSSING)
(C) DRIVEWAY STRIP LEASE, JAN 15, 1958
(5) THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH.
(6) BEARINGS ARE SHOWN IN THE NW AND NE QUADRANTS. FOR BACK BEARINGS, CONVERT NW TO SE AND NE TO SW.
(7) MEASUREMENTS SHOWN HEREON ARE BASED ON A CONTROL TRAVERSE WITH ELECTRO-OPTICAL INSTRUMENTS PRECISE TO 5 SECONDS OF ARC (0°00'05") AND 0.01 FEET. SURVEY AND MAP FOLLOW STANDARDS OF THE NIAGARA FRONTIER LAND SURVEYORS' ASSOCIATION.
(8) WARNING: STATEMENTS AS TO THE STATUS OF A SURVEY (CHANGE OR NO CHANGE) CAN BE MADE ONLY BY A PRACTICING LICENSED SURVEYOR WHO HAS SUPERVISED A FIELD CREW TO INSPECT PREMISES AND COMPARE SAME WITH THE CURRENT DEED OF RECORD. UNAUTHORIZED ALTERATION HERETO OR PLAGIARISM HEREOF, MAY BE A VIOLATION OF NEW YORK STATE LAW OR REGULATION. ORIGINAL SURVEYOR'S PRINTS OF THIS DRAWING BEAR (1) THE SURVEYOR'S SIGNATURE (2) THE SURVEYOR'S CIRCULAR STAMP AND (3) THE SURVEYOR'S CIRCULAR, EMBOSSED SEAL.

January, 2001

ALUMAX EXTRUSIONS, INC. TO
...and more particularly described as follows:

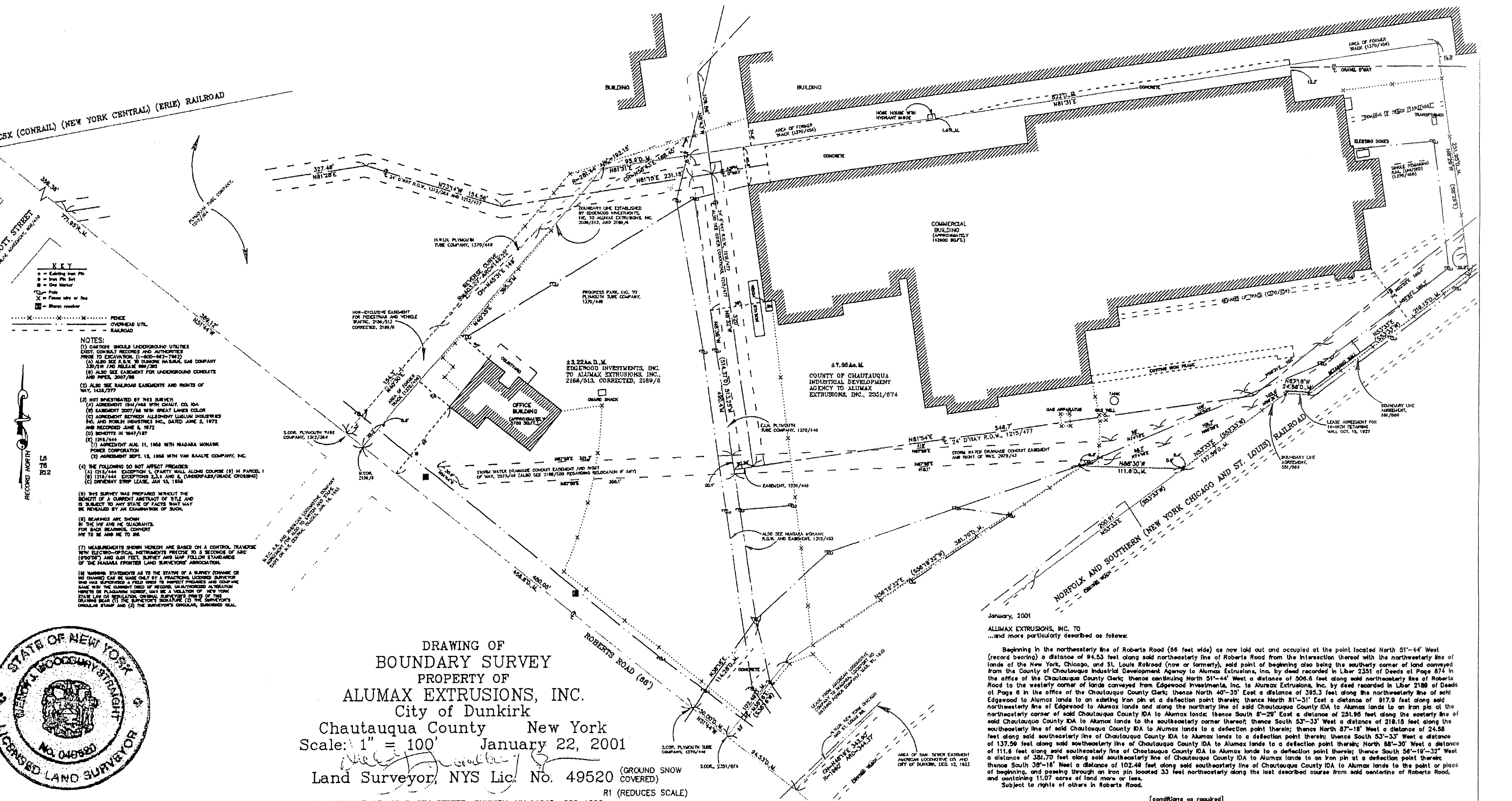
Beginning in the northeasterly line of Roberts Road (66 feet wide) as now laid out and occupied at the point located North 51°-44' West (record bearing) a distance of 94.53 feet along said northeasterly line of Roberts Road from the intersection thereof with the northwesterly line of lands of the New York, Chicago, and St. Louis Railroad (now or formerly), said point of beginning also being the southerly corner of land conveyed from the County of Chautauqua Industrial Development Agency to Alumax Extrusions, Inc. by deed recorded in Liber 2351 of Deeds at Page 874 in the office of the Chautauqua County Clerk; thence continuing North 51°-44' West a distance of 506.6 feet along said northeasterly line of Roberts Road to the westerly corner of lands conveyed from Edgewood Investments, Inc. to Alumax Extrusions, Inc. by deed recorded in Liber 2189 of Deeds at Page 6 in the office of the Chautauqua County Clerk; thence North 40°-35' East a distance of 395.3 feet along the northwesterly line of said Edgewood to Alumax lands to an existing iron pin at a deflection point therein; thence North 81°-31' East a distance of 917.9 feet along said northwesterly line of Edgewood to Alumax lands and along the northerly line of said Chautauqua County IDA to Alumax lands to an iron pin at the northeasterly corner of said Chautauqua County IDA to Alumax lands; thence South 8°-29' East a distance of 251.95 feet along the easterly line of said Chautauqua County IDA to Alumax lands to the southeasterly corner thereof; thence South 53°-33' West a distance of 219.15 feet along the southeasterly line of said Chautauqua County IDA to Alumax lands to a deflection point therein; thence North 87°-18' West a distance of 24.88 feet along said southeasterly line of Chautauqua County IDA to Alumax lands to a deflection point therein; thence South 53°-33' West a distance of 137.59 feet along said southeasterly line of Chautauqua County IDA to Alumax lands to a deflection point therein; North 88°-30' West a distance of 111.6 feet along said southeasterly line of Chautauqua County IDA to Alumax lands to a deflection point therein; thence South 56°-19'-32" West a distance of 381.70 feet along said southeasterly line of Chautauqua County IDA to Alumax lands to an iron pin at a deflection point therein; thence South 38°-18' West a distance of 102.49 feet along said southeasterly line of Chautauqua County IDA to Alumax lands to the point or place of beginning, and passing through an iron pin located 33 feet northeasterly along the last described course from said centerline of Roberts Road, and containing 11.07 acres of land more or less.

Subject to rights of others in Roberts Road.

(conditions as required)

STATE OF NEW YORK · WENDY J. WOODBURY STRAIGHT · NO. 049520 · LICENSED LAND SURVEYOR

WOODBURY SURVEYING – OFFICE OF WENDY J. WOODBURY STRAIGHT, LS 12 E. 5TH STREET DUNKIRK, NY 14048 366-1990



K E Y

- ○ = Existing Iron Pin
- ◎ = Iron Pin Set
- ■ = One Marker
- Pole
- X = Fence wire or Ties
- Storm receiver

- ·····X·····X····· FENCE
- ——— OVERHEAD UTIL.
- — — — RAILROAD

NOTES:

(1) CAUTION: SHOULD UNDERGROUND UTILITIES EXIST, CONSULT RECORDS AND AUTHORITIES PRIOR TO EXCAVATION. (1-800-962-7962)
(A) ALSO SEE R.O.W. TO DUNKIRK NATURAL GAS COMPANY 330/241 AND RELEASE 980/395
(B) ALSO SEE EASEMENT FOR UNDERGROUND CONDUITS AND PIPES, 2007/88

(2) ALSO SEE RAILROAD EASEMENTS AND RIGHTS OF WAY, 1426/377

(3) NOT INVESTIGATED BY THIS SURVEY:
(A) AGREEMENT 1941/468 WITH CHAUT. CO. IDA
(B) EASEMENT 2007/88 WITH GREAT LAKES COLOR
(C) AGREEMENT BETWEEN ALLEGHENY LUDLUM INDUSTRIES INC. AND ROBLIN INDUSTRIES INC., DATED JUNE 2, 1972 AND RECORDED JUNE 8, 1972
(D) BENEFITS IN 1847/187
(E) 1215/444
(1) AGREEMENT AUG. 11, 1950 WITH NIAGARA MOHAWK POWER CORPORATION
(2) AGREEMENT SEPT. 15, 1956 WITH VAN RAALTE COMPANY, INC.

(4) THE FOLLOWING DO NOT AFFECT PREMISES:
(A) 1215/444 EXCEPTION 1, (PARTY WALL ALONG COURSE (9) IN PARCEL I
(B) 1215/444 EXCEPTIONS 2,3,4 AND 5, (UNDERPASS/GRADE CROSSING)
(C) DRIVEWAY STRIP LEASE, JAN 15, 1956

(5) THIS SURVEY WAS PREPARED WITHOUT THE BENEFIT OF A CURRENT ABSTRACT OF TITLE AND IS SUBJECT TO ANY STATE OF FACTS THAT MAY BE REVEALED BY AN EXAMINATION OF SUCH.

(6) BEARINGS ARE SHOWN IN THE NW AND NE QUADRANTS. FOR BACK BEARINGS, CONVERT NW TO SE AND NE TO SW.

(7) MEASUREMENTS SHOWN HEREON ARE BASED ON A CONTROL TRAVERSE WITH ELECTRO-OPTICAL INSTRUMENTS PRECISE TO 5 SECONDS OF ARC (0°00'05") AND 0.01 FEET. SURVEY AND MAP FOLLOW STANDARDS OF THE NIAGARA FRONTIER LAND SURVEYORS' ASSOCIATION.

(8) WARNING: STATEMENTS AS TO THE STATUS OF A SURVEY (CHANGE OR NO CHANGE) CAN BE MADE ONLY BY A PRACTICING LICENSED SURVEYOR WHO HAS SUPERVISED A FIELD CREW TO INSPECT PREMISES AND COMPARE SAME WITH THE CURRENT DEED OF RECORD. UNAUTHORIZED ALTERATION HERETO OR PLAGIARISM HEREOF, MAY BE A VIOLATION OF NEW YORK STATE LAW OR REGULATION. ORIGINAL SURVEYOR'S PRINTS OF THIS DRAWING BEAR (1) THE SURVEYOR'S SIGNATURE (2) THE SURVEYOR'S CIRCULAR STAMP AND (3) THE SURVEYOR'S CIRCULAR, EMBOSSED SEAL.

STATE OF NEW YORK — WENDY J. WOODBURY STRAIGHT — NO. 049520 — LICENSED LAND SURVEYOR

DRAWING OF
BOUNDARY SURVEY
PROPERTY OF
ALUMAX EXTRUSIONS, INC.
City of Dunkirk
Chautauqua County New York
Scale: 1" = 100' January 22, 2001
Land Surveyor, NYS Lic. No. 49520 (GROUND SNOW COVERED)
R1 (REDUCES SCALE)

January, 2001

ALUMAX EXTRUSIONS, INC. TO
...and more particularly described as follows:

Beginning in the northeasterly line of Roberts Road (66 feet wide) as now laid out and occupied at the point located North 51°-44' West (record bearing) a distance of 94.53 feet along said northeasterly line of Roberts Road from the intersection thereof with the northwesterly line of lands of the New York, Chicago, and St. Louis Railroad (now or formerly), said point of beginning also being the southerly corner of land conveyed from the County of Chautauqua Industrial Development Agency to Alumax Extrusions, Inc. by deed recorded in Liber 2351 of Deeds at Page 874 in the office of the Chautauqua County Clerk; thence continuing North 51°-44' West a distance of 506.6 feet along said northeasterly line of Roberts Road to the westerly corner of lands conveyed from Edgewood Investments, Inc. to Alumax Extrusions, Inc. by deed recorded in Liber 2189 of Deeds at Page 6 in the office of the Chautauqua County Clerk; thence North 40°-35' East a distance of 395.3 feet along the northwesterly line of said Edgewood to Alumax lands to an existing iron pin at a deflection point therein; thence North 81°-31' East a distance of 917.9 feet along said northwesterly line of Edgewood to Alumax lands and along the northerly line of said Chautauqua County IDA to Alumax lands to an iron pin at the northeasterly corner of said Chautauqua County IDA to Alumax lands; thence South 8°-29' East a distance of 251.96 feet along the easterly line of said Chautauqua County IDA to Alumax lands to the southeasterly corner thereof; thence South 53°-33' West a distance of 219.18 feet along the southeasterly line of said Chautauqua County IDA to Alumax lands to a deflection point therein; thence North 87°-18' West a distance of 24.88 feet along said southeasterly line of Chautauqua County IDA to Alumax lands to a deflection point therein; thence South 53°-33' West a distance of 137.59 feet along said southeasterly line of Chautauqua County IDA to Alumax lands to a deflection point therein; North 88°-30' West a distance of 111.6 feet along said southeasterly line of Chautauqua County IDA to Alumax lands to a deflection point therein; thence South 56°-19'-32" West a distance of 381.70 feet along said southeasterly line of Chautauqua County IDA to Alumax lands to an iron pin at a deflection point therein; thence South 38°-18' West a distance of 102.49 feet along said southeasterly line of Chautauqua County IDA to Alumax lands to the point or place of beginning, and passing through an iron pin located 33 feet northeasterly along the last described course from said centerline of Roberts Road, and containing 11.07 acres of land more or less.

Subject to rights of others in Roberts Road.

[conditions as required]

WOODBURY SURVEYING – OFFICE OF WENDY J. WOODBURY STRAIGHT, LS 12 E. 5TH STREET DUNKIRK, NY 14048 366-1990

ATTACHMENT B
Annual Certification

Annual Certification of Institutional/Engineering Controls at
Voluntary Clean-Up Program Site

Site Number: V00589-9
Site Name: The Closed Alumax Extrusion Facility
Site Address: 320 South Roberts Road, Dunkirk, New York
County: Chatauqua
Town: Dunkirk
Property I.D.:
Parcel A: Containing Office Building
Section: 30.00 Block: 1 Lot: 7.3
Parcel B: Containing Former Manufacturing Plant
Section: 30.00 Block: 1 Lot: 7.2.1

I (name) , residing at (address) ______________, as owner, or duly authorized representative, of properties listed above which are located wholly or partially within the boundaries of the Voluntary Cleanup Site named above; do certify that the engineering and institutional controls, as specified in the Restrictive Covenant for the Voluntary Cleanup Site are in-place and functioning as designed within the properties listed above.

Signature:

(This area for notary public)

DESCRIPTIVE LOGS
CONFIRMATORY BORINGS

CB-1

0-4 feet	Recovery = 30 inches PID = 0 Iron – None Detected Dry 0-15 inches – dark brown silty sand fill 15-20 inches – concrete and brick 20-30 inches medium brown clay w/roots
4-8 feet	Recovery = Full PID = 0, except 16.5 ppm at 6 feet Iron – None Detected Moist 4-8 feet – yellowish brown and light gray mottled clay
8-10.9 feet	Refusal at 10' 10" Recovery = 2' 10" PID = 0, except 4.3 ppm at 10.2 feet Iron – None Detected Dry 8-10'10" feet – gray clay with gray shale fragments

CB-2

0-4 feet	Recovery = 32 inches PID = 0 Iron – None Detected Dry 0-18 inches – dark brown sand fill 18-32 inches – light gray clay
4-8 feet	Recovery = Full PID = 0, except 16.5 ppm at 6 feet Iron – None Detected Moist 0-14 inches – gray clay 14-20 inches – yellowish brown and light gray mottled clay 20-48 inches yellowish brown and medium brown clay
8-10.1 feet	Refusal at 10.1 feet Recovery = 2.1 feet PID = 0, except 5.6 ppm at 10 feet Iron – None Detected Dry 8-10'10" feet – gray clay with rounded gray shale pebbles Tip - gray shale fragments

CB-3

0-4 feet	Recovery = 36 inches PID = 0 Iron – None Detected Damp 0-36 inches – Black sand and ash, occasional glass fragment
4-8 feet	Recovery = Full PID = 0 Iron – at 34 inches, too large for injection Damp to Moist 4-8 feet – Black sand and ash, with gravel size slag from 24 to 34 inches
8-12 feet	Refusal at 12 feet Recovery = 4 feet PID = 0, except 94 ppm at 12 feet Iron – Detected 11.8-12 feet Wet 8-11.7 feet – Black sand and ash, with slag 11.7-12 feet – clay with gray shale fragments and iron filings

CB-4

0-4 feet	Recovery = 31 inches PID = 0 Iron – None Detected Dry 0-36 inches – Black sand and ash, occasional glass fragment
4-8 feet	Recovery = Full PID = 20-40 ppm Iron –present - too large for injection 4-8 feet – Black sand and ash, with some slag
8-10 feet	Refusal at 10 feet Recovery = 2 feet PID = 20-40 ppm Iron – Detected 9-10 feet, minor diffuse throughout Wet 8-10 – Black sand and ash, with slag

CB-5

0-4 feet	Recovery = 40 inches PID = 0 Iron – Disperse in top 6 inches Damp 0-6 inches – dark brown sand, some iron 6-40 inches – mottled yellowish brown and light gray clay
4-8 feet	Recovery = Full PID = 0, except 11.8 ppm at 7.5-8 feet Iron – at 39 inches Moist 4-8 feet – yellowish brown and light gray mottled clay
8-9'10" feet	Refusal at 9' 10" Recovery = 2' PID = up to 671 ppm Iron – seam from 8'-8.5" Moist, wet in iron zone 8-8.5 feet – Iron Seam 8.5-9.9 feet – gray clay

CB-6

0-4 feet	Recovery = 38 inches PID = 0 Iron – Disperse in top 6 inches Damp 0-6 inches – gray sand, some iron 6-38 inches – Brown clay
4-8 feet	Recovery = Full PID = 6-16 ppm Iron – at 7 Feet Moist 4-8 feet – yellowish brown and light gray clay, iron seam at 7 feet
8-9 feet	Refusal at 9 feet Recovery = 2 PID = 11.9 ppm at base Iron – 8-9 Wet 8-9 feet – Iron in liquefied clay

CB-7

0-4 feet	Recovery = 32 inches PID = 0 ppm Iron – None Dry 0-32 inches – Yellowish brown clay
4-8 feet	Recovery = Full PID = 0 ppm Iron – at 5.3 Feet Moist 4-8 feet – yellowish brown and light gray clay, sand seam with flyash at 4'4" to 4'7"
8-9 feet	Refusal at 9 feet Recovery = 2 PID = 17.1 ppm at base, 0 ppm on rest Iron – none Wet 8-9 feet – gray shale

CB-8

0-4 feet	Recovery = 40 inches PID = 0 ppm Iron – None Moist 0-6 inches – Sand with iron 6-32 inches – Yellowish brown and gray mottled clay
4-8 feet	Recovery = 36 inches PID = 8 ppm Iron – at 7 Feet Moist 4-8 feet – yellowish brown and light gray mottled clay, shale in tip
8-9 feet	Refusal at 9 feet Recovery = 4 inches PID = 5.6 ppm at base, 0 ppm on rest Iron – none Dry 8-9 feet – gray shale

CB-9

0-4 feet	Recovery = 38 inches PID = 0 ppm Iron – None 0-38 inches – Yellowish brown and gray mottled clay
4-8 feet	Recovery = full PID = 0 ppm Iron – at 7 Feet Moist 4-8 feet – yellowish brown grading to light gray clay at 6.5 feet
8-9.2 feet	Refusal at 9.2 feet Recovery = 1.2 feet PID = 15.2 ppm Iron – none Dry 8-9.2 feet – gray shale with gray shale

CB-10

0-4 feet	Recovery = 38 inches PID = 0 ppm Iron – None Dry 0-38 inches – Yellowish brown clay
4-7.66 feet	Refusal at 7.66 feet Recovery = 3.66 feet PID = 0 ppm Iron – none Moist 4-8 feet – Gray clay and gray shale

CB-11

0-4 feet	Recovery = 2 inches PID = 0 Iron – Iron Stained Wet 0-2 inches – Iron stained sand and gravel
4-8 feet	Recovery = Full PID = 0 Iron – None Detected Wet 4-8 feet – Sand and gravel
8-11 feet	Refusal at 11 feet Recovery = 3 feet" PID = 0 Iron – at 9'2" Wet 8-11 feet – Sand and gravel

CB-12

0-4 feet	Recovery = 38 inches PID = 0 ppm Iron – None Detected Moist, bottom 6 inches wet 0-38 inches – Black sand and ash
4-8 feet	Recovery = Full PID = 0 ppm Iron – Disseminated through 4-6 feet Wet 4-8 feet –Black sand and ash
8-11'8" feet	Refusal at 11' 8" Recovery = 2' PID = 0, except 4.3 ppm at 10.2 feet Iron – Disseminated throughout Wet 8-11'8" feet – black sand and ash with 1"gray clay with gray shale fragments in bottom

Monitoring Well Log and Construction Details

Monitoring Well AL-7
Installed using 4.25" hollow stem augers
Logged cuttings
0-8" – Concrete
8'-8 feet Black sand and ash with some slag and coal fragments
Iron noted at 3 feet below ground surface
Water at 8 feet, no cuttings, ash and sand with iron filings on augers
Bedrock at 12 feet, total depth 12.3 feet

Well construction:
Screened 12.3 –8 feet, 2-inch diameter, 10-slot PVC screen with 3-inch pre-packed sand filter.
Annulus filled from 12.3 to 4.5 feet below surface
Bentonite pellets from 4.5 to 3 feet below surface, hydrated
Bentonite chips to 1 foot below surface, hydrated
Top finished with a locking expansion plug and a manhole

SEVERN TRENT STL

STL Buffalo
10 Hazelwood Drive, Suite 106
Amherst, NY 14228

Tel: 716 691 2600 Fax: 716 691 7991
www.stl-inc.com

ANALYTICAL REPORT

Job#: A04-0732

STL Project#: NY2A9011
Site Name: URS CORPORATION - ALUMAX
Task: Alumax Extrusions - TCLP

Mr. Mark Dowiak
URS Corp
4955 Stubenville Pike, Ste 250
Pittsburgh, PA 15205

STL Buffalo

Brian J. Fischer
Project Manager

02/17/2004

DATA COMMENT PAGE

ORGANIC DATA QUALIFIERS

ND or U Indicates compound was analyzed for, but not detected at or above the reporting limit.

J Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the data indicates the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

C This flag applies to pesticide results where the identification has been confirmed by GC/MS.

B This flag is used when the analyte is found in the associated blank, as well as in the sample.

E This flag identifies compounds whose concentrations exceed the calibration range of the instrument for that specific analysis.

D This flag identifies all compounds identified in an analysis at the secondary dilution factor.

N Indicates presumptive evidence of a compound. This flag is used only for tentatively identified compounds, where the identification is based on the Mass Spectral library search. It is applied to all TIC results.

P This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on the data page and flagged with a "P".

A This flag indicates that a TIC is a suspected aldol-condensation product.

‡ Indicates coelution.

* Indicates analysis is not within the quality control limits.

INORGANIC DATA QUALIFIERS

ND or U Indicates element was analyzed for, but not detected at or above the reporting limit.

J or B Indicates a value greater than or equal to the instrument detection limit, but less than the quantitation limit.

N Indicates spike sample recovery is not within the quality control limits.

K Indicates the post digestion spike recovery is not within the quality control limits.

S Indicates value determined by the Method of Standard Addition.

M Indicates duplicate injection results exceeded quality control limits.

W Post digestion spike for Furnace AA analysis is out of quality control limits (85-115%) while sample absorbance is less than 50% of spike absorbance.

E Indicates a value estimated or not reported due to the presence of interferences.

H Indicates analytical holding time exceedance. The value obtained should be considered an estimate.

* Indicates analysis is not within the quality control limits.

+ Indicates the correlation coefficient for the Method of Standard Addition is less than 0.995.

Client Sample ID	Lab Sample ID	Parameter (Inorganic)/Method (Organic)	Dilution	Code
ALMX-DEBRIS SOLIDS	A4073201	8260/5ML	10.00	007
ALMX-CATCH BASIN	A4073202	8260/5ML	10.00	007

:ion Code Definition:

002 - sample matrix effects
003 - excessive foaming
004 - high levels of non-target compounds
005 - sample matrix resulted in method non-compliance for an Internal Standard
006 - sample matrix resulted in method non-compliance for Surrogate
007 - nature of the TCLP matrix
008 - high concentration of target analyte(s)
009 - sample turbidity
010 - sample color
011 - insufficient volume for lower dilution
012 - sample viscosity
013 - other

****

The results presented in this report relate only to the analytical testing and condition of the sample at receipt. This report pertains to only those samples actually tested. All pages of this report are integral parts of the analytical data. Therefore, this report should be reproduced only in its entirety.

"I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or his designee, as verified by the following signature."

Brian J. Fischer
Project Manager

2-17-04
Date

NON-CONFORMANCE SUMMARY

Job#: A04-0732

STL Project#: NY2A9011
Site Name: URS CORPORATION - ALUMAX

General Comments

The enclosed data have been reported utilizing data qualifiers (Q) as defined on the Data Comment Page.

Soil, sediment and sludge sample results are reported on "dry weight" basis unless otherwise noted in this data package.

According to 40CFR Part 136.3, pH, Chlorine Residual and Dissolved Oxygen analyses are to be performed immediately after aqueous sample collection. When these parameters are not indicated as field (e.g. pH-Field), they were not analyzed immediately, but as soon as possible after laboratory receipt.

Sample dilutions were performed as indicated on the attached Dilution Log. The rationale for dilution is specified by the 3-digit code and definition.

Sample Receipt Comments

A04-0732
Sample Cooler(s) were received at the following temperature(s); 4.0 °C
All samples were received in good condition.

GC/MS Volatile Data

Initial calibration standard curve A4I0000064-1 exhibited the %RSD of the surrogate Toluene-D8 as greater than 15%. However, the mean RSD of all compounds is 6.88%.

GC Extractable Data

No deviations from protocol were encountered during the analytical procedures.

Wet Chemistry Data

No deviations from protocol were encountered during the analytical procedures.

METHODS SUMMARY

Job#: A04-0732

STL Project#: NY2A9011
Site Name: URS CORPORATION - ALUMAX

PARAMETER	ANALYTICAL METHOD
URS - METHOD 8260 - TCLP VOLATILES - S	SW8463 8260/5ML
URS - METHOD 8082 - POLYCHLORINATED BIPHENYLS - S	SW8463 8082
Toxicity Characteristic Leaching Procedure	SW8463 1311

References:

SW8463 "Test Methods for Evaluating Solid Waste Physical/Chemical Methods (SW846), Third Edition, 9/86; Update I, 7/92; Update IIA, 8/93; Update II, 9/94; Update IIB, 1/95; Update III, 12/96.

SAMPLE SUMMARY

		SAMPLED		RECEIVED	
LAB SAMPLE ID	CLIENT SAMPLE ID	DATE	TIME	DATE	TIME
A4073202	ALMX-CATCH BASIN	01/28/2004	12:00	01/29/2004	10:00
A4073201	ALMX-DEBRIS SOLIDS	01/28/2004	11:20	01/29/2004	10:00

SAMPLE DATA SUMMARY PACKAGE

STL Buffalo
Current Certifications

STATE	Program	Cert # / Lab ID
A2LA (ISO 17025)	SDWA, CWA, RCRA	0732-01
Arkansas	SDWA, CWA, RCRA, SOIL	03-054-D/88-0686
California	NELAP CWA, RCRA	01169CA
Canada	GENERAL	SCC 1007-15/10B
Connecticut	SDWA, CWA, RCRA, SOIL	PH-0568
Florida	NELAP CWA, RCRA	E87672
Georgia	SDWA	956
Illinois	NELAP SDWA, CWA, RCRA	200003
Kansas	NELAP SDWA, CWA, RCRA	E-10187
Kentucky	SDWA	90029
Kentucky UST	UST	30
Louisiana	NELAP CWA, RCRA	2031
Maine	SDWA, CWA	NY044
Maryland	SDWA	294
Massachusetts	SDWA, CWA	M-NY044
Michigan	SDWA	9937
Minnesota	SDWA, CWA, RCRA	036-999-337
New Hampshire	NELAP SDWA, CWA	233701
New Jersey	SDWA, CWA, RCRA, CLP	NY455
New York	NELAP, AIR, SDWA, CWA, RCRA	10026
North Carolina	CWA	411
North Dakota	SDWA, CWA, RCRA	R-176
Oklahoma	CWA, RCRA	9421
Pennsylvania	Env. Lab Reg.	68-281
South Carolina	RCRA	91013
Tennessee	SDWA	2970
USDA	FOREIGN SOIL PERMIT	S-4650
Virginia	SDWA	278
Washington	CWA, RCRA	C254
West Virginia	CWA	252
Wisconsin	CWA, RCRA	998310390
Wyoming UST	UST	NA

U R S CORPORATION
URS CORPORATION - ALUMAX
URS - METHOD 8260 - TCLP VOLATILES - S
ANALYSIS DATA SHEET

Client No.

ALMX-CATCH BASIN

ame: STL Buffalo   Contract: ____________

Code: RECNY   Case No.: _____   SAS No.: ______   SDG No.: ______

x: (soil/water) SOIL   Lab Sample ID: A4073202

e wt/vol: 5.00 (g/mL) ML   Lab File ID: Q5179.RR

l: (low/med) LOW   Date Samp/Recv: 01/28/2004 01/29/2004

sture: not dec. 100.0   Heated Purge: N   Date Analyzed: 02/03/2004

olumn: DB-624   ID: 0.25 (mm)   Dilution Factor: 10.00

Extract Volume: ______ (uL)   Soil Aliquot Volume: ________ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	MG/L	Q
71-43-2	Benzene	0.050	U
78-93-3	2-Butanone	0.25	U
56-23-5	Carbon Tetrachloride	0.050	U
108-90-7	Chlorobenzene	0.050	U
67-66-3	Chloroform	0.050	U
107-06-2	1,2-Dichloroethane	0.050	U
75-35-4	1,1-Dichloroethene	0.050	U
127-18-4	Tetrachloroethene	0.050	U
79-01-6	Trichloroethene	0.044	J
75-01-4	Vinyl chloride	0.050	U

U R S CORPORATION
URS CORPORATION - ALUMAX
URS - METHOD 8260 - TCLP VOLATILES - S
ANALYSIS DATA SHEET

Client No.

ALMX-DEBRIS SOLIDS

ame: STL Buffalo   Contract: ____________

Code: RECNY   Case No.: _____   SAS No.: ______   SDG No.: ______

x: (soil/water) SOIL   Lab Sample ID: A4073201

ple wt/vol: 5.00 (g/mL) ML   Lab File ID: Q5178.RR

l: (low/med) LOW   Date Samp/Recv: 01/28/2004 01/29/2004

sture: not dec. 100.0   Heated Purge: N   Date Analyzed: 02/03/2004

Column: DB-624   ID: 0.25 (mm)   Dilution Factor: 10.00

Extract Volume: ______ (uL)   Soil Aliquot Volume: ________ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	MG/L	Q
71-43-2	Benzene	0.050	U
78-93-3	2-Butanone	0.25	U
56-23-5	Carbon Tetrachloride	0.050	U
108-90-7	Chlorobenzene	0.050	U
67-66-3	Chloroform	0.050	U
107-06-2	1,2-Dichloroethane	0.050	U
75-35-4	1,1-Dichloroethene	0.050	U
127-18-4	Tetrachloroethene	0.050	U
79-01-6	Trichloroethene	0.050	U
75-01-4	Vinyl chloride	0.050	U

U R S CORPORATION
URS CORPORATION - ALUMAX
URS - METHOD 8082 - POLYCHLORINATED BIPHENYLS - S
ANALYSIS DATA SHEET

Client No.

ALMX-CATCH BASIN

Jame: STL Buffalo Contract: ______

Code: RECNY Case No.: ______ SAS No.: ______ SDG No.: ______

x: (soil/water) SOIL Lab Sample ID: A4073202

ple wt/vol: 30.85 (g/mL) G Lab File ID: 14A01287.TX0

sture: 23.2 decanted: (Y/N) N Date Samp/Recv: 01/28/2004 01/29/2004

ction: (SepF/Cont/Sonc/Soxh): SONC Date Extracted: 02/02/2004

centrated Extract Volume: 10000 (uL) Date Analyzed: 02/05/2004

tion Volume: 1.00 (uL) Dilution Factor: 1.00

Cleanup: (Y/N) N pH: _ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
2674-11-2	Aroclor 1016	21	U
11104-28-2	Aroclor 1221	21	U
11141-16-5	Aroclor 1232	21	U
3469-21-9	Aroclor 1242	21	U
2672-29-6	Aroclor 1248	21	U
11097-69-1	Aroclor 1254	29	
1096-82-5	Aroclor 1260	21	U

U R S CORPORATION
URS CORPORATION - ALUMAX
URS - METHOD 8082 - POLYCHLORINATED BIPHENYLS - S
ANALYSIS DATA SHEET

Client No.

ALMX-DEBRIS SOLIDS

Name: STL Buffalo Contract: ____________

Code: RECNY Case No.: _____ SAS No.: ______ SDG No.: ______

ix: (soil/water) SOIL Lab Sample ID: A4073201

le wt/vol: 30.66 (g/mL) G Lab File ID: 14A01288.TX0

oisture: 28.2 decanted: (Y/N) N Date Samp/Recv: 01/28/2004 01/29/2004

action: (SepF/Cont/Sonc/Soxh): SONC Date Extracted: 02/02/2004

centrated Extract Volume: 10000 (uL) Date Analyzed: 02/05/2004

tion Volume: 1.00 (uL) Dilution Factor: 1.00

Cleanup: (Y/N) N pH: _ Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
12674-11-2	Aroclor 1016	23	U
11104-28-2	Aroclor 1221	23	U
11141-16-5	Aroclor 1232	23	U
53469-21-9	Aroclor 1242	44	
12672-29-6	Aroclor 1248	23	U
11097-69-1	Aroclor 1254	240	
11096-82-5	Aroclor 1260	23	U

U R S CORPORATION
URS CORPORATION - ALUMAX
URS - METHOD 8260 - TCLP VOLATILES - S
SOIL SURROGATE RECOVERY

Lab Name: STL Buffalo Contract: ______

Lab Code: RECNY Case No.: ____ SAS No.: ____ SDG No.: ____

Level (low/med): LOW

Client Sample ID	BFB %REC #	DCE %REC #	TOL %REC #						TOT OUT
ALMX-CATCH BASIN	102	110	114						0
ALMX-DEBRIS SOLIDS	103	108	114						0
EBLK Z-1215	103	112	116						0
MSB57	109	106	119						0
VBLK57	103	102	113						0

		QC LIMITS
FB =	p-Bromofluorobenzene	(74-120)
CE =	1,2-Dichloroethane-D4	(73-136)
=	Toluene-D8	(77-122)

Column to be used to flag recovery values
Values outside of contract required QC limits
Surrogates diluted out

U R S CORPORATION
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URS - METHOD 8082 - POLYCHLORINATED BIPHENYLS - S
SOIL SURROGATE RECOVERY

Lab Name: STL Buffalo Contract: ____________

Lab Code: RECNY Case No.: _____ SAS No.: ______ SDG No.: ______

GC Column(1): ZB-35 ID: 0.53 (mm)

Level (low/med): LOW

	Client Sample ID	DCBP %REC #	TCMX %REC #							TOT OUT
	====================	=======	=======	=======	=======	=======	=======	=======	=======	===
1	ALMX-CATCH BASIN	79	84							0
2	ALMX-DEBRIS SOLIDS	106	86							0
3	Matrix Spike Blank	100	102							0
4	Matrix Spike Blk Dup	100	102							0
5	Method Blank	98	100							0

		QC LIMITS
(DCBP)	= Decachlorobiphenyl	(36-153)
(TCMX)	= Tetrachloro-m-xylene	(32-148)

Column to be used to flag recovery values
Values outside of contract required QC limits
D Surrogates diluted out

U R S CORPORATION
URS CORPORATION - ALUMAX
URS - METHOD 8260 - TCLP VOLATILES - S
SOIL MATRIX SPIKE BLANK RECOVERY

Name: STL Buffalo Contract: ____________ Lab Samp ID: A4073203

ode: RECNY Case No.: _____ SAS No.: ______ SDG No.: ______

ix Spike - Client Sample No.: ~~VBLK57~~ MSB57 MTm 2/9/2004 Level:(low/med) LOW

UND	SPIKE ADDED MG/L	MSB CONCENTRATION MG/L	MSB % REC #	QC LIMITS REC.
zene	0.0500	0.0475	95	77 - 123
anone	0.250	0.291	116	64 - 139
on Tetrachloride	0.0500	0.0501	100	75 - 128
orobenzene	0.0500	0.0494	99	77 - 121
oform	0.0500	0.0465	93	75 - 126
Dichloroethane	0.0500	0.0493	99	74 - 126
-Dichloroethene	0.0500	0.0502	100	66 - 142
chloroethene	0.0500	0.0472	94	77 - 120
loroethene	0.0500	0.0483	97	77 - 123
yl chloride	0.0500	0.0483	97	55 - 145

umn to be used to flag recovery and RPD values with an asterisk

es outside of QC limits

recovery: 0 out of 10 outside limits

ents: ____

U R S CORPORATION
URS CORPORATION - ALUMAX
URS - METHOD 8082 - POLYCHLORINATED BIPHENYLS - S
SOIL MATRIX SPIKE BLANK/MATRIX SPIKE BLANK DUPLICATE RECOVERY

o Name: STL Buffalo Contract: ____________ Lab Samp ID: A4B0529403

Code: RECNY Case No.: _____ SAS No.: ______ SDG No.: ______

trix Spike - Client Sample No.: Method Blank Level:(low/med) LOW

MPOUND	SPIKE ADDED UG/KG	MSB CONCENTRATION UG/KG	MSB % REC #	QC LIMITS REC.	+ =
roclor 1254	164	169	103	52 - 153	

POUND	SPIKE ADDED UG/KG	MSBD CONCENTRATION UG/KG	MSBD % REC #	% RPD #	QC LIMITS RPD	QC LIMITS REC.	+ =
roclor 1254	161	172	106	3	30	52 - 153	

olumn to be used to flag recovery and RPD values with an asterisk

lues outside of QC limits

____0 out of ____1 outside limits
e recovery: ____0 out of ____2 outside limits

ments: ______________________________

U R S CORPORATION
URS CORPORATION - ALUMAX
URS - METHOD 8260 - TCLP VOLATILES - S
METHOD BLANK SUMMARY

Client No.

VBLK57

Name: STL Buffalo　　Contract: ______

ode: RECNY　　Case No.: ______　　SAS No.: ______　　SDG No.: ______

ile ID: Q5173.RR　　Lab Sample ID: A4073203

e Analyzed: 02/03/2004　　Time Analyzed: 12:56

lumn: DB-624　　ID: 0.25 (mm)　　Heated Purge: (Y/N) N

rument ID: HP5973Q

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	LAB FILE ID	TIME ANALYZED
1	ALMX-CATCH BASIN	A4073202	Q5179.RR	17:10
2	ALMX-DEBRIS SOLIDS	A4073201	Q5178.RR	16:38
3	EBLK Z-1215	A4073205	Q5177.RR	16:07
4	MSB57	A4073204	Q5172.RR	12:25

nts: ______

U R S CORPORATION
URS CORPORATION - ALUMAX
URS - METHOD 8260 - TCLP VOLATILES - S
ANALYSIS DATA SHEET

Client No.

VBLK57

ame: STL Buffalo Contract: ______

Code: RECNY Case No.: ______ SAS No.: ______ SDG No.: ______

x: (soil/water) SOIL Lab Sample ID: A4073203

e wt/vol: 5.00 (g/mL) ML Lab File ID: Q5173.RR

el: (low/med) LOW Date Samp/Recv: ______ ______

sture: not dec. ______ Heated Purge: N Date Analyzed: 02/03/2004

Column: DB-624 ID: 0.25 (mm) Dilution Factor: 1.00

Extract Volume: ______ (uL) Soil Aliquot Volume: ______ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) MG/L

CAS NO.	COMPOUND	(ug/L or ug/Kg) MG/L	Q
71-43-2	Benzene	0.0050	U
78-93-3	2-Butanone	0.025	U
56-23-5	Carbon Tetrachloride	0.0050	U
108-90-7	Chlorobenzene	0.0050	U
67-66-3	Chloroform	0.0050	U
107-06-2	1,2-Dichloroethane	0.0050	U
75-35-4	1,1-Dichloroethene	0.0050	U
127-18-4	Tetrachloroethene	0.0050	U
79-01-6	Trichloroethene	0.0050	U
75-01-4	Vinyl chloride	0.0050	U

U R S CORPORATION
URS CORPORATION - ALUMAX
URS - METHOD 8082 - POLYCHLORINATED BIPHENYLS - S
METHOD BLANK SUMMARY

Client No.

Method Blank

b Name: STL Buffalo Contract: ______

Code: RECNY Case No.: ______ SAS No.: ______ SDG No.: ______

Sample ID: A4B0529403 Lab File ID: 14A01285.TX0

trix: (soil/water) SOIL Extraction: SONC

ur Cleanup: (Y/N): Y Date Extracted: 02/02/2004

te Analyzed (1): 02/05/2004 Date Analyzed (2): ______

Analyzed (1): 11:52 Time Analyzed (2): ______

strument ID (1): HP5890-14 Instrument ID (2): ______

olumn (1): ZB-35 Dia: 0.53 (mm) GC Column (2): ______ Dia: ____ (mm)

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES, MS AND MSD:

	CLIENT SAMPLE NO.	LAB SAMPLE ID	DATE ANALYZED 1	DATE ANALYZED 2
1	ALMX-CATCH BASIN	A4073202	02/05/2004	
2	ALMX-DEBRIS SOLIDS	A4073201	02/05/2004	
3	Matrix Spike Blank	A4B0529401	02/05/2004	
4	Matrix Spike Blk Dup	A4B0529402	02/05/2004	

ents: ______

U R S CORPORATION
URS CORPORATION - ALUMAX
URS - METHOD 8082 - POLYCHLORINATED BIPHENYLS - S
ANALYSIS DATA SHEET

Client No.

Method Blank

'ame: STL Buffalo Contract: ____________

Code: RECNY Case No.: _____ SAS No.: ______ SDG No.: ______

x: (soil/water) SOIL Lab Sample ID: A4B0529403

'le wt/vol: 30.73 (g/mL) G Lab File ID: 14A01285.TX0

isture: ______ decanted: (Y/N) N Date Samp/Recv: __________ __________

ction: (SepF/Cont/Sonc/Soxh): SONC Date Extracted: 02/02/2004

centrated Extract Volume: 10000 (uL) Date Analyzed: 02/05/2004

tion Volume: 1.00 (uL) Dilution Factor: 1.00

Cleanup: (Y/N) N pH: _ Sulfur Cleanup: (Y/N) Y

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
2674-11-2	Aroclor 1016	16	U
11104-28-2	Aroclor 1221	16	U
11141-16-5	Aroclor 1232	16	U
3469-21-9	Aroclor 1242	16	U
12672-29-6	Aroclor 1248	16	U
11097-69-1	Aroclor 1254	16	U
1096-82-5	Aroclor 1260	16	U

SAMPLE DATA PACKAGE