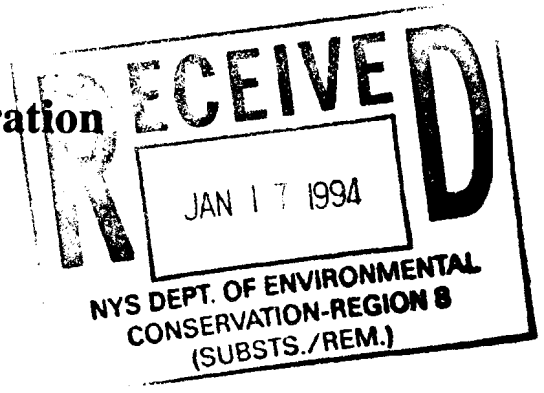
REPORT

Focused Remedial Investigation Addendum

Alcan Aluminum Corporation
Site #828005
Pittsford, New York



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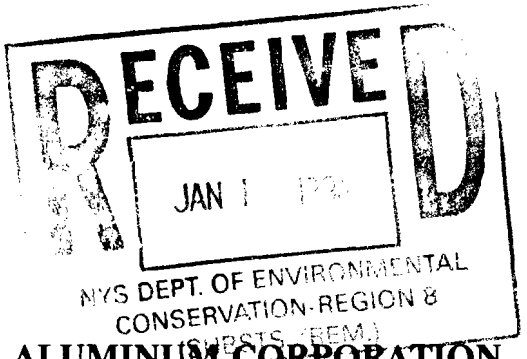
FOCUSED REMEDIAL INVESTIGATION ADDENDUM REPORT



ALCAN ALUMINUM CORPORATION
SITE #828005
PITTSFORD, NEW YORK

DECEMBER 1993

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SYRACUSE, NEW YORK 13221

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SECTION 1 - INTRODUCTION

1.01 General

This Focused Remedial Investigation Addendum Report document presents the methods and results of a second round ground water and sediment sampling at the Alcan Aluminum Corporation site #828005 (Figure 1) in accordance with Article 27, Title 13 of the Environmental Conservation Law of the State of New York entitled "Inactive Hazardous Waste Disposal Sites" and Order on Consent # B8-0049-84-10.

This Addendum and a previously submitted Focused Remedial Investigation Report (October 1992) meet the requirements of the Order on Consent through the development and implementation of work tasks designed to evaluate the nature and extent of impacts former site activities may have had on the site. The original RI work tasks were submitted to the New York State Department of Environmental Conservation (NYSDEC) in a Work Plan entitled Focused Remedial Investigation - Alcan Aluminum site #828005, Pittsford, New York dated July 1990. The Work Plan included a Quality Assurance Project Plan and a Health and Safety Plan. In a letter dated September 10, 1990, the NYSDEC informed Alcan Aluminum Corporation that the Work Plan was approved. On September 17, 1990, Alcan Aluminum Corporation executed the Order on Consent #B8-0049-84-10 at which time the NYSDEC considered the Work Plan in effect. Subsequent requests by the NYSDEC resulted in an additional scope of work identified in a letter to NYSDEC dated May 20, 1991. In a letter dated July 8, 1991 the NYSDEC approved the additional scope of work. The results of the additional work are presented in the Focused Remedial Investigation Report (October 1992) and this Addendum.

Contained within this Addendum are the second round of results of ground water samples from selected wells, water and sediment samples from a cistern and two pumphouses, and a habitat assessment.

reported in this Addendum.

2.01 Ground Water Sampling and Analyses

Second round ground water samples were collected on August 10, 1992 from four of the wells (B-9, B-10, B-12D, and B-13) installed in 1991. First round samples for these wells were collected on June 4, 1992. Upgradient well B-1D installed in 1990 was also sampled. Ground water samples from the five monitoring wells were analyzed for volatile organic compounds. Samples from wells B-9 and B-13 were also analyzed for selected inorganic parameters (hexavalent chromium, chromium, cadmium, iron, lead, mercury, nickel, sodium, zinc, flouride, chloride, and sulfate). Well B-10 did not contain enough water to perform inorganic analyses and the scope of additional work did not require inorganic analyses for wells B-1D or B-12D.

Prior to sampling, ground water level measurements were collected in each of the monitoring wells and converted to the ground water elevations presented in Table 1. Ground water samples were collected using a decontaminated stainless steel bailer attached to new polypropylene rope. Bailers were decontaminated between wells by scrubbing with a low phosphate detergent, a tap water rinse, 1% HNO_3 rinse, methanol rinse, followed by a hexane rinse, and a final distilled water rinse.

Wells were purged of a minimum of three well volumes or wells were bailed dry and sampled after recharge. Water removed from deep wells was contained in secured drums. Containerization of shallow water was not required by the Work Plan. Because of the slow recharge rates, some wells were bailed dry a number of times during the sampling process.

SECTION 2 - FIELD INVESTIGATION METHODS

Field methods utilized for the collection and analysis of samples presented in this Addendum were previously presented for review and accepted by the NYSDEC as part of the Focused Remedial Investigation Work Plan dated July 1990. The protocols employed during the sampling of the east and west pumphouses and the cistern were accepted by the NYSDEC prior to initial sample collection.

Several monitoring wells were installed at the site in 1991. Monitoring wells B-9, B-10, and B-11 were installed along the north side of the main plant. A single well, B-13, was installed north of the extrusions building and a deeper well, B-12D, was installed along Linden Avenue (Figure 2). The wells were installed and sampled twice to evaluate the potential impact from activities performed inside the plant, and to assist in identifying the source of upgradient contamination in the deeper ground water zone. The results of the first round of sampling in June 1992 were presented in the Focused Remedial Investigation Report (October 1992) and the results of the second round of sampling in August 1992 are reported in this Addendum.

At the request of the NYSDEC, two rounds of sampling were also performed on standing water bodies within two of the buildings that were believed to have served as pumphouses during plant operation. A cistern, located south of the former impoundments, that currently collects rainwater from the main plants roof was also sampled. The results of the first round of sampling were presented in the Focused Remedial Investigation Report (October 1992), and the results of the second round of sampling in August 1992 are

Field measurements of water level, conductivity, temperature, Ph, and turbidity were collected and are included in the ground water field sampling logs (Appendix A).

Samples for inorganic analyses with turbidities less than or equal to 50 NTUs were not filtered and inorganic results are reported as soluble. Samples with turbidity greater than 50 NTUs were filtered with disposable in-line filters after retrieval with a bailer. Laboratory results from samples with turbidities below 50 NTUs and filtered samples are reported as soluble, while unfiltered samples with turbidities above 50 NTUs are reported as total.

The collected samples, along with required trip and field blanks including matrix spike (MS) and matrix spike duplicates (MSD), were placed in appropriate containers and placed in a cooler for transport to the laboratory. The samples were delivered to NYTEST Environmental, Inc. on the day of collection. A chain of custody was initiated in the field during collection of the sample.

2.02 Cistern and Pumphouse Sampling and Analyses

The second round of sampling of the cistern and two pumphouses was performed on August 10, 1992. Sediment samples were proposed for all three of these locations, but only the cistern contained enough sediment for sampling. Samples were analyzed for the parameters requested by the NYSDEC for the second round of ground water samples, including volatile organic compounds, hexavalent chromium, chromium, cadmium, iron, lead, mercury, nickel, sodium, zinc, fluoride, chloride, and sulfate. Samples were submitted to NYTEST Environmental, Inc. for analyses using NYS CLP methodologies with Category B

deliverables.

Methodologies utilized for sediment and water sampling of the cistern and pumphouses were approved by the NYSDEC prior to sample collection. During both sampling rounds, water samples from the pumphouses were collected using the same protocol. Water from the cistern was collected during the second round with a decontaminated stainless steel bailer and new polypropylene rope. During the initial sampling of the cistern, there was insufficient water to collect a sample with a bailer so a distilled water bottle was lowered into the cistern to collect the sample. This field improvised method was performed with NYSDEC consent and is not believed to have compromised the sample results. During both sampling events, sediment samples were retrieved from the cistern with a decontaminated stainless steel Ekman box dredge that was lowered into the cistern with new polypropylene rope.

SECTION 3 - LABORATORY RESULTS

Laboratory results for samples from ground water monitoring wells B-1D, B-10, B-12D, and B-13, water samples from the east and west pumphouses, and sediment and water samples from the cistern are presented in the following sections and Tables 2, 3, 4, and 5. As a guideline for interpretation of inorganic parameters in sediments, a comparison with concentrations in naturally occurring North American soils (Dragun, 1988), and reference materials provided by the NYSDEC were used. The data were validated based on QA/QC criteria in accordance with the QAPP provided in the Work Plan dated July 1990. The Data Validation Technical Memorandum is provided as a separate document dated November 1992 (Appendix B). Ground water results were compared with the available New York State Class GA water quality standards and guidance values, where applicable. Tables 2 through 5 provide the results of both sampling rounds. Appendix C provides the Chain of Custody Records from both sampling events.

3.01 Ground Water Inorganic Analyses

On June 4 and August 10, 1992, ground water samples were collected from newly installed wells B-9 and B-13 which are located south of the former impoundments and south of the office building, respectively. Ground water samples from B-13 had turbidities above 100 NTUs, and therefore unfiltered (total) and filtered (soluble) results are presented (Table 2). The ground water sample from B-9 was clear, so filtering was not required and results are reported as soluble.

Cadmium was not detected in the first or second round ground water samples at the site. For the second round unfiltered samples, only well B-13 had a chromium concentration of 6.4 ppb with a B qualifier because chromium was also discovered in the laboratory blank. This sample did not exceed the Class GA ground water quality standard of 50 ppb for chromium. During the first sampling event, chromium was only detected in the unfiltered sample from well B-13 a concentration of 114 ppb. Chromium was not detected in B-13 filtered samples during both rounds.

Total hexavalent chromium was not detected in first round samples, but was found at a concentration of 20 ppb in well B-13 during the second sampling event. The soluble chromium concentration in B-9 during the second sampling event was 10 ppb. These values are below the NYS Class GA ground water quality standard of 50 ppb.

Total iron values for the unfiltered samples analyzed during the first and second round exceeded the NYS Class GA ground water quality standard of 300 ppb. At well B-13, the total iron concentration for the first round sample was 143,000 ppb, while the total iron concentration from the second round sample had a concentration of 3820 ppb. The second round soluble iron concentration from well B-9 was 1410 ppb, which also exceeded the NYS Class GA Standard. The second round soluble sample from B-13 contained a reported concentration of 19.6 ppb with a B qualifier due to laboratory blank contamination.

Soluble and total lead concentrations were not detected during the second round sampling. Total lead was detected at a concentration exceeding the NYS Class GA ground water standard of 25 ppb at well B-13 (29.6 ppb) during the first round of sampling.

Mercury was not detected in any total or soluble ground water sample during the first

and second sampling round.

Nickel was not detected during the second round sampling, although total nickel was detected in a single first round sample from well B-13 at 110 ppm.

Soluble and total sodium concentrations in B-13 for the first and second sampling rounds exceeded the NYS Class GA water quality standard of 20,000 ppb. Concentrations ranged from 238,000 ppb in the first round to 169,000 ppb in the second round. In well B-9, the soluble sodium concentrations observed during the second sampling round (15,000 ppb) was below the standard.

During the first round of sampling, zinc concentrations ranged from non-detect at B-13 to 30.1 ppb at B-9 and were below the NYS Class GA water quality standard of 100 ppb. During the second round of sampling, zinc was detected in the sample from B-9 at 16.41 ppb, and the samples from B-13 at 15.8 ppb with B qualifiers due to laboratory blank contamination.

Sulfate concentrations in the ground water samples were below the standard of 250,000 ppb with a range from 52,000 ppb at B-13 to 30,000 ppb at B-9.

During the second round of sampling, soluble chloride concentrations for B-9 and B-13 were below the NYS Class GA water standard of 250,000 ppb, with concentrations ranging from 241,000 ppb at B-13 to 7,000 ppb at B-9. The total chloride concentration at B-13 during the second sampling round was also below the standard.

Fluoride concentrations during the second sampling round were below the NYS Class GA water quality standard of 1,500 ppb and ranged from 110 ppb at B-9 to 100 ppb at B-13.

3.02 Ground Water Volatile Organic Analyses

Volatile organic analyses of ground water were completed for monitoring wells B-1D, B-9, B-10, B-12D, and B-13 on June 4, 1992 and August 10, 1992.

Methylene chloride was detected in B-1D, B-9 and B-13 at estimated concentrations of 2 ppb, 2 ppb and 3 ppb, respectively. The NYS Class GA Ground Water Standard for methylene chloride is 5 ppb. Methylene chloride was detected in the first round samples from wells B-12D and B-1D at estimated concentrations of 5 ppb and 4 ppb, respectively. Methylene chloride was also detected in the trip blank at an estimated concentration of 2 ppb.

Trichloroethene was present in first and second round samples from B-1D at concentrations of 13 and 9 ppb, respectively. Concentrations of trichloroethene in the volatile blind duplicate, obtained from the same well, were 12 and 7 ppb, respectively. The NYS Class GA water quality standard for trichloroethane is 5 ppb. Freon 113 was not detected in samples submitted for volatile analyses during the second round.

3.03 Cistern Sediment Inorganic Results

The results of inorganic analyses from the cistern sediment samples collected on June 4 and August 10, 1992 can be found on Table 5. Concentrations typically observed for naturally occurring New York soils are also included on these tables.

Cadmium was not detected in the cistern sediments analyzed during the two rounds of sampling of the cistern except for a concentration of 5.8 ppb in the second round blind duplicate.

Chromium concentrations of the sediment in the cistern ranged from 2,410 ppb to 1,170 ppb. These values are below the typical range for soils.

The second round sample contained 860 ppb of hexavalent chromium. No guidelines were found on levels of naturally occurring hexavalent chromium. Hexavalent chromium was not detected in the soil samples analyzed during the first round sampling of the cistern.

The iron concentrations detected during both sampling rounds (29,700 ppb) were below the upper limit of naturally occurring soils.

Lead concentrations ranged from 722 ppb for round one to 412 ppb for the second round sample. Concentrations of lead are not elevated with respect to naturally occurring New York soils.

Samples analyzed for mercury revealed concentrations of 0.52 ppb for the first round and 0.27 ppb in the second round. Concentrations in the cistern samples were not above the upper limit of 60 ppb for native New York soils.

Nickel concentrations for the first and second round samples were 70 ppb and 62.9 ppb, respectively. These concentrations are below the 25,000 ppb upper limit for naturally occurring New York soils.

Sodium concentrations for the first and second rounds were 778 ppb and 540 ppb, respectively. These concentrations are within the range expected for New York soils.

Zinc was detected at 3,110 ppb and 2,510 ppb for the first and second round samples, respectively. Zinc concentrations were below the upper limit of 60,000 ppb for typically occurring New York soils.

Concentrations of fluoride were within the range typically found in naturally occurring

New York soils. Concentration in the first and second round samples were 560 ppb and 440 ppb, respectively.

Chloride concentrations in the first round soil sample was 2,940,000 ppb, while second round sample was 61,000 ppb. The chloride concentration observed during the first round was elevated with respect to typical New York soils.

3.04 Cistern Sediment Volatile Organic Results

Volatile analyses of cistern sediment samples during the first and second sampling rounds detected six parameters, however only two parameters (methylene chloride and chlorobenzene) were detected in both rounds. Results of sediment analyses for volatiles are presented on Table 4.

Methylene chloride was detected at estimated concentrations of 7 ppb and 38 ppb during the first and second sampling rounds, respectively. Methylene chloride was detected in the laboratory blank during the second round sampling. Chlorobenzene was detected in the sediment samples at concentrations of 5J ppb and 1300 ppb for the first and second rounds, respectively. Xylene (total) was only detected in the second round sample at a concentration of 340 ppb. Toluene was detected during the second round of sampling at an estimated concentrations of 13 ppb. Ethylbenzene was also detected only in the second round with an estimated concentration of 39 ppb.

3.05 Cistern and Pumphouses Water Inorganic Results

Water samples from the cistern and the east and west pumphouses collected on June

the cistern. These concentrations did not exceed the NYS Class GA water quality standard of 1,500 ppb for fluoride.

Chloride concentrations ranged from 10,000 ppb at the east pumphouse to non-detect in the cistern sample. Concentrations were below the NYS Class GA water quality standard of 250,000 ppb.

3.06 Cistern and Pumphouses Water Volatile Organic Results

Second round samples did not detect methylene chloride or freon 113. Methylene chloride was detected in the east pumphouse and the trip blank during the first sampling round at estimated concentrations of 3 ppb and 2 ppb, respectively. Freon 113 was detected in the cistern and west pumphouses during the first sampling round at concentrations of 5 ppb. No other volatile organic compounds were detected during the first or second sampling rounds.

SECTION 4 - RESULTS DISCUSSION

4.01 Shallow Ground Water

The shallow ground water elevation data suggests that a mound of ground water is present in the area of the former impoundment (Figure 3). The ground water elevation data (Table 1) indicates that the shallow zone of saturation adjacent to and under the buildings is thin to non-existent. The general lack of water in the wells adjacent to the building supports this hypothesis. The principle source of water in the shallow saturated zone is recharge from precipitation. The impoundment area is covered with sand while buildings and pavement cover the remainder of the southern portion of the site. Therefore a mound would be expected to develop where the sand cover allows infiltration. Little to no recharge in the covered areas of the site would result in a thin to non-existent shallow ground water zone. This mound and corresponding low water adjacent to the buildings indicates that wells B-9, B-10, and B-13 are located hydraulic downgradient of the surface impoundments.

The only volatile compound detected at these wells was methylene chloride which was detected below the method limits during the second sampling round. This contaminant was not detected in the first round and did not demonstrate consistent patterns of ground water contamination. Methylene chloride is a common laboratory solvent and is often a laboratory contaminant.

Inorganic parameters detected above the NYS Class GA standard in shallow wells B-9 and B-13 were iron for both wells and sodium only for well B-13. These parameters

and concentrations are similar to other shallow wells at the site including upgradient well B-1. Inorganic parameters such as chromium and hexavalent chromium were not consistently detected and therefore do not suggest the presence of ground water contamination. The lower concentration observed in the filtered sample from B-13 also suggests that the concentrations of iron are generally higher in ground water samples which were turbid (greater than 50 NTUs) due to the presence of sediment in the samples.

4.02 Deep Ground Water

The ground water elevation data indicated that monitoring wells B-1D and B-12D are located upgradient of the former impoundments. Trichloroethene, which was detected during all four sampling events at monitoring well B-1D, was the only consistent volatile organic compound detected in the two deep monitoring wells sampled during these rounds. Methylene chloride were detected sporadically in the deep ground water. There does not appear to be any replication of the results or a pattern of occurrence. Therefore, as discussed above, the presence of methylene chloride in the samples probably reflects laboratory contamination. Trichloroethene was not detected in the newly installed upgradient monitoring well B-12D which suggests that the source of the B-1D volatile organics is on the site or to the west of the site. Since trichloroethene concentrations are low and are not detected at the downgradient site wells, the trichloroethene occurrence appears to be localized.

SECTION 5 - HABITAT ASSESSMENT

5.01 Introduction

This document presents the methods and results of a covertype analysis and ecological resource inventory conducted at the Alcan Aluminum Corporation site (#828005), in Pittsford, New York. The scope of this analysis consists of wildlife habitat descriptions consistent with portions of Step I of a Fish and Wildlife Impact Analysis (NYSDEC, 1991). The scope of the analysis was based on NYSDEC comments on the Remedial Investigation Report for the Alcan Aluminum Corporation site (OBG, 1992). Based on NYSDEC's comments, examination of analytical data and evaluation of potential exposure pathways typically included in a Step I analysis are not included in this report. The purpose of this analysis is to identify potential ecological receptors inhabiting the site and vicinity.

This report is organized into two sections: Section 1 - Site Description, and Section 2 - Summary and Discussion. Section 1 describes the physical characteristics of identified covertypes and evaluates the use and value of each covertype as fish and wildlife resources. Section 2 summarizes the ecological assessment and habitat evaluation. The tasks which were performed and the results of each task are discussed in the following sections.

5.02 Site Description

The site description section is divided into components designated as tasks: 1) General Site Description - presents a general discussion of the environmental setting and the history of site activities, 2) Covertype Delineation - discusses the classification of the site

5.04.2 Aquatic Habitats

The small drainageways located north of the site were apparently created by runoff from recent construction activities north of the site. They are approximately 10 to 12 inches wide and 2 to 3 inches deep. The observed flow was extremely slow.

The unnamed tributary to Irondequoit Creek is located north of the site. The approximate width and depth of the stream are 8 feet and 6 to 12 inches, respectively. Small pools were observed, but riffles were absent. Its perennial flow rate varies seasonally and is dependent upon ground water discharge and runoff from the south. The stream bottom is sandy and void of vegetation. The stream is hydrologically connected to deep ground water. Runoff from adjacent areas and ground water discharge into the stream may adversely impact the water quality.

Irondequoit Creek borders the northeast portion of the study area. According to the NYCRR (6 NYCRR Part 846), this stretch of Irondequoit Creek is a Class "B" surface water. Class "B" waters are suitable for primary contact recreation and any other uses except as a source of water supply for drinking, culinary, or food processing purposes. Irondequoit Creek is represented by light blue on the covertype map (Figure 5).

5.04.3 Cultural Covertype Designations

The remaining covertypes in the study area are heavily influenced by urbanization. Industrial and residential areas have eliminated much of the natural habitat in the area and replaced it with urban wildlife habitats consisting primarily

of mowed lawns, mowed lawns with trees, paved roads, parking lots, landfills, and urban structure exteriors. These areas are considered covertypes by NYSDEC since they do provide suitable habitat for urban wildlife. These cultural covertypes are discussed below.

Urban Structure Exterior

The dominate covertype in the study area consists of urban or densely populated suburban zones. This area is sparsely vegetated with natural vegetation consisting of: boxelder (*Acer negundo*), goldenrod, staghorn sumac, wild carrot, milkweed (*Asclepias*), aster and grasses. Commercial buildings, apartment buildings, houses and paved roadways are prevalent in this area. Urban structure exterior areas are represented by red on the covertype map (Figure 5).

Mowed Lawn

Surrounding many of the commercial and residential structures in the study areas was groundcover dominated by grasses maintained by mowing. These areas are maintained for cosmetic purposes around buildings located to the east, west and south of the site. Mowed lawn areas are represented by light green on the covertype map (Figure 5).

Urban Vacant Lot

An area to the north of the site consists of an open zone cleared for construction or development. Vegetation was lacking as bulldozing activity appeared recent. This area is bordered to the north/northwest by Penfield Road. The urban vacant lot area is represented by yellow on the covertype map (Figure 5).

Paved Road/Path

Roadways traversed the study area with moderate to heavy vehicle traffic. Penfield Road to the north, and Linden Avenue and Conrail Railroad to the south are the significant asphalt or concrete pathways. Paved roads and paths are represented by black on the covertype map (Figure 5).

5.05 Description of Fish and Wildlife Resources

The objectives of the description of fish and wildlife resources were to: 1) list wildlife observed within the study area, 2) identify typical fauna of each covertype or aquatic habitat, 3) describe the quality of the terrestrial covertypes and aquatic habitats present within the study area, 4) discuss the value of fish and wildlife resources to humans and 5) document instances in the study area where the site may have produced visible signs of stress to vegetation or wildlife. The tasks performed to meet each of these objectives and the results of the tasks are discussed in the following sections.

5.05.1 Observed Fish and Wildlife

Fish and wildlife observed during the site reconnaissance were identified and are listed in this section. Included in the list of observed species are species for which evidence (e.g. tracks or scat) was observed within the study area.

Terrestrial Wildlife

The majority of the wildlife observed during the site reconnaissance were birds. The greatest diversity of species was found in the Successional Southern

species potentially inhabiting the identified covertypes are presented in Appendix D.

Aquatic Habitat

Because of their small size, shallow depth, and seasonal flow, no fishes or aquatic furbearers are expected to inhabit the drainageways.

Both Irondequoit Creek and its tributary, located north of the site, are capable of supporting small fishes and aquatic furbearers. Although no aquatic wildlife was observed, Appendix D lists avian, reptilian, mammalian and plant species potentially inhabiting freshwater stream habitats.

5.05.3 Habitat Quality Evaluation

The value of each habitat was qualitatively evaluated based on field observations of physical characteristics. For terrestrial covertype wildlife habitat evaluations, resident wildlife species requirements for food sources, home range, breeding requirements, and cover were examined. Additional information used in the evaluation of habitat quality included: 1) the nature, extent and diversity of observed wildlife, 2) the availability of similar habitats in the immediate vicinity, 3) the size of the habitat, and 4) adjacent land use patterns. Aquatic habitat evaluations were primarily based on the size of the stream and adjacent land use.

Successional Northern and Southern Hardwoods, Pine - Northern Hardwood Forest

Although these covertypes contain sufficient food and cover to support a diversity of wildlife species, their location and size limit their use by wildlife. The covertypes are bordered by industrial facilities and residential neighborhoods. The

the creek are used for spawning by rainbow and brown trout, and Pacific and Atlantic Salmon (Sanderson, 1992).

Cultural Covertypes

Urban and industrial areas, with their mowed lawns, ornamental trees, and building exteriors provide habitat for urbanized bird and mammal species. As natural habitat communities diminish in size and quality, wildlife are forced to adapt to the more urban environment. However, urbanization is not practical for the majority of wildlife species. This analysis acknowledges the need and use of urban areas by many wildlife species, but does not consider these habitats to be impacted by the site.

5.05.4 Value of Resources to Humans

Fish and wildlife resources are valuable to humans for recreational and aesthetic reasons. Many sportsmen hunt, fish and consume their catches. Wildlife resources are also enjoyed by naturalists which enjoy observations of wildlife during hiking and camping. However, the value of wildlife inhabiting the study area to humans is very limited. Access to the site and contiguous areas is restricted by fences, posted signs, etc. There is no hunting allowed within the City of Rochester. For these reasons, the value of wildlife in the study area for humans is considered to be low.

5.05.5 Observations of Site-Related Stress

During the site reconnaissance, the study area was examined for evidence of stress to biota potentially attributable to chemical residues of the site. No signs of stress were observed on or in the vicinity of the site.

5.06 Other Resources

Freshwater Wetlands

Based on a review of the NYSDEC Freshwater Wetlands Maps for the Fairport, Webster, Rochester East, and Pittsford Quadrangles, two state wetlands are located within 2 miles of the site (Figure 6). One wetland (PR-29) is located approximately one mile southeast of the site, on Irondequoit Creek. This portion of the creek is upgradient of the confluence with tributaries near the site. The second wetland (PR-6) is also located on Irondequoit Creek, almost two miles upstream of site tributaries. Both wetlands are designated Class I (Sanderson, 1992).

NYS wetlands are classified according to the functions and values of the wetlands. According to the Codes, Rules and Regulations for the State of New York (NYCRR), Class I wetlands provide the most critical of the State's wetland benefits; Class II wetlands provide important wetland benefits; Class III wetlands supply wetland benefits; Class IV wetlands provide some wildlife and open space benefits (6 NYCRR Part 663). Permits are issued for regulated activities in wetlands based on their functions and values. Permits are issued for activities in Class I wetlands if the activity satisfies a compelling economic or social need that clearly and

substantially outweighs the loss of or detriment to the benefits of the wetland (6 NYCRR Part 663).

Significant Habitats

According to the NYSDEC, Division of Fish and Wildlife, the area around the site is one of rich biodiversity (Butkas, 1992). An 11-acre area providing significant wildlife habitat exists approximately 1.5 miles northeast of the site. This area is a relatively undisturbed natural environment isolated in an expanding urban development (Hauber, 1977). A 3-acre "oak opening" community within 2 miles of the site was identified by the New York State Natural Heritage Program (NHP). Although the "oak opening" community is considered rare, it is not protected in New York State. No information on the location of the community was provided by NHP.

Wild, Scenic and Recreational Rivers

No surface waters of the site and vicinity are designated as Wild, Scenic or Recreational in accordance with the Wild, Scenic and Recreational Rivers Act.

Rare, Threatened, or Endangered Plant and Animal Species

Information regarding the presence of state listed rare, threatened or endangered (RTE) plant or animal species on or within 2 miles of the site was obtained from NHP. No state listed RTE animal species or habitats were identified. However, NHP identified five plant species receiving NYS legal status (Buffington, 1992). Information on the locations of protected plants and communities is not released to the public by NHP. Table 6 summarizes the legal status of each species. Information regarding Federally listed RTE plant and animal species was obtained

from the United States Fish and Wildlife Service (USFWS). According to the USFWS, no Federally listed or proposed threatened or endangered species are known to exist in the vicinity of the site.

TABLE 6

Rare, Threatened, or Endangered Plant Species and Communities in the Vicinity of the Site

Alcan Aluminum Corporation
Alcan Aluminum Site # 828005
Pittsford, New York

Common Name	Scientific Name	NYS Legal Status
Tick-trefoil	*Desmodium ciliare*	Threatened
Tall tick-clover	*Desmodium glabellum*	Threatened
Green gentian	*Frasera caroliniensis*	Rare
Sweet-scented indian-plantain	*Cacalia suaveolens*	Rare
Clearweed	*Pilea fontana*	Unprotected
Oak openings - Community		Unprotected

SECTION 6 - SUMMARY AND DISCUSSION

6.01 Summary

This section summarizes the ecological resources and habitat evaluation based on the site reconnaissance and information provided by state agencies.

- Four natural covertypes and four cultural covertypes exist within the study area.
- The natural covertypes: Successional southern hardwoods, Successional northern hardwoods, Pine-hardwood forest, and Successional old-field provide good quality habitat for a variety of wildlife species.
- Irondequoit Creek and an unnamed tributary are significant aquatic habitats within the study area.
- Cultural covertypes do not provide significant habitats which are capable of supporting a diversity of wildlife species.
- Two NYS regulated wetlands are present along Irondequoit Creek within 2 miles of the site, but upstream of site tributaries.
- Five rare plants and one rare community exist within 2 miles of the site.

6.02 Discussion

The Environmental Evaluation was designed to identify potential ecological receptors at or in the vicinity of a site, which could be exposed to site-related compounds during normal life activities. Covertypes and aquatic habitats in the vicinity of the site provide

quality wildlife habitat for a variety of mammalian, avian, reptilian, and amphibious species. Five rare plants, one rare community, two regulated wetlands, Irondequoit Creek, and an Irondequoit Creek tributary are located within 2 miles of the site. Based on the wetland locations upstream of the site on Irondequoit Creek, the site could not influence wetland quality.

Respectively submitted,

O'BRIEN & GERE ENGINEERS, INC.

Thomas K. Pelis, P.E.
Vice President

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Tables

TABLE 1

GROUND WATER MONITORING WELL DATA
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

WELL NUMBER	GROUND SURFACE ELEV. (FT)	PVC CASING ELEV. (FT)	WELL DEPTH (FT) (Below Surface)	SCREENED INTERVAL ELEV. (FT)	HYDRAULIC CONDUC-TIVITY (cm/sec)	GROUND WATER ELEVATION (FT) 11/30/90	2/28/91	6/3/92	8/10/92
B-1S	417.4	419.27	23.0	395 - 405	1.3E-05	406.31	407.31	406.70	408.48
B-1D	417.8	420.30	70.1	348 - 358	1.2E-02	362.98	363.02	362.32	362.55
B-2S	414.8	417.18	18.0	397 - 407	2.3E-06	406.42	408.92	409.77	410.20
B-2D	414.9	417.42	70.3	345 - 355	2.6E-03	353.03	353.54	353.07	353.35
B-3S	416.0	417.98	21.3	395 - 405	4.3E-07	401.77	405.86	404.36	402.79
B-3D	415.9	417.90	83.7	333 - 343	2.3E-03	339.73	340.03	339.81	339.92
B-4S	418.3	420.97	20.7	398 - 408	N/A	DRY	410.70	404.56	404.31
B-4D	417.9	420.18	89.9	328 - 338	9.8E-03	336.71	337.03	336.86	336.95
B-5S	416.4	418.69	20.9	396 - 406	N/A	DRY	DRY	397.62	DRY
B-5D	415.7	417.72	89.5	326 - 336	1.4E-02	335.17	335.61	335.43	335.51
B-6	415.4	417.59	20.7	394 - 404	9.9E-07	403.33	405.78	403.92	406.24
B-7	418.0	420.00	19.5	399 - 409	2.0E-07	401.73	408.82	405.39	407.03
B-8	418.9	421.22	21.9	397 - 407	1.2E-07	405.74	409.29	421.22	405.15
B-9	417.2	418.88	19.9	397 - 407	1.2E-04	(*)	(*)	405.48	410.83
B-10	417.5	419.36	16.9	401 - 411	N/A	(*)	(*)	DRY	401.69
B-11	413.5	414.66	13.4	400 - 410	N/A	(*)	(*)	DRY	DRY
B-12D	416.5	418.76	53.4	363 - 373	3.9E-03	(*)	(*)	371.81	372.17
B-13	413.4	413.50	19.9	393 - 403	2.7E-05	(*)	(*)	399.08	403.73
Cistern	415.2	------	11.6	------	-----	(*)	(*)	~405.30	~413.13

Note: Based on a range from 1.2 x 10-7 to 1.2 x 10-4 cm/sec., the log average hydraulic conductivity for the shallow ground water zone is 2.4 x 10-6 cm/sec.

Based on a range from 2.3 x 10-3 to 1.4 x 10-2 cm/sec., the log average hydraulic conductivity for the deep ground water zone is 5.8 x 10-3 cm/sec.

N/A - Insufficient water in wells to perform test

--- - Not applicable

(*) - Wells not yet installed

PFG:cmb/AL032.2

TABLE 2

WATER INORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	NYS CLASS GA STANDARDS	B-1S TOTAL 11/16/90	B-1S SOLUBLE 11/16/90	B-1S SOLUBLE 2/28/91	B-1D TOTAL 11/13/90	B-1D SOLUBLE 11/13/90	B-1D SOLUBLE 2/28/91	B-2S SOLUBLE 11/16/90
ALUMINUM	—	6,320	68 B	—	715	20 U	—	456
ANTIMONY	3 *	50 U	50 U	—	50 U	50 U	—	50 U
ARSENIC	25	3 B	2 B	—	2 U	2 B	—	13
BARIUM	1,000	82 B	49 B	—	119 B	123 B	—	17 B
BERYLLIUM	3 *	3 B	1 U	—	1 U	1 U	—	1 U
CADMIUM	10	3 U	3 U	5 U	3 U	3 U	5 U	3 U
CALCIUM	—	119,000	96,400	—	134,000	146,000	—	32,400
CHROMIUM	50	22	5 U	10 U	5 B	5 U	10 U	64
CHROMIUM-HEXAVALENT	50	10 U	10 U	10 U	10 U	10 U	10 U	90
COBALT	—	5 U	5 U	—	5 U	5 U	—	5 U
COPPER	200	18 B	5 U	—	8 B	5 U	—	11 B
IRON	300	9,820	38 B	150	1,310	20 U	72 B	836
LEAD	25	7	1 U	5 U	3 B	1 U	5 U	2 B
MAGNESIUM	35,000 *	31,800	28,000	—	32,600	35,600	—	7,070
MANGANESE	300	1,100	11 B	—	95	64	—	554
MERCURY	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	—	23 B	15 U	20 U	15 U	15 U	20 U	15 U
POTASSIUM	—	1,360 B	1,000 U	—	1,630 B	1,000 U	—	1,000 U
SELENIUM	10	3 U	3 U	—	3 U	3 U	—	3 U
SILVER	50	2 U	2 U	—	3 B	2 U	—	2 U
SODIUM	20,000	19,200	19,200	18,400 U	93,500	102,000	116,000	200,000
THALLIUM	4 *	1 U	1 U	—	1 U	1 U	—	1 U
VANADIUM	—	17 B	5 B	—	5 U	5 U	—	11 B
ZINC	300	42	5 U	10 U	25	5 U	10 U	23
CYANIDE	100	10 U	—	—	10 U	—	—	10 U
SULFATE	250,000	46,000	—	36,200	88,000	—	69,500	20,000
BORON	1,000	100 U	—	—	900	—	—	100
FLUORIDE	1,500	400	—	100 U	500	—	100 U	400
PHENOL	5	5 U	—	—	5 U	—	—	5 U
CHLORIDE	250,000	15,000	—	7,590	160,000	—	149,000	17,000
pH ***		7.5	—	7.6	7.2	—	7.6	7.9
CONDUCTIVITY (μS)		600	—	760	1150	—	1,500	840
TEMPERATURE (°C)		14	—	7	11	—	10	14
TURBIDITY (NTU)		>100	—	49	67	—	7	21

NOTES: All values reported in μg/l (ppb).
— – Not available
* – NYS CLASS GA GUIDANCE VALUE
*** – Field determined values
U – Not detected
B – Value less than contract required detection limit, but greater than instrument detection limit.
TOTAL = Samples having turbidity >50 NTUs
SOLUBLE = Samples having turbidity <50 NTUs, or filtered samples

PFG:kjf/AL032.3

TABLE 2 (CONT.)

WATER INORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	NYS CLASS GA STANDARDS	B-2S SOLUBLE 3/1/91	B-2D SOLUBLE 11/14/90	B-2D SOLUBLE 3/1/91	B-3S TOTAL 11/16/90	B-3S SOLUBLE 11/16/90	B-3S TOTAL 3/1/91	B-3S SOLUBLE 3/1/91
ALUMINUM	—	—	794	—	9,900	1,540	—	—
ANTIMONY	3 *	—	50 U	—	50 U	50 U	—	—
ARSENIC	25	—	2 U	—	20	20	—	—
BARIUM	1,000	—	42 B	—	58 B	61 B	—	—
BERYLLIUM	3 *	—	1 U	—	3 B	1 U	—	—
CADMIUM	10	5 U	3 U	5 U	3 U	3 U	5 U	5 U
CALCIUM	—	—	73,200	—	80,300	5,110	—	—
CHROMIUM	50	82	12	13.6	37	9 B	283	230
CHROMIUM-HEXAVALENT	50	35	10	10 U	10 U	10 U	177	201
COBALT	—	—	5 U	—	8 B	5 U	—	—
COPPER	200	—	9 B	—	48	21 B	—	—
IRON	300	384	1,660	2,020	15,700	1,460	806	355
LEAD	25	5 U	4 B	5 U	6	2 B	5 U	5 U
MAGNESIUM	35,000 *	—	21,600	—	19,700	1,100 B	—	—
MANGANESE	300	—	53	—	546	21	—	—
MERCURY	2	0.22	0.2 U	0.2 U	0.8	0.9	0.43	0.72
NICKEL	—	20 U	15 U	20 U	29 B	15 U	20 U	20 U
POTASSIUM	—	—	1,000 U	—	1,000 U	1,000 U	—	—
SELENIUM	10	—	3 U	—	8	3.34 B	—	—
SILVER	50	—	2 U	—	2 U	2 U	—	—
SODIUM	20,000	119,000	90,200	117,000	349,000	372,000	378,000	353,000
THALLIUM	4 *	—	1 U	—	1 U	1 U	—	—
VANADIUM	—	—	6 B	—	79	63	—	—
ZINC	300	10 U	24	12.7 B	72	17 B	10 U	10 U
CYANIDE	100	—	10 U	—	10 U	—	—	—
SULFATE	250,000	13,600	72,000	83,400	75,000	—	5,000 U	5,480
BORON	1,000	—	100	—	100 U	—	—	—
FLUORIDE	1,500	1,020	400	100 U	600	—	4,920	4,530
PHENOL	5	—	5 U	—	5 U	—	—	—
CHLORIDE	250,000	17,800	61,000	67,900	12,000	—	15,600	19,400
pH ***		7.9	7.6	7.5	7.7	—	8.7	—
CONDUCTIVITY (μS)		790	770	1,100	940	—	1,710	—
TEMPERATURE (°C)		5	9	9	14	—	9	—
TURBIDITY (NTU)		13	28	40	>100	—	90	—

NOTES:

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U – Not detected
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TOTAL = Samples having turbidity >50 NTUs
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PFG:kjf/AL032.3

TABLE 2 (CONT.)

WATER INORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	NYS CLASS GA STANDARDS	B-3D SOLUBLE 11/14/90	B-3D TOTAL 3/1/91	B-3D SOLUBLE 3/1/91	B-4S SOLUBLE 3/1/91	B-4D SOLUBLE 11/14/90	B-4D SOLUBLE 3/1/91	B-5D SOLUBLE 11/14/90
ALUMINUM	—	96 B	—	—	—	359	—	492
ANTIMONY	3 *	50 U	—	—	—	50 U	—	50 U
ARSENIC	25	2 U	—	—	—	2 U	—	3 B
BARIUM	1,000	73 B	—	—	—	76 B	—	120 B
BERYLLIUM	3 *	1 U	—	—	—	1 U	—	1 U
CADMIUM	10	3 U	5 U	5 U	5 U	3 U	5 U	3 U
CALCIUM	—	83,500	—	—	—	97,200	—	86,600
CHROMIUM	50	214	179	150	10 U	6 B	10 U	10
CHROMIUM-HEXAVALENT	50	230	191	181	10 U	10 U	10 U	10
COBALT	—	5 U	—	—	—	5 U	—	5 U
COPPER	200	10 B	—	—	—	8 B	—	10 B
IRON	300	157	11,800	52.8 B	920	807	204	1,170
LEAD	25	2 B	5 U	5 U	5 U	3 B	5 U	3 B
MAGNESIUM	35,000 *	26,300	—	—	—	23,700	—	23,600
MANGANESE	300	12 B	—	—	—	40	—	46
MERCURY	2	0.2 U	0.79	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	—	15 U	20 U	20 U	20 U	15 U	20 U	15 U
POTASSIUM	—	1,000 U	—	—	—	1,000 U	—	1,000 U
SELENIUM	10	3 U	—	—	—	3 U	—	3 U
SILVER	50	2 B	—	—	—	3 B	—	2 U
SODIUM	20,000	13,900	152,000	146,000	284,000	80,500	68,400	143,000
THALLIUM	4 *	1 U	—	—	—	1 U	—	1 U
VANADIUM	—	5 B	—	—	—	6 B	—	5 U
ZINC	300	18 B	29.8	10 U	12.8 B	20	10 U	22
CYANIDE	100	10 U	—	—	—	10 U	—	10 U
SULFATE	250,000	120,000	112,000	109,000	56,400	65,000	71,600	62,000
BORON	1,000	300	—	—	—	500	—	200
FLUORIDE	1,500	300	171	201	118	200	100 U	300
PHENOL	5	5 U	—	—	—	5 U	—	5 U
CHLORIDE	250,000	150,000	116,000	122,000	4,750	81,000	114,000	190,000
pH ***		7.7	7.6	—	7.8	7.5	7.5	7.0
CONDUCTIVITY (μS)		1030	1,470	—	1,980	880	1,380	1530
TEMPERATURE (°C)		11	9	—	8	11	10	11
TURBIDITY (NTU)		7	>100	—	30	23	4	23

NOTES:
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— – Not available
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TOTAL = Samples having turbidity >50 NTUs
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TABLE 2 (CONT.)

WATER INORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	NYS CLASS GA STANDARDS		B-5D SOLUBLE 3/1/91		B-6 TOTAL 11/16/90		B-6 SOLUBLE 11/16/90		B-6 TOTAL 2/28/91		B-6 SOLUBLE 2/28/91		B-7 TOTAL 11/27/90		B-7 SOLUBLE 11/27/90	
ALUMINUM	—		—		89,500		12,500		—		—		51,900		6,510	
ANTIMONY	3	*	—		50	U	50	U	—		—		50	U	50	U
ARSENIC	25		—		6	B	10		—		—		4	B	4	B
BARIUM	1,000		—		435		46	B	—		—		249		105	B
BERYLLIUM	3	*	—		7		1	U	—		—		4	B	1	U
CADMIUM	10		5	U	3	U	3	U	5	U	5	U	3	U	3	U
CALCIUM	—		—		128,000		2,990	B	—		—		27,500		5,550	
CHROMIUM	50		10.6		431		36		124		11.5		129		24	
CHROMIUM-HEXAVALENT	50		10	U	10	U	10	U	10	U	10	U	10	U	10	U
COBALT	—		—		52		5	U	—		—		38	B	6	B
COPPER	200		—		183		22	B	—		—		92		16	B
IRON	300		2,110		132,000		8,610		38,000		1,590		87,500		6,270	
LEAD	25		5	U	51		1	B	14.5		5	U	28		2	B
MAGNESIUM	35,000	*	—		39,100		1,690	B	—		—		16,200		1,120	B
MANGANESE	300		—		2,770		139		—		—		2,600		120	
MERCURY	2		0.22		0.2	U	0.2	U	0.2	U	0.2	U	0.2	U	0.2	U
NICKEL	—		20	U	137		15	U	48.1		20	U	96		15	U
POTASSIUM	—		—		13,400		3,850	B	—		—		7,080		2,550	B
SELENIUM	10		—		15	U	3	U	—		—		10.8		3	U
SILVER	50		—		2	U	2	U	—		—		2	U	2	U
SODIUM	20,000		144,000		492,000		540,000		404,000		387,000	U	274,000		282,000	
THALLIUM	4	*	—		1	U	1	U	—		—		1	U	1	U
VANADIUM	—		—		168		35	B	—		—		117		13	B
ZINC	300		12.1	B	336		16	B	97		10	U	229		24	
CYANIDE	100		—		10	U	—		—		—		10	U	—	
SULFATE	250,000		72,800		110,000		—		14,100		30,200		230,000		—	
BORON	1,000		—		100		—		—		—		100		—	
FLUORIDE	1,500		267		600		—		178		178		1,700		—	
PHENOL	5		—		5	U	—		—		—		5	U	—	
CHLORIDE	250,000		171,000		39,000	U	—		9,280		8,680		350,000		—	
pH ***			7.6		9.7		—		9		—		9.5		—	
CONDUCTIVITY (μS)			1,620		>1400		—		1,980		—		1010		—	
TEMPERATURE (°C)			10		16		—		7		—		15		—	
TURBIDITY (NTU)			40		>100		—		>100		—		>100		—	

NOTES: All values reported in μg/l (ppb).
— – Not available
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*** – Field determined values
U – Not detected
B – Value less than contract required detection limit, but greater than instrument detection limit.
TOTAL = Samples having turbidity >50 NTUs
SOLUBLE = Samples having turbidity <50 NTUs, or filtered samples

TABLE 2 (CONT.)

WATER INORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	NYS CLASS GA STANDARDS	B-7 TOTAL 3/1/91	B-7 SOLUBLE 3/1/91	B-8 TOTAL 11/14/90	B-8 SOLUBLE 11/14/90	B-8 TOTAL 3/1/91	B-8 SOLUBLE 3/1/91	B-9 TOTAL 6/4/92
ALUMINUM	—	—	—	36,400	1,120	—	—	—
ANTIMONY	3 *	—	—	50 U	50 U	—	—	—
ARSENIC	25	—	—	16	18	—	—	—
BARIUM	1,000	—	—	257	13 B	—	—	—
BERYLLIUM	3 *	—	—	3 B	1 U	—	—	—
CADMIUM	10	5 U	5 U	3 U	3 U	5 U	5 U	3.8 U
CALCIUM	—	—	—	149,000	3,810 B	—	—	—
CHROMIUM	50	57.6	26	78	5 U	131	94	3.9 U
CHROMIUM-HEXAVALENT	50	10.8	7.38	10 U	10 U	113	99.5	10 U
COBALT	—	—	—	26 B	5 U	—	—	—
COPPER	200	—	—	115	16 B	—	—	—
IRON	300	16,400	1,560	67,500	1,930	2,260	538	897
LEAD	25	5 U	5 U	27	2 B	5 U	5 U	3 U
MAGNESIUM	35,000 *	—	—	25,400	469 B	—	—	—
MANGANESE	300	—	—	1,440	58	—	—	—
MERCURY	2	0.2 U	0.2 U	0.2	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	—	20 U	20 U	69	15 U	20 U	20 U	30.6 U
POTASSIUM	—	—	—	5,600	1,000 U	—	—	—
SELENIUM	10	—	—	15 U	3 U	—	—	—
SILVER	50	—	—	2 U	2 U	—	—	—
SODIUM	20,000	143,000	150,000	219,000	233,000	65,600	85,900	10,300
THALLIUM	4 *	—	—	1 U	1 U	—	—	—
VANADIUM	—	—	—	93	20 B	—	—	—
ZINC	300	41	10 B	219	12 B	11.5 B	10 U	30.1
CYANIDE	100	—	—	10	—	—	—	—
SULFATE	250,000	33,600	17,600	81,000	—	19,800	24,800	31,000
BORON	1,000	—	—	100	—	—	—	—
FLUORIDE	1,500	341	492	700	—	100 U	100 U	140
PHENOL	5	—	—	5 U	—	—	—	—
CHLORIDE	250,000	6,440	3,150	24,000	—	2,670	2,850	7,000
pH ***		8.4	—	9.1	—	7.8	—	—
CONDUCTIVITY (μS)		710	—	1080	—	660	—	—
TEMPERATURE (°C)		10	—	11	—	8	—	—
TURBIDITY (NTU)		>100	—	>100	—	>100	—	—

NOTES: All values reported in μg/l (ppb).
— – Not available
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*** – Field determined values
U – Not detected
B – Value less than contract required detection limit, but greater than instrument detection limit.
TOTAL = Samples having turbidity >50 NTUs
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PFG:kjf/AL032.3

TABLE 2 (CONT.)

WATER INORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	NYS CLASS GA STANDARDS	B-9 SOLUBLE 6/4/92	B-9 SOLUBLE 8/10/92	B-13 TOTAL 6/4/92	B-13 SOLUBLE 6/4/92	B-13 TOTAL 8/10/92	B-13 SOLUBLE 8/10/92	Cistern-W TOTAL 6/4/92
ALUMINUM	—	—	—	—	—	—	—	—
ANTIMONY	3 *	—	—	—	—	—	—	—
ARSENIC	25	—	—	—	—	—	—	—
BARIUM	1,000	—	—	—	—	—	—	—
BERYLLIUM	3 *	—	—	—	—	—	—	—
CADMIUM	10	3.8 U	5 U	3.8 U	3.8 U	5 U	5 U	3.8 U
CALCIUM	—	—	—	—	—	—	—	—
CHROMIUM	50	3.9 U	6 U	114	3.9 U	6.4 B	6 U	214
CHROMIUM-HEXAVALENT	50	—	10	10 U	10 U	20	10 U	10 U
COBALT	—	—	—	—	—	—	—	—
COPPER	200	—	—	—	—	—	—	—
IRON	300	11.2 U	1,410	143,000	11.2 U	3,820	19.6 B	4930
LEAD	25	3 U	3 U	29.6	3 U	15 U	15 U	77.8
MAGNESIUM	35,000 *	—	—	—	—	—	—	—
MANGANESE	300	—	—	—	—	—	—	—
MERCURY	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	—	30.6 U	17 U	101	30.6 U	17 U	17 U	30.6 U
POTASSIUM	—	—	—	—	—	—	—	—
SELENIUM	10	—	—	—	—	—	—	—
SILVER	50	—	—	—	—	—	—	—
SODIUM	20,000	241,000	15,000	220,000	238,000	169,000	172,000	2,350 B
THALLIUM	4 *	—	—	—	—	—	—	—
VANADIUM	—	—	—	—	—	—	—	—
ZINC	300	4.5 U	16.4 B	395	4.5 U	15.8 B	15.8 B	673
CYANIDE	100	—	—	—	—	—	—	—
SULFATE	250,000	—	30,000	116,000	101,000	52,000	51,000	6,000
BORON	1,000	—	—	—	—	—	—	—
FLUORIDE	1,500	—	110	130	110	110	100	100
PHENOL	5	—	—	—	—	—	—	—
CHLORIDE	250,000	—	7,000	314,000	311,000	238,000	241,000	2,000
pH ***		—	—	—	—	—	—	—
CONDUCTIVITY (μS)		—	—	—	—	—	—	—
TEMPERATURE (°C)		—	—	—	—	—	—	—
TURBIDITY (NTU)		—	—	—	—	—	—	—

NOTES:
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— – Not available
* – NYS CLASS GA GUIDANCE VALUE
*** – Field determined values
U – Not detected
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TOTAL = Samples having turbidity >50 NTUs
SOLUBLE = Samples having turbidity <50 NTUs, or filtered samples

PFG:kjf/AL032.3

TABLE 2 (CONT.)

WATER INORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	NYS CLASS GA STANDARDS	Cistern-W SOLUBLE 6/4/92	Cistern-W SOLUBLE 8/10/92	Cistern-W BLDUP. 8/10/92	East Pumphouse 6/4/92	East Pumphouse 8/10/92	West Pumphouse 6/4/92	West Pumphouse 8/10/92
ALUMINUM	—	—	—	—	—	—	—	—
ANTIMONY	3 *	—	—	—	—	—	—	—
ARSENIC	25	—	—	—	—	—	—	—
BARIUM	1,000	—	—	—	—	—	—	—
BERYLLIUM	3 *	—	—	—	—	—	—	—
CADMIUM	10	3.8 U	5 U	5 U	3.8 U	5 U	3.8 U	5 U
CALCIUM	—	—	—	—	—	—	—	—
CHROMIUM	50	3.9 U	6 U	6 U	3.9 U	6 U	3.9 U	6 U
CHROMIUM-HEXAVALENT	50	10 U	10 U	10 U	10 U	10 U	10 U	10
COBALT	—	—	—	—	—	—	—	—
COPPER	200	—	—	—	—	—	—	—
IRON	300	998	74.4 B	51.7 B	136	204	63.7 B	935
LEAD	25	3 U	3 U	3.7	3 U	3 U	3 U	3 U
MAGNESIUM	35,000 *	—	—	—	—	—	—	—
MANGANESE	300	—	—	—	—	—	—	—
MERCURY	2	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	—	30.6 U	17 U	17 U	30.6 U	17 U	30.6 U	17 U
POTASSIUM	—	—	—	—	—	—	—	—
SELENIUM	10	—	—	—	—	—	—	—
SILVER	50	—	—	—	—	—	—	—
SODIUM	20,000	2,450 B	990 U	990 U	21,400	19,000	10,900	10,700
THALLIUM	4 *	—	—	—	—	—	—	—
VANADIUM	—	—	—	—	—	—	—	—
ZINC	300	48.6	310	327	52.3	56.7	106	60.7
CYANIDE	100	—	—	—	—	—	—	—
SULFATE	250,000	7,000	3,000 U	3,000 U	24,000	16,000	34,000	28,000
BORON	1,000	—	—	—	—	—	—	—
FLUORIDE	1,500	70	50	40	250	210	270	220
PHENOL	5	—	—	—	—	—	—	—
CHLORIDE	250,000	<1,000	1,000 U	1,000 U	16,000	10,000	7,000	4,000
pH ***		—	—	—	—	—	—	—
CONDUCTIVITY (μS)		—	—	—	—	—	—	—
TEMPERATURE (°C)		—	—	—	—	—	—	—
TURBIDITY (NTU)		—	—	—	—	—	—	—

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PFG:kjf/AL032.3

TABLE 2 (CONT.)

WATER INORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	NYS CLASS GA STANDARDS		EQUIP. BLANK 8/10/92	
ALUMINUM	—		—	
ANTIMONY	3	*	—	
ARSENIC	25		—	
BARIUM	1,000		—	
BERYLLIUM	3	*	—	
CADMIUM	10		5	U
CALCIUM	—		—	
CHROMIUM	50		6	U
CHROMIUM-HEXAVALENT	50		10	
COBALT	—		—	
COPPER	200		—	
IRON	300		11	U
LEAD	25		3	U
MAGNESIUM	35,000	*	—	
MANGANESE	300		—	
MERCURY	2		0.2	U
NICKEL	—		17	U
POTASSIUM	—		—	
SELENIUM	10		—	
SILVER	50		—	
SODIUM	20,000		990	U
THALLIUM	4	*	—	
VANADIUM	—		—	
ZINC	300		4	U
CYANIDE	100		—	
SULFATE	250,000		3,000	U
BORON	1,000		—	
FLUORIDE	1,500		10	U
PHENOL	5		—	
CHLORIDE	250,000		1,000	U
pH ***			—	
CONDUCTIVITY (μS)			—	
TEMPERATURE (°C)			—	
TURBIDITY (NTU)			—	

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TABLE 3

WATER VOLATILE ORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	NYS CLASS GA STANDARDS	B-1S 11/16/90	B-1S 2/28/91	B-1D 11/13/90	B-1D 2/28/91	B-1D 6/4/92	B-1D 8/10/92
CHLOROMETHANE	—	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	—	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	2	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	—	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	5	5 U	5 U	5 U	5 U	4 J	2 J
ACETONE	—	7 JB	10 U	10 U	10 U	10 U	10 U
CARBON DISULFIDE	—	5 U	5 U	5 U	5 U	10 U	10 U
1,1-DICHLOROETHENE	5	5 U	5 U	5 U	5 U	10 U	10 U
1,1-DICHLOROETHANE	5	5 U	5 U	5 U	5 U	10 U	10 U
1,2-DICHLOROETHENE (TOTAL)	5	5 U	5 U	5 U	5 U	10 U	10 U
CHLOROFORM	7	5 U	5 U	5 U	5 U	10 U	10 U
1,2-DICHLOROETHANE	5	5 U	5 U	5 U	5 U	10 U	10 U
2-BUTANONE	—	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	5	5 U	5 U	1 J	5 U	10 U	10 U
CARBON TETRACHLORIDE	5	5 U	5 U	5 U	5 U	10 U	10 U
VINYL ACETATE	2	10 U	10 U	10 U	10 U	10 U	—
BROMODICHLOROMETHANE	50 *	5 U	5 U	5 U	5 U	10 U	10 U
1,2-DICHLOROPROPANE	5	5 U	5 U	5 U	5 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	—	5 U	5 U	5 U	5 U	10 U	10 U
TRICHLOROETHENE	5	5 U	5 U	23	6	13	9 J
DIBROMOCHLOROMETHANE	50 *	5 U	5 U	5 U	5 U	10 U	10 U
1,1,2-TRICHLOROETHANE	5	5 U	5 U	5 U	5 U	10 U	10 U
BENZENE	0.7	5 U	5 U	5 U	5 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	—	5 U	5 U	5 U	5 U	10 U	10 U
BROMOFORM	50 *	5 U	5 U	5 U	5 U	10 U	10 U
4-METHYL-2-PENTANONE	—	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	50 *	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	5	5 U	5 U	5 U	5 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	5	5 U	5 U	5 U	5 U	10 U	10 U
TOLUENE	5	1 J	5 U	0.7 JB	5 U	10 U	10 U
CHLOROBENZENE	5	5 U	5 U	5 U	5 U	10 U	10 U
ETHYLBENZENE	5	5 U	5 U	5 U	5 U	10 U	10 U
STYRENE	5	5 U	5 U	5 U	5 U	10 U	10 U
XYLENE (TOTAL)	5	5 U	5 U	5 U	5 U	10 U	10 U
HEXANE	—	10 U	10 U	10 U	10 U	10 U	10 U
FREON 113	—	—	—	—	—	9	ND

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PFG:cmb/AL032.4

TABLE 3 (CONT.)

WATER VOLATILE ORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	NYS CLASS GA STANDARDS		B-1D BLDUP. 8/10/92		B-2S 11/16/90		B-2S 3/1/91		B-2D 11/14/90		B-2D 3/1/91		B-3S 11/19/90		B-3S 3/1/91	
CHLOROMETHANE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
BROMOMETHANE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
VINYL CHLORIDE	2		10	U	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROETHANE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	5		10	U	5	U	12		5	U	10		5	U	5	U
ACETONE	—		10	U	4	J	10	U	10		10	U	10	U	10	U
CARBON DISULFIDE	—		10	U	5	U	5	U	5	U	5	U	5	U	5	U
1,1-DICHLOROETHENE	5		10	U	5	U	5	U	5	U	5	U	5	U	5	U
1,1-DICHLOROETHANE	5		10	U	5	U	5	U	5	U	5	U	5	U	5	U
1,2-DICHLOROETHENE (TOTAL)	5		10	U	5	U	5	U	5	U	5	U	80		5	U
CHLOROFORM	7		10	U	5	U	5	U	5	U	5	U	5	U	5	U
1,2-DICHLOROETHANE	5		10	U	5	U	5	U	5	U	5	U	5	U	5	U
2-BUTANONE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,1,1-TRICHLOROETHANE	5		10	U	5	U	5	U	2	J	5	U	5	U	5	U
CARBON TETRACHLORIDE	5		10	U	5	U	5	U	5	U	5	U	5	U	5	U
VINYL ACETATE	2		—		10	U	10	U	10	U	10	U	10	U	10	U
BROMODICHLOROMETHANE	50	*	10	U	5	U	5	U	5	U	5	U	5	U	5	U
1,2-DICHLOROPROPANE	5		10	U	5	U	5	U	5	U	5	U	5	U	5	U
CIS-1,3-DICHLOROPROPENE	—		10	U	5	U	5	U	5	U	5	U	5	U	5	U
TRICHLOROETHENE	5		7	J	5	U	5	U	5	U	5	U	46		5	U
DIBROMOCHLOROMETHANE	50	*	10	U	5	U	5	U	5	U	5	U	5	U	5	U
1,1,2-TRICHLOROETHANE	5		10	U	5	U	5	U	5	U	5	U	5	U	5	U
BENZENE	0.7		10	U	0.7	J	5	U	5	U	5	U	5	U	5	U
TRANS-1,3-DICHLOROPROPENE	—		10	U	5	U	5	U	5	U	5	U	5	U	5	U
BROMOFORM	50	*	10	U	5	U	5	U	5	U	5	U	5	U	5	U
4-METHYL-2-PENTANONE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-HEXANONE	50	*	10	U	10	U	10	U	10	U	10	U	10	U	10	U
TETRACHLOROETHENE	5		10	U	5	U	5	U	5	U	5	U	5	U	5	U
1,1,2,2-TETRACHLOROETHANE	5		10	U	5	U	5	U	5	U	5	U	5	U	5	U
TOLUENE	5		10	U	1	JB	1	J	1	J	5	U	5	U	5	U
CHLOROBENZENE	5		10	U	5	U	5	U	5	U	5	U	5	U	5	U
ETHYLBENZENE	5		10	U	5	U	5	U	5	U	5	U	5	U	5	U
STYRENE	5		10	U	5	U	5	U	5	U	5	U	5	U	5	U
XYLENE (TOTAL)	5		10	U	5	U	5	U	5	U	5	U	5	U	5	U
HEXANE	—		10	U	10	U	10	U	10	U	10	U	10	U	5	J
FREON 113	—		ND		—		—		—		—		—		—	

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TABLE 3 (CONT.)

WATER VOLATILE ORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	NYS CLASS GA STANDARDS		B-3D 11/14/90	B-3D 3/1/91	B-4S 3/1/91	B-4D 11/14/90	B-4D 3/1/91	B-5D 11/14/90	B-5D 3/1/91
CHLOROMETHANE	—		10 U	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	—		10 U	10 U	10 U	10 U	10 U	10 U	10 U
VINYL CHLORIDE	2		10 U	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	—		10 U	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	5		5 U	5 U	5 U	5 U	10	5 U	5 U
ACETONE	—		10 U	10 U	10 U	11	10 U	10 U	10 U
CARBON DISULFIDE	—		5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-DICHLOROETHENE	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-DICHLOROETHANE	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DICHLOROETHENE (TOTAL)	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U
CHLOROFORM	7		5 U	5 U	5 U	5 U	5 U	1 J	5 U
1,2-DICHLOROETHANE	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-BUTANONE	—		10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,1-TRICHLOROETHANE	5		5	4 J	5 U	1 J	5 U	2 J	5 U
CARBON TETRACHLORIDE	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U
VINYL ACETATE	2		10 U	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	50	*	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-DICHLOROPROPANE	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U
CIS-1,3-DICHLOROPROPENE	—		5 U	5 U	5 U	5 U	5 U	5 U	5 U
TRICHLOROETHENE	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U
DIBROMOCHLOROMETHANE	50	*	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-TRICHLOROETHANE	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U
BENZENE	0.7		5 U	5 U	5 U	5 U	5 U	5 U	5 U
TRANS-1,3-DICHLOROPROPENE	—		5 U	5 U	5 U	5 U	5 U	5 U	5 U
BROMOFORM	50	*	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-METHYL-2-PENTANONE	—		10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	50	*	10 U	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2-TETRACHLOROETHANE	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U
TOLUENE	5		5 U	5 U	5 U	0.9 J	5 U	5 U	5 U
CHLOROBENZENE	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U
ETHYLBENZENE	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U
STYRENE	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U
XYLENE (TOTAL)	5		5 U	5 U	5 U	5 U	5 U	5 U	5 U
HEXANE	—		10 U	1600 J	6 J	10 U	640 J	10 U	480 J
FREON 113	—		—	—	—	—	—	—	—

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TABLE 3 (CONT.)

WATER VOLATILE ORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	NYS CLASS GA STANDARDS	B-6 11/16/90	B-6 2/28/91	B-7 11/16/90	B-7 3/1/91	B-8 11/14/90	B-8 3/1/91	B-9 6/4/92
CHLOROMETHANE	——	20 U	10 U	10 U	10 U	20 U	10 U	10 U
BROMOMETHANE	——	20 U	10 U	10 U	10 U	20 U	10 U	10 U
VINYL CHLORIDE	2	20 U	10 U	10 U	10 U	20 U	10 U	10 U
CHLOROETHANE	——	20 U	10 U	10 U	10 U	20 U	10 U	10 U
METHYLENE CHLORIDE	5	46	12	5 U	8	10 U	3 J	10 U
ACETONE	——	20 U	10 U	20	10 U	20 U	10 U	10 U
CARBON DISULFIDE	——	10 U	5 U	5 U	5 U	10 U	5 U	10 U
1,1-DICHLOROETHENE	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
1,1-DICHLOROETHANE	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
1,2-DICHLOROETHENE (TOTAL)	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
CHLOROFORM	7	10 U	5 U	3 J	5 U	10 U	5 U	10 U
1,2-DICHLOROETHANE	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
2-BUTANONE	——	20 U	10 U	10 U	10 U	20 U	10 U	10 U
1,1,1-TRICHLOROETHANE	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
CARBON TETRACHLORIDE	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
VINYL ACETATE	2	20 U	10 U	10 U	10 U	20 U	10 U	10 U
BROMODICHLOROMETHANE	50 *	10 U	5 U	5 U	5 U	10 U	5 U	10 U
1,2-DICHLOROPROPANE	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
CIS-1,3-DICHLOROPROPENE	——	10 U	5 U	5 U	5 U	10 U	5 U	10 U
TRICHLOROETHENE	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
DIBROMOCHLOROMETHANE	50 *	10 U	5 U	5 U	5 U	10 U	5 U	10 U
1,1,2-TRICHLOROETHANE	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
BENZENE	0.7	10 U	5 U	5 U	5 U	10 U	5 U	10 U
TRANS-1,3-DICHLOROPROPENE	——	10 U	5 U	5 U	5 U	10 U	5 U	10 U
BROMOFORM	50 *	10 U	5 U	5 U	5 U	10 U	5 U	10 U
4-METHYL-2-PENTANONE	——	20 U	10 U	10 U	10 U	20 U	10 U	10 U
2-HEXANONE	50 *	20 U	10 U	10 U	10 U	20 U	10 U	10 U
TETRACHLOROETHENE	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
1,1,2,2-TETRACHLOROETHANE	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
TOLUENE	5	5 J	2 J	5 U	5 U	10 U	5 U	10 U
CHLOROBENZENE	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
ETHYLBENZENE	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
STYRENE	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
XYLENE (TOTAL)	5	10 U	5 U	5 U	5 U	10 U	5 U	10 U
HEXANE	——	10 U	10 U	10 U	10 U	20 U	10 U	10 U
FREON 113	——	——	——	——	——	——	——	11

NOTES:
All values reported in µg/l (ppb).
—— – Not available
U – Not detected
J – Indicates an estimated value
B – Analyte found in blank
* – Indicates NYS CLASS GA GUIDANCE VALUE
ND – non-detect

PFG:cmb/AL032.4

TABLE 3 (CONT.)

WATER VOLATILE ORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	NYS CLASS GA STANDARDS		B-9 8/10/92		B-10 8/10/92		B-12D 6/4/92		B-12D 8/10/92		B-13 6/4/92		B-13 8/10/92		CISTERN-W 6/4/92	
CHLOROMETHANE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
BROMOMETHANE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
VINYL CHLORIDE	2		10	U	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROETHANE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	5		2	J	10	U	5	J	10	U	10	U	3	J	10	U
ACETONE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
CARBON DISULFIDE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHENE	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHANE	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROFORM	7		10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHANE	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-BUTANONE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,1,1-TRICHLOROETHANE	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
CARBON TETRACHLORIDE	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
VINYL ACETATE	2		—		—		10	U	—		10	U	—		10	U
BROMODICHLOROMETHANE	50	*	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROPROPANE	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
TRICHLOROETHENE	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
DIBROMOCHLOROMETHANE	50	*	10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
BENZENE	0.7		10	U	10	U	10	U	10	U	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
BROMOFORM	50	*	10	U	10	U	10	U	10	U	10	U	10	U	10	U
4-METHYL-2-PENTANONE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
2-HEXANONE	50	*	10	U	10	U	10	U	10	U	10	U	10	U	10	U
TETRACHLOROETHENE	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
TOLUENE	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
CHLOROBENZENE	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
ETHYLBENZENE	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
STYRENE	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
XYLENE (TOTAL)	5		10	U	10	U	10	U	10	U	10	U	10	U	10	U
HEXANE	—		10	U	10	U	10	U	10	U	10	U	10	U	10	U
FREON 113	—		ND		ND		10		ND		6		ND		5	

NOTES:
All values reported in μg/l (ppb).
— – Not available
U – Not detected
J – Indicates an estimated value
B – Analyte found in blank
* – Indicates NYS CLASS GA GUIDANCE VALUE
ND – non-detect

PFG:cmb/AL032.4

TABLE 3 (CONT.)

WATER VOLATILE ORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	NYS CLASS GA STANDARDS		CISTERN-W 8/10/92		EAST PUMPHOUSE 6/4/92		EAST PUMPHOUSE 8/10/92		WEST PUMPHOUSE 6/4/92		WEST PUMPHOUSE 8/10/92	
CHLOROMETHANE	—		10	U	10	U	10	U	10	U	10	U
BROMOMETHANE	—		10	U	10	U	10	U	10	U	10	U
VINYL CHLORIDE	2		10	U	10	U	10	U	10	U	10	U
CHLOROETHANE	—		10	U	10	U	10	U	10	U	10	U
METHYLENE CHLORIDE	5		10	U	3	J	10	U	10	U	10	U
ACETONE	—		10	U	10	U	10	U	10	U	10	U
CARBON DISULFIDE	—		10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHENE	5		10	U	10	U	10	U	10	U	10	U
1,1-DICHLOROETHANE	5		10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHENE (TOTAL)	5		10	U	10	U	10	U	10	U	10	U
CHLOROFORM	7		10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROETHANE	5		10	U	10	U	10	U	10	U	10	U
2-BUTANONE	—		10	U	10	U	10	U	10	U	10	U
1,1,1-TRICHLOROETHANE	5		10	U	10	U	10	U	10	U	10	U
CARBON TETRACHLORIDE	5		10	U	10	U	10	U	10	U	10	U
VINYL ACETATE	2		—		10	U	—		10	U	—	
BROMODICHLOROMETHANE	50	*	10	U	10	U	10	U	10	U	10	U
1,2-DICHLOROPROPANE	5		10	U	10	U	10	U	10	U	10	U
CIS-1,3-DICHLOROPROPENE	—		10	U	10	U	10	U	10	U	10	U
TRICHLOROETHENE	5		10	U	10	U	10	U	10	U	10	U
DIBROMOCHLOROMETHANE	50	*	10	U	10	U	10	U	10	U	10	U
1,1,2-TRICHLOROETHANE	5		10	U	10	U	10	U	10	U	10	U
BENZENE	0.7		10	U	10	U	10	U	10	U	10	U
TRANS-1,3-DICHLOROPROPENE	—		10	U	10	U	10	U	10	U	10	U
BROMOFORM	50	*	10	U	10	U	10	U	10	U	10	U
4-METHYL-2-PENTANONE	—		10	U	10	U	10	U	10	U	10	U
2-HEXANONE	50	*	10	U	10	U	10	U	10	U	10	U
TETRACHLOROETHENE	5		10	U	10	U	10	U	10	U	10	U
1,1,2,2-TETRACHLOROETHANE	5		10	U	10	U	10	U	10	U	10	U
TOLUENE	5		10	U	10	U	10	U	10	U	10	U
CHLOROBENZENE	5		10	U	10	U	10	U	10	U	10	U
ETHYLBENZENE	5		10	U	10	U	10	U	10	U	10	U
STYRENE	5		10	U	10	U	10	U	10	U	10	U
XYLENE (TOTAL)	5		10	U	10	U	10	U	10	U	10	U
HEXANE	—		10	U	10	U	10	U	10	U	10	U
FREON 113	—		ND		ND		ND		5		ND	

NOTES:
All values reported in µg/l (ppb).
— – Not available
U – Not detected
J – Indicates an estimated value
B – Analyte found in blank
* – Indicates NYS CLASS GA GUIDANCE VALUE
ND – non-detect

PFG:cmb/AL032.4

TABLE 4

SEDIMENT VOLATILE ORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	Cistern 6/4/92		Cistern 8/10/92		Blind Dup. 6/4/92		Blind Dup. 8/10/92	
CHLOROMETHANE	24	U	100	U	28	U	140	U
BROMOMETHANE	24	U	100	U	28	U	140	U
VINYL CHLORIDE	24	U	100	U	28	U	140	U
CHLOROETHANE	24	U	100	U	28	U	140	U
METHYLENE CHLORIDE	7	J	38	BJ	7	J	34	BJ
ACETONE	24	U	140	B	28	U	210	B
CARBON DISULFIDE	24	U	100	U	28	U	140	U
1,1-DICHLOROETHENE	24	U	100	U	28	U	140	U
1,1-DICHLOROETHANE	24	U	100	U	28	U	140	U
1,2-DICHLOROETHENE (TOTAL)	24	U	100	U	28	U	140	U
CHLOROFORM	24	U	100	U	28	U	140	U
1,2-DICHLOROETHANE	24	U	100	U	28	U	140	U
2-BUTANONE	24	U	100	U	28	U	140	U
1,1,1-TRICHLOROETHANE	24	U	100	U	28	U	140	U
CARBON TETRACHLORIDE	24	U	100	U	28	U	140	U
VINYL ACETATE	24	U	NA		28	U	NA	
BROMODICHLOROMETHANE	24	U	100	U	28	U	140	U
1,2-DICHLOROPROPANE	24	U	100	U	28	U	140	U
CIS-1,3-DICHLOROPROPENE	24	U	100	U	28	U	140	U
TRICHLOROETHENE	24	U	100	U	28	U	140	U
DIBROMOCHLOROMETHANE	24	U	100	U	28	U	140	U
1,1,2-TRICHLOROETHANE	24	U	100	U	28	U	140	U
BENZENE	24	U	100	U	28	U	140	U
TRANS-1,3-DICHLOROPROPENE	24	U	100	U	28	U	140	U
BROMOFORM	24	U	100	U	28	U	140	U
4-METHYL-2-PENTANONE	24	U	100	U	28	U	140	U
2-HEXANONE	24	U	100	U	28	U	140	U
TETRACHLOROETHENE	24	U	100	U	28	U	140	U
1,1,2,2-TETRACHLOROETHANE	24	U	100	U	28	U	140	U
TOLUENE	24	U	13	J	28	U	9	J
CHLOROBENZENE	5	J	1300		28	U	750	
ETHYLBENZENE	24	U	39	J	28	U	22	J
STYRENE	24	U	100	U	28	U	140	U
XYLENE (TOTAL)	24	U	340		28	U	150	
HEXANE	24	U	NA		7	J	NA	
FREON-113	21	J	NA		26	J	NA	

NOTES: All values reported in µg/kg (ppb).
U - Not detected
J - Indicates an estimated value
NA - Not analyzed

PFG:cmb/AL032.17

TABLE 5

SEDIMENT INORGANIC ANALYSES RESULTS
ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK

	SOIL CONCENTRATIONS TYPICAL RANGE (ppm)	Cistern 6/4/92	Cistern 8/10/92	Blind Dup. 6/4/92	Blind Dup. 8/10/92
ALUMINUM	1,000-25,000	---	---	---	---
ANTIMONY	0.6-10 *	---	---	---	---
ARSENIC	3-12	---	---	---	---
BARIUM	15-600	---	---	---	---
BERYLLIUM	0-1.75	---	---	---	---
CADMIUM	0.0001-1	1.9 U	2 U	2.1 U	5.8
CALCIUM	130-35,000	---	---	---	---
CHROMIUM	1.5-40	2,410	1,170	1,390	1,640
CHROMIUM-HEXAVALENT	----	0.10 U	860	0.10 U	1,190
COBALT	2.5-60	---	---	---	---
COPPER	1-50	---	---	---	---
IRON	17,500-25,000	29,700	29,700	33,400	32,100
LEAD	1-30	722	412	516	658
MAGNESIUM	100-5,000	---	---	---	---
MANGANESE	50-5,000	---	---	---	---
MERCURY	0.042-0.06	0.52	0.27	0.27 U	0.35
NICKEL	0.5-25	70	62.9	66.3	95.7
POTASSIUM	8,500-43,000	---	---	---	---
SELENIUM	<0.1-3.9	---	---	---	---
SILVER	0.1-5 *	---	---	---	---
SODIUM	<500-8,000	778 B	540 B	480 B	648 B
THALLIUM	0.1-12 *	---	---	---	---
VANADIUM	11-119	---	---	---	---
ZINC	37-60	3,110	2,510	2,530	5,520
CYANIDE	----	---	---	---	---
SULFATE	2-130 *	---	6,000 U	---	6,000 U
BORON	----	---	---	---	---
FLUORIDE	30-300 *	560	440	470	1,000
PHENOL	----	---	---	---	---
CHLORIDE	10-100 *	2,940,000	61,000	1,380,000	208,000

NOTES: Lab values reported in µg/kg (ppb).
---- - Not available
* - Guidance value
U - Not detected
B - Value less than contract required detection limit, but greater than instrument detection limit.
NYS concentration range in uncontaminated soils from backround concentrations of 20 elements in soils with special regard for New York State by E. Carol McGovern
* - Dragun, Soil Chemistry of Hazardous Wastes

PFG:cmb/AL032.15

TABLE 6

Rare, Threatened, or Endangered Plant Species and Communities in the Vicinity of the Site

Alcan Aluminum Corporation
Alcan Aluminum Site # 828005
Pittsford, New York

Common Name	Scientific Name	NYS Legal Status
Tick-trefoil	*Desmodium ciliare*	Threatened
Tall tick-clover	*Desmodium glabellum*	Threatened
Green gentian	*Frasera caroliniensis*	Rare
Sweet-scented indian-plantain	*Cacalia suaveolens*	Rare
Clearweed	*Pilea fontana*	Unprotected
Oak openings - Community		Unprotected

Figures

FIGURE 1

ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE • 828005
PITTSFORD, NEW YORK

SITE LOCATION MAP

CONTOUR INTERVAL = 5 FEET

0 2000 4000

SCALE IN FEET

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

7/17/90

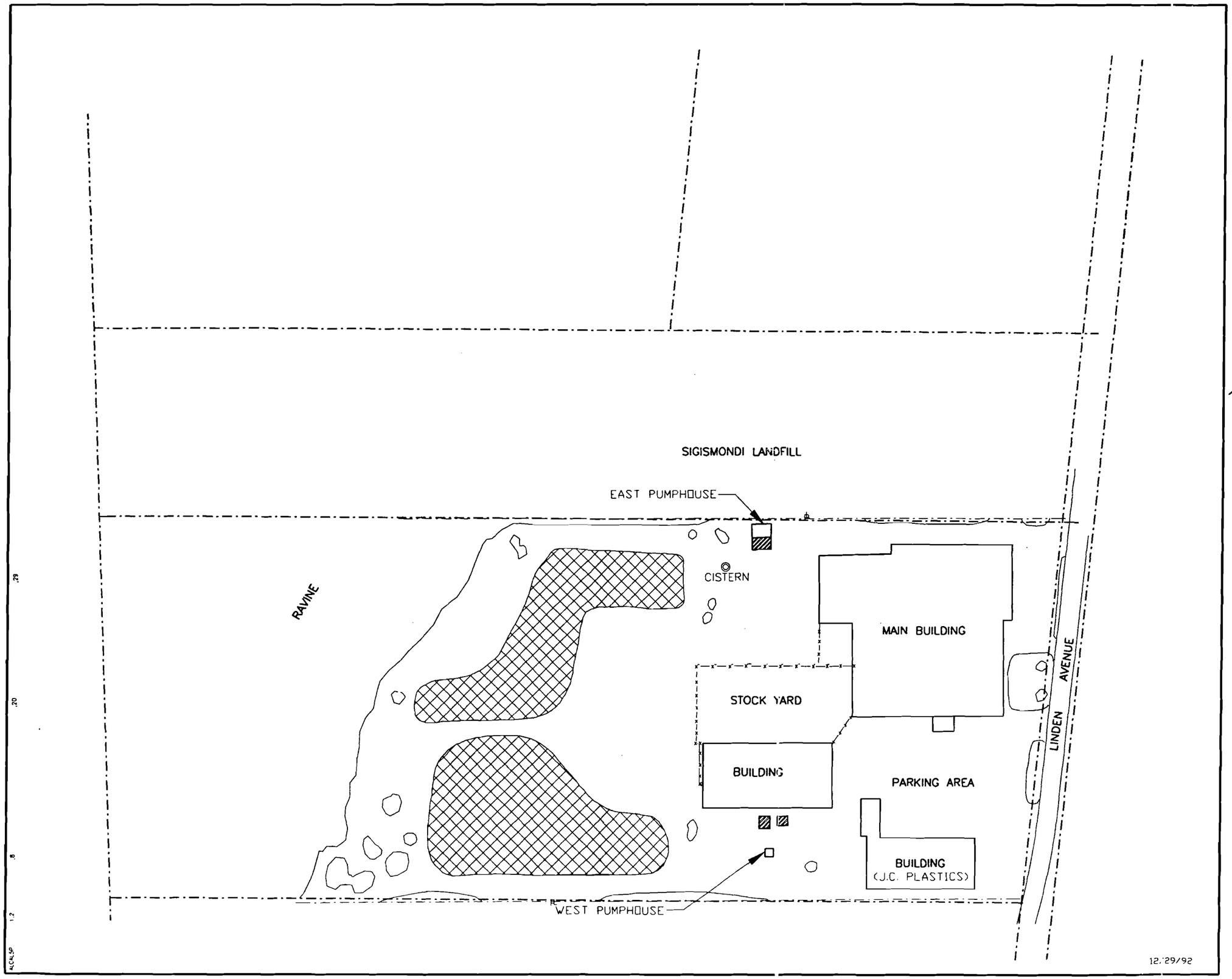
3057.032.130

8.5X11

O'BRIEN & GERE ENGINEERS, INC.

FIGURE 2

ALCAN ALUMINUM CORPORATIO
ALCAN ALUMINUM SITE #82800
PITTSFORD, NEW YORK



LEGEND

FORMER WATER IMPOUNDMENTS LOACTED BY AERIAL PHOTOS

PROPERTY BOUDARY

CEMENT FOUNDATION

CISTERN

SITE MAP

150 0 150

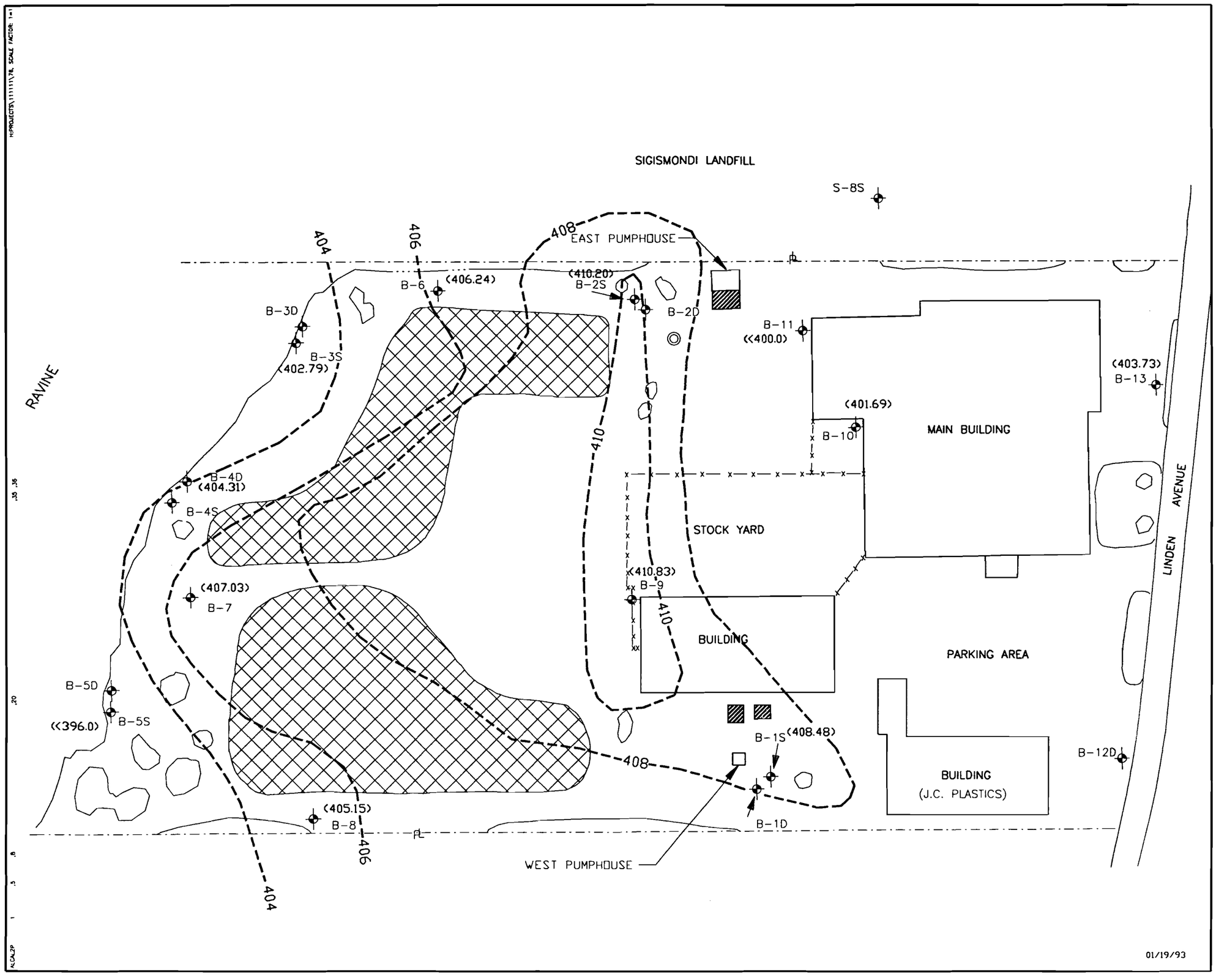
SCALE IN FEET

3057.032.131

O'BRIEN & GERE
ENGINEERS, INC.

FIGURE 3

ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK



LEGEND

- PROPERTY BOUNDARY
- MONITORING WELL LOCATION
- (401.69) GROUND WATER ELEVATION
- 400 GROUND WATER ELEVATION CONTOUR
- FORMER WATER IMPOUNDMENTS LOCATED BY AERIAL PHOTOS & SOIL BORINGS
- CEMENT FOUNDATION
- CISTERN

SHALLOW GROUND WATER ELEVATIONS
8/10/92

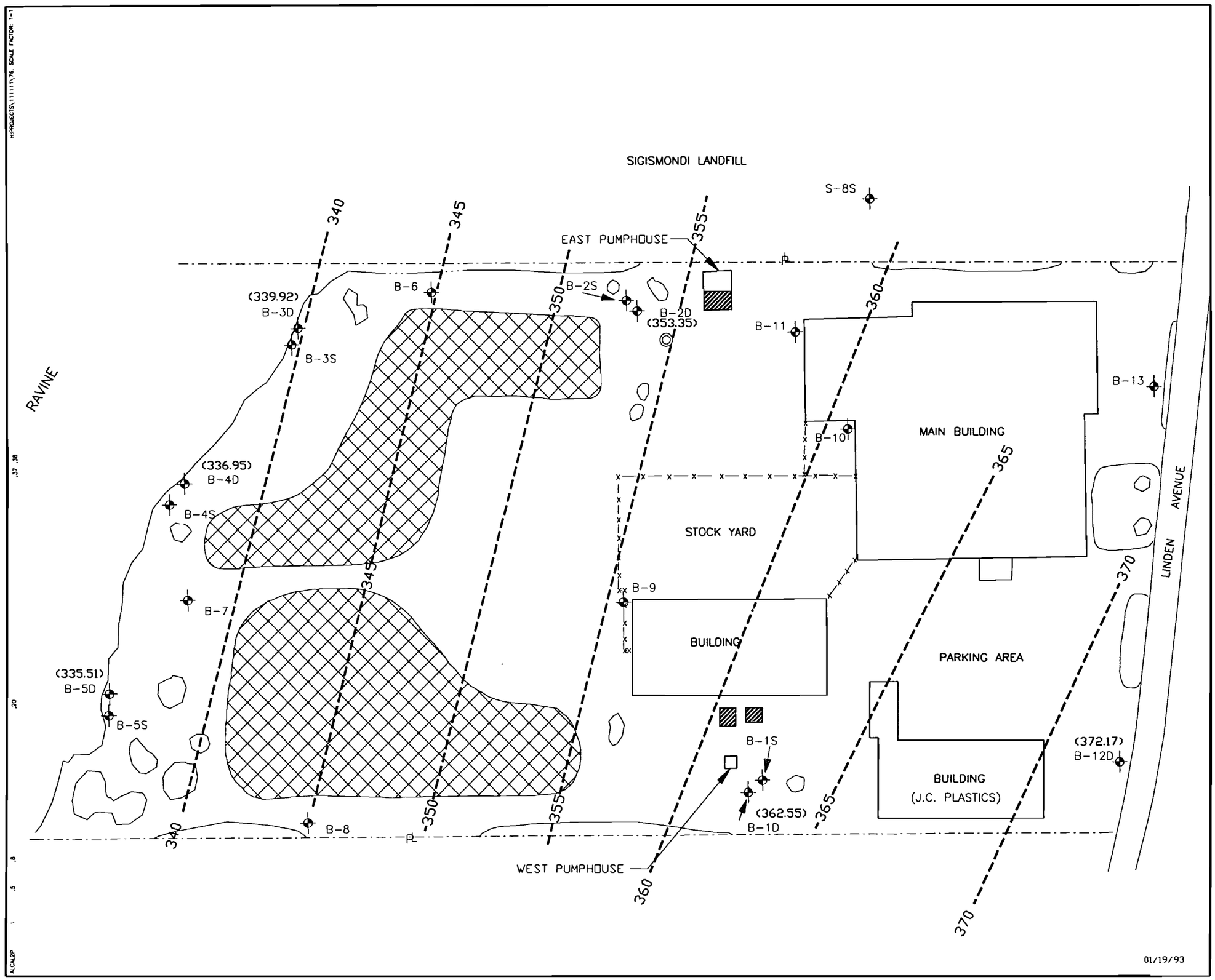
100 0 100
SCALE IN FEET

3057.032.131

O'BRIEN & GERE
ENGINEERS, INC.

FIGURE 4

ALCAN ALUMINUM CORPORATION
ALCAN ALUMINUM SITE #828005
PITTSFORD, NEW YORK



LEGEND

- PROPERTY BOUNDARY
- MONITORING WELL LOCATION
- (353.35) GROUND WATER ELEVATION
- 350 GROUND WATER ELEVATION CONTOUR
- FORMER WATER IMPOUNDMENTS LOCATED BY AERIAL PHOTOS & SOIL BORINGS
- CEMENT FOUNDATION
- CISTERN

DEEP GROUND WATER ELEVATIONS
8/10/92

100 0 100
SCALE IN FEET

3057.032.131

O'BRIEN & GERE
ENGINEERS, INC.

SOURCE:USGS TOPOGRAPHIC MAPS–FAIRPORT, WEBSTER, ROCHESTER EAST AND PITTSFORD QUADRANGLES

12/29/92

FIGURE 5

ALCAN ALUMINUM CORPORATION
PITTSFORD, NEW YORK

LEGEND

- URBAN STRUCTURE EXTERIOR
- MOWED LAWN
- SUCCESSIONAL SOUTHERN HARDWOODS
- SUCCESSIONAL NORTHERN HARDWOODS
- SUCCESSIONAL OLD FIELD
- URBAN VACANT LOT
- PINE–NORTHERN HARDWOOD FOREST
- PAVED ROAD/PATH
- SURFACE WATER
- SITE

COVERTYPE MAP

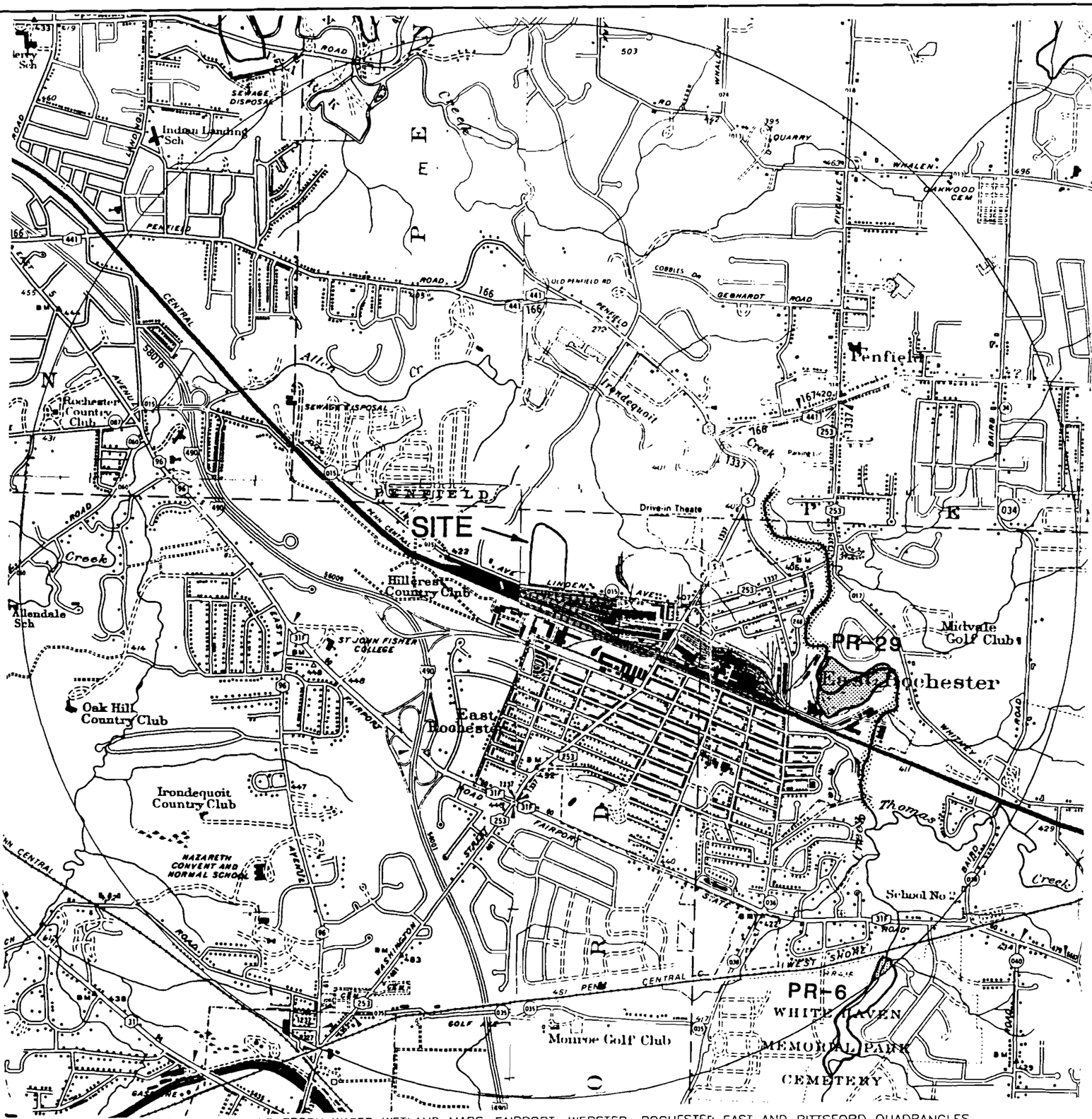
650 0 650

APPROX. SCALE IN FEET

(76)3057.032.131

O'BRIEN & GERE ENGINEERS, INC.

H:\PROJECTS\111111\76, SCALE FACTOR: 1=1



SOURCE: NEW YORK STATE FRESH WATER WETLAND MAPS–FAIRPORT, WEBSTER, ROCHESTER EAST AND PITTSFORD QUADRANGLES

12/29/92

WOLL104F 1:2

FIGURE 6

ALCAN ALUMINUM CORPORATION
PITTSFORD, NEW YORK

LEGEND

NEW YORK STATE WETLAND

NEW YORK STATE
FRESHWATER WETLAND MAP

2200 0 2200

APPROX. SCALE IN FEET

(82)1549.007.04F

O'BRIEN & GERE
ENGINEERS, INC.

Appendices

APPENDIX A
Ground Water Field Sampling Logs

GROUND WATER SAMPLING FIELD LOG

Sample Location Alcan Site 828005 Well No. B-1D

Sampled By C. Odell / J. Moore Date 8-10-92 Time 1540

Weather Partly Cloudy Sampled with Bailer X Pump ____

A. WATER TABLE:

Well depth: (below top of casing) 70.39 ft. Well elevation: (top of casing) ____ ft.

Depth to water table: (below top of casing) 57.65 ft. Water table elevation: ____ ft.

Length of water column (LWC) 12.74 ft.

Volume of water in well:

2" diameter wells = 0.163 x (LWC) = 2.08 gallons 6.23 gal

B. PHYSICAL APPEARANCE AT START:

Color Colorless Odor None Turbidity Low

Was an oil film or layer apparent? No

C. PREPARATION OF WELL FOR SAMPLING:

Amount of water removed before sampling ~6.5 gallons.

Did well go dry? No

D. PHYSICAL APPEARANCE DURING SAMPLING:

Color Light Tan Odor None Turbidity Moderate

Was an oil film or layer apparent? No

E. CONDUCTIVITY 1472

F. pH 7.28

G. TEMPERATURE 62°F

H. WELL SAMPLING NOTES:

Sampled B-1D & Blind Duplicate for VOC's (1555) TCL Volatiles

GROUND WATER SAMPLING FIELD LOG

Sample Location Alcan Site 828005 Well No. B-9

Sampled By C. Odell / J. Moore Date 8-10-92 Time 1400

Weather Overcast / 80°F Sampled with Bailer X Pump ____

A. WATER TABLE:

Well depth: (below top of casing) 21.54 ft. Well elevation: (top of casing) ____ ft.

Depth to water table: (below top of casing) 8.01 ft. Water table elevation: ____ ft.

Length of water column (LWC) 13.53 ft.

Volume of water in well:

2" diameter wells = 0.163 x (LWC) = 2.21 gallons 6.62 gal

B. PHYSICAL APPEARANCE AT START:

Color Colorless Odor None Turbidity Low

Was an oil film or layer apparent? No

C. PREPARATION OF WELL FOR SAMPLING:

Amount of water removed before sampling ~7.0 gallons.

Did well go dry? No

D. PHYSICAL APPEARANCE DURING SAMPLING:

Color Colorless Odor None Turbidity Low

Was an oil film or layer apparent? No

E. CONDUCTIVITY 580

F. pH 7.2

G. TEMPERATURE 65°F

H. WELL SAMPLING NOTES:

Sampled at 1445 Turbidity <50 NTUs

VOC's unfiltered Cr+6 & metals

GROUND WATER SAMPLING FIELD LOG

Sample Location ALCAN SITE 828005 Well No. B-10

Sampled By J. MOORE / C. ODELL Date 8-10-92 Time 0900

Weather OVERCAST, 80°F Sampled with Bailer X Pump ____

A. WATER TABLE:

Well depth: (below top of casing) 18.75 ft.

Well elevation: (top of casing) ____ ft.

Depth to water table: (below top of casing) 17.67 ft.

Water table elevation: ____ ft.

Length of water column (LWC) 1.08 ft.

Volume of water in well:

(2") diameter wells = 0.163 x (LWC) = .18 gallons .54

4" diameter wells = 0.653 X (LWC) = ____ gallons

6" diameter wells = 1.469 X (LWC) = ____ gallons

B. PHYSICAL APPEARANCE AT START:

Color COLORLESS Odor NONE Turbidity LOW

Was an oil film or layer apparent? NO

C. PREPARATION OF WELL FOR SAMPLING:

Amount of water removed before sampling ~ .20 gallons.

Did well go dry? YES

D. PHYSICAL APPEARANCE DURING SAMPLING:

Color TAN Odor NONE Turbidity MODERATE

Was an oil film or layer apparent? NO

E. CONDUCTIVITY —

F. pH —

G. TEMPERATURE —

H. WELL SAMPLING NOTES:

SAMPLED B-10 AT 1220, ONLY FOR TCL VOLATILES IN SIGNIFICANT WATER PRODUCED. pH, SpCnd, Temp READINGS.

GROUND WATER SAMPLING FIELD LOG

Sample Location Alcan Site 828005 Well No. MW-12D

Sampled By C. Odell / J. Moose Date 8-10-92 Time 10:50

Weather Partly Cloudy Sampled with Bailer X Pump ____

A. WATER TABLE:

Well depth: (below top of casing) 55.63 ft. Well elevation: (top of casing) ____ ft.

Depth to water table: (below top of casing) 46.59 ft. Water table elevation: ____ ft.

Length of water column (LWC) 9.04 ft.

Volume of water in well:

2" diameter wells = 0.163 x (LWC) = 1.47 gallons 4.1 gal

B. PHYSICAL APPEARANCE AT START:

Color Colorless Odor None Turbidity Low

Was an oil film or layer apparent? No

C. PREPARATION OF WELL FOR SAMPLING:

Amount of water removed before sampling 6 gallons.

Did well go dry? No

D. PHYSICAL APPEARANCE DURING SAMPLING:

Color Brown Odor None Turbidity Moderate

Was an oil film or layer apparent? No

E. CONDUCTIVITY 1830

F. pH 7.58

G. TEMPERATURE 61.02°F

H. WELL SAMPLING NOTES:

Sampled at 1110

Collected TCL Volatiles

GROUND WATER SAMPLING FIELD LOG

Sample Location Alcan Site 828005 Well No. B-135

Sampled By C. Odell / J. Moore Date 8-10-92 Time 1310

Weather PARTLY Cloudy Sampled with Bailer X Pump ____

A. WATER TABLE:

Well depth: (below top of casing) 19.71 ft. Well elevation: (top of casing) ____ ft.

Depth to water table: (below top of casing) 9.64 ft. Water table elevation: ____ ft.

Length of water column (LWC) 10.09 ft.

Volume of water in well:

2" diameter wells = 0.163 x (LWC) = 1.64 gallons

B. PHYSICAL APPEARANCE AT START:

Color Colorless Odor NONE Turbidity Low

Was an oil film or layer apparent? NO

C. PREPARATION OF WELL FOR SAMPLING:

Amount of water removed before sampling ~5.0 gallons.

Did well go dry? No

D. PHYSICAL APPEARANCE DURING SAMPLING:

Color Brown Odor None Turbidity High

Was an oil film or layer apparent? No

E. CONDUCTIVITY 1515 us/cm

F. pH 7.45

G. TEMPERATURE 64°F

H. WELL SAMPLING NOTES:

SAMPLED AT 1310 >100NTUs.

TCL VOLATILES & FILTERED & UNFILTERED Cr+6 & METALS.

GROUND WATER SAMPLING FIELD LOG

Sample Location ALCAN SITE 828005 Well No. EAST PUMPHOUSE
Sampled By J. MOORE / C. ODELL Date 8/10/92 Time 1635
Weather OVERCAST 80°F Sampled with Bailer X Pump ____

A. WATER TABLE:

Well depth: (below top of casing) — ft.
Well elevation: (top of casing) ____ ft.
Depth to water table: (below top of casing) 7.96 ft.
Water table elevation: ____ ft.
Length of water column (LWC) — ft.
Volume of water in well:

2" diameter wells = 0.163 x (LWC) = — gallons
4" diameter wells = 0.653 X (LWC) = ~~—~~ gallons
6" diameter wells = 1.469 X (LWC) = ~~—~~ gallons

B. PHYSICAL APPEARANCE AT START:

Color COLORLESS Odor NONE Turbidity LOW
Was an oil film or layer apparent? NO

C. PREPARATION OF WELL FOR SAMPLING:

Amount of water removed before sampling — gallons.
Did well go dry? NO

D. PHYSICAL APPEARANCE DURING SAMPLING:

Color CLEAR Odor NONE Turbidity LOW
Was an oil film or layer apparent? NO

E. CONDUCTIVITY 498

F. pH 7.95

G. TEMPERATURE 65°F

H. WELL SAMPLING NOTES:

SAMPLED AT 1645 <50 NTU'S
COLLECTED TCL VOLATILES & (Cr+6 & METALS, UNFILTERED) & MS & MSD.

GROUND WATER SAMPLING FIELD LOG

Sample Location ALCAN SITE 828005 Well No. WEST PUMPHOUSE

Sampled By J. MOORE / C. O'DELL Date 8-10-92 Time 1605

Weather OVERCAST Sampled with Bailer X Pump ____

A. WATER TABLE:

Well depth: (below top of casing) — ft.

Well elevation: (top of casing) ____ ft.

Depth to water table: (below top of casing) 9.18 ft.

Water table elevation: ____ ft.

Length of water column (LWC) — ft.

Volume of water in well:

2" diameter wells = 0.163 x (LWC) = — gallons
4" diameter wells = 0.653 X (LWC) = ~~—~~ gallons
6" diameter wells = 1.469 X (LWC) = ~~—~~ gallons

B. PHYSICAL APPEARANCE AT START:

Color COLORLESS Odor NONE Turbidity LOW

Was an oil film or layer apparent? NO

C. PREPARATION OF WELL FOR SAMPLING:

Amount of water removed before sampling — gallons.

Did well go dry? NO

D. PHYSICAL APPEARANCE DURING SAMPLING:

Color COLORLESS Odor NONE Turbidity LOW

Was an oil film or layer apparent? NO

E. CONDUCTIVITY 667

F. pH 7.5

G. TEMPERATURE 64°F

H. WELL SAMPLING NOTES:

SAMPLED AT 1615 (<50 NTU'S)

COLLECTED TCL VOLATILES & (Cr+6, METALS, UNFILTERED)

GROUND WATER SAMPLING FIELD LOG

Sample Location ALCAN SITE 828005 Well No. CISTERN

Sampled By J. MOORE / C. O'DELL Date 8/10/92 Time 1705

Weather OVERCAST 80°F Sampled with Bailer X Pump ____

A. WATER TABLE:

Well depth: (below top of casing) — ft.

Well elevation: (top of casing) ____ ft.

Depth to water table: (below top of casing) 2.07 ft.

Water table elevation: ____ ft.

Length of water column (LWC) — ft.

Volume of water in well:

2" diameter wells = 0.163 x (LWC) = — gallons
4" diameter wells = 0.653 X (LWC) = ~~—~~ gallons
6" diameter wells = 1.469 X (LWC) = ~~—~~ gallons

B. PHYSICAL APPEARANCE AT START:

Color COLORLESS Odor NONE Turbidity LOW

Was an oil film or layer apparent? NO

C. PREPARATION OF WELL FOR SAMPLING:

Amount of water removed before sampling — gallons.

Did well go dry? NO

D. PHYSICAL APPEARANCE DURING SAMPLING:

Color CLEAR Odor NONE Turbidity LOW

Was an oil film or layer apparent? NO

E. CONDUCTIVITY 55

F. pH 7.8

G. TEMPERATURE 68°F

H. WELL SAMPLING NOTES:

SAMPLED WATER AT 1715 FOR TCL VOLATILES & (Cr+6, METALS UNFILTERED.) TURBIDITY <50 NTU'S

BLIND DUPLICATE COLLECT AT CISTERN FOR (Cr+6, METALS, UNFILTERED)

1730 SOILS WERE COLLECTED FOR TCL VOLATILES & TOTAL METALS, Cr+6. ALSO MS & MSD & BLIND DUPLICATE WERE COLLECTED FOR SOILS AT CISTERN BY USE OF ENCON DOOR.

APPENDIX B
Data Validation Memorandum

SUMMARY

The analytical data generated for the Alcan Aluminum Corporation, Site #828005, in Pittsford, New York were validated based on QA/QC criteria established by the NYSDEC Analytical Services Protocol (ASP) and QA/QC criteria presented in the Quality Assurance Project Plan (QAPP) for this project. Two rounds of samples which were collected during the focused remedial investigation are addressed in this report. The first round of samples consisted of one sediment and seven water samples for inorganic and volatile organic analyses collected on June 3, 1992. The second round of sampling consisted of one sediment and six water samples for inorganic analyses and one sediment and eight water samples for volatile organic analyses collected on August 10, 1992.

The data quality objective (DQO) for this investigation is to keep the total uncertainty of the analytical data within an acceptable range so as not to hinder the intended use of the data. The data collected during the course of this investigation will be used to answer the following questions:

1. Are volatile organics and metals present or absent? (Qualitative)

2. If volatile organics and metals are present, what are the types or classes? (Qualitative)

3. What quantities (concentrations) of volatile organic and metals are present? (Quantitative)

4. What are the environmental/public health risks? (Qualitative and quantitative)

5. What are the source pathway contaminant characteristics with respect to migration? (Qualitative and quantitative)

Upon completion of the data validation, it was determined that 95.8% of the Round I inorganic data were usable for qualitative and quantitative purposes. Iron results were rejected for ICP serial dilution percent difference excursions in six Round I water samples. These results may be useable for qualitative purposes, but should not be used for quantitative purposes. One hundred percent of the data for Round I organic analyses and Round II inorganic and organic analyses were determined to be useable for qualitative and quantitative purposes. A summary of data useability with reference to the specific samples that required qualification is presented in Section 5 of this document.

SECTION 1 - INTRODUCTION

1.01 Introduction

The following validation report addresses data quality for samples collected at the Alcan Aluminum Corporation site in Pittsford, New York. The site is #828005 on the New York State list of Inactive Hazardous Waste Sites and is currently a class 2 site. Two rounds of samples which were collected by O'Brien & Gere Engineers, Inc. of Syracuse, New York are addressed in this report. The first round of samples consisted of one sediment and seven water samples collected on June 3, 1992. The second round of samples consisted of one sediment and eight water samples collected on August 10, 1992. The samples were analyzed for volatile organics, inorganics (Cr^{+6}, Cr, Cd, Fe, Hg, Pb, Na, Zn, Ni, Cl, SO_4, and F), and total percent solids sediments only).

Laboratory analyses for the first and second round of samples were performed by NYTEST Environmental, Inc. (NEI) of Port Washington, New York. Analytical results are presented in laboratory reports dated June 30, 1992 and September 23, 1992 for the first and second rounds of sampling, respectively. The reports contain laboratory sample results and quality control information in the reporting format specified in the New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocols (ASP) 1991 Superfund-Contract Laboratory Program (CLP) for Target Compound List (TCL) analyses.

1.02 General Considerations

Validation is a process of determining the suitability of a measurement system for providing useful analytical data. Although the term is frequently used in discussing methodologies, it applies to all aspects of the system and especially to samples, their measurement, and the actual data output. Accordingly, this report outlines excursions from the applicable quality control criteria outlined in the following documents:

> *Quality Assurance Project Plan (QAPP) for the Focused Remedial Investigation, Alcan Aluminum Corporation Site (#828005) Pittsford, New York*, O'Brien & Gere Engineers, Inc. July 1990.
>
> *Exhibit E of New York State Department of Environmental Conservation Analytical Services Protocol (NYSDEC ASP)*, NYSDEC September 1989, 12/91 Revisions.
>
> *USEPA Laboratory Data Validation - Functional Guidelines for Evaluation of Organic/Inorganic Analyses*, USEPA February 1988 and June 1988, respectively.
>
> *CLP Organics Data Review and Preliminary Review, SOP NO. HW-6 Revision #8*, USEPA Region II, January 1992.
>
> *Evaluation of Metals Data for Contract Laboratory Program (CLP) SOP HW-2 Revision #11*, USEPA Region II, January, 1992.

The following four sections of this document address distinct aspects of the validation process. Section 2 provides the analytical methodology employed in sample analysis. Section 3 lists the data quality assurance/quality control (QA/QC) protocols used to validate the sample data. Specific QA/QC excursions and qualifications performed on the sample data are discussed in Section 4. Finally, data completeness and usability with respect to the intended purposes of the data are discussed in Section 5. Each section is subdivided with respect to the phase of the

investigation and the type of analyses performed. As a result, some redundancy has been incorporated into the report by necessity.

SECTION 2 - ANALYTICAL METHODS

2.01 Round I - June 3, 1992

One sediment and seven water samples collected on June 3, 1992 were analyzed by NEI Laboratories, Inc. utilizing the methods listed below.

PARAMETER	ANALYTICAL METHOD	REFERENCE
Volatile Organics	91.1	1
ICP Metals	200.7	1
Lead by furnace method	239.2	1
Mercury in water	245.1	1
Mercury in sediment	245.5	1
Percent Solids	209F	2
Hexavalent Chromium	7196	3
Chloride	325.2	4
Fluoride	340.2	4
Sulfate	375.4	4

ANALYTICAL METHOD REFERENCES

1) *New York State Department of Environmental Conservation Analytical Services Protocol*, September 1989, Revised 12/91.

2) *Standard Methods for the Examination of Water and Wastewater*, 16th Edition, 1985.

3) *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, SW-846, 3rd Edition, USEPA, September 1986.

4) *Methods for Chemical Analysis of Water and Wastes*, USEPA, EPA-600/4-79-020, March 1979.

Validated analytical results for this round of samples are presented on Tables 2, 3, 4, and in Appendix A. Letters found immediately to the right of individual sample

results serve to qualify the sample data. The following qualifiers have been used in this data validation.

U Indicates that the compound was analyzed for, but was not detected. The sample quantitation limit is presented and adjusted for dilution and percent moisture (solid samples only). This qualifier is also used to signify that the detection limit of an analyte was raised due to blank contamination.

J Indicates that the result should be considered approximate. This qualifier is used when the data validation procedure identifies a deficiency in the data generation process. Additionally, for organic analysis this qualifier is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but, the result is less than the sample quantification limit but greater than zero.

UJ Indicates that the detection limit for the analyte in this sample should be considered approximate. This qualifier is used when the data validation process identifies a deficiency in the data generation process.

R Indicates that the previously reported detection limit or sample result has been rejected due to a major deficiency in the data generation

procedure. The data should not be used for any qualitative or quantitative purposes.

2.02 Round II - August 10, 1992

The second round of sampling was a duplication of the first round with the addition of one ground water sample collected from well B-10 for volatile analyses and the deletion of one filtered water sample (Cistern filtered water) for inorganic analyses. Therefore, the sampling included the collection of one sediment, eight water, and associated QC samples for organics and one sediment, six water, and associated QC samples for inorganics collected on August 10, 1992. Laboratory analyses were performed by Nytest Environmental Inc., utilizing the methods listed in section 2.01. Analytical results for this round of samples are presented on Tables 5, 6, 7, and in Appendix B. Qualifiers used for these sample results are described in Section 2.01.

SECTION 3 - DATA VALIDATION PROTOCOLS

3.01 June 3, 1992 Round I

3.01.1 Superfund-CLP TAL Inorganic Analyses

One sediment, seven water, and associated QC samples were analyzed for NYSDEC Superfund-CLP TAL metals (Cr, Cd, Fe, Hg, Pb, Na, Zn, and Ni) and conventionals (Cr^{+6}, Cl, F, and SO_4) utilizing the analytical methods and QA/QC protocols outlined in NYSDEC ASP (12/91) and the QAPP for this investigation. The validation of analytical data followed the requirements presented in the QAPP and NYSDEC ASP. Qualification of sample data was based on data validation guidelines presented in *Evaluation of Metals Data for Contract Laboratory Program SOP HW-2 Revision #11*, USEPA Region II, January 1992. The following QA/QC parameters were evaluated:

1. Holding Times
2. Calibration
   a. Initial Calibration Verification
   b. Continuing Calibration Verification
3. CRDL Standard Analysis
4. Blank Analysis
5. ICP Interference Check Sample Analysis (ICP only)
6. Matrix Spike Analysis
7. Laboratory Duplicate Analysis
8. Field Duplicate Analysis
9. Laboratory Control Sample Analysis
10. Furnace Atomic Absorption Analysis

11. ICP Serial Dilution Analysis (ICP only)

12. Element Quantitation and Reported Detection Limits

13. Percent Solids Quantitation and Content (Sediments only)

14. Verification of Instrument Parameters

    a. Quarterly Detection Limit Verification

    b. Annual ICP Interelement Correction Factors

15. Document Completeness

16. Overall Data Assessment

3.01.2 Superfund-CLP TCL Organic Analyses

One sediment, seven water, and associated QC samples were analyzed for NYSDEC Superfund-CLP TCL volatile organics, utilizing the analytical methods and QA/QC protocols outlined in NYSDEC ASP (12/91). The validation of volatile analyses followed the requirements presented in the QAPP, and the NYSDEC ASP method 91-3. Qualification of sample data was based on the data validation guidelines presented in *CLP Organics Data Review and Preliminary Review SOP NO. HW-6, Revision #8*, USEPA Region II, January 1992. The following QA/QC parameters were evaluated for volatile analyses:

1. Holding Times

2. GC/MS Instrument Tuning Criteria

3. Calibration

    a. Initial Calibration

    b. Continuing Calibration

4. Blank Analysis
5. Surrogate Recovery
6. Matrix Spike / Matrix Spike Duplicate / Matrix Spike Blank Analysis
7. Field Duplicate Analysis
8. Internal Standards Performance
9. Compound Identification and Quantitation
10. Tentatively Identified Compounds
11. Percent Solids Determination and Content (sediments only)
12. System Performance
13. Documentation Completeness
14. Overall Data Assessment

3.02 August 10, 1992 Round II

Round II consisted of a duplication of Round I with the addition of one ground water sample (B-10) for organic analyses and the deletion of one filtered water sample (Cistern water) for inorganic analyses. Qualification of sample data and the QA/QC parameters evaluated are listed in sections 3.01.1 and 3.01.2.

SECTION 4 - DATA QUALITY EVALUATION

This section summarizes the QA/QC parameters, validation criteria and describes qualifications performed on the sample data when QA/QC parameters did not meet criteria. Samples that required qualification are identified in the following sections by the description documented on the sample chain of custody records. Only one qualifier was used for an individual sample result. When the data validation process identified several quality control deficiencies, the qualifier that indicated the more serious problem took precedence.

4.01 June 3, 1992 Round I

4.01.1 Superfund-CLP TAL Inorganic Analyses

QA/QC parameters for the following analytes were evaluated for one sediment and seven water samples; Cr^{+6}, Cr, Cd, Fe, Hg, Pb, Na, Zn, Ni, Cl, F, and SO_4 using the NYSDEC Superfund-CLP ASP 1991 protocol. The following QA/QC parameters were found to meet validation criteria: holding times, initial and continuing calibrations, ICP interference check sample analysis, laboratory control sample analysis, furnace atomic absorption analysis, element quantitation and reported detection limits. Validated sample results are tabulated on Tables 2 and 3. Excursions from QA/QC criteria are summarized below.

Sample Preservation

Sample pH values were checked by the laboratory before sample digestion to determine preservation. Several sample pH values exceeded preservation criterion. Metal results, excluding Cr^{+6}, for the following samples; East Pumphouse water, West Pumphouse water, B-9 water, B-13 water, B-13 filtered water, and Blind dup. water, were estimated (UJ,J) since the samples were not preserved to a pH less than two.

Blank Analysis

Calibration, preparation, and equipment blanks were analyzed at the required frequency. Zinc and SO_4 were detected above the instrument detection limits (IDLs) in the equipment blank. Blank action levels were calculated at five times the concentration detected in the equipment blank. Sample results above the IDL and below the action level were qualified with a "U", indicating that the sample result may partially or wholly reflect blank contamination. Qualification of zinc results were not required since results were reported as not detected at the IDL or were above the blank action level. Sulfate (SO_4) results for Cistern filtered water and Cistern water were qualified with a "U".

CRDL Standard Analysis

The final contract required detection limit (CRDL) standard recovery (144.7%) for ICP lead analysis exceeded the control limits of 80% to 120%. Due to this excursion, lead results for sediment samples, Cistern sediment and

Blind dup. sediment, were estimated (J). The percent recovery criteria was exceeded for lead, however, lead results were not affected in all samples since lead was quantified by furnace atomic absorption in the water samples.

Matrix Spike Analysis

Sediment matrix spike recoveries for chromium, lead, and zinc exceeded recovery criteria for ICP analysis. Qualification of data was not required for chromium and zinc since the sample concentrations were greater than four times the spike concentration. Recovery criteria (75% to 125%) were exceeded (31.7%) for the ICP lead sediment matrix spike sample. Since the affected samples, Cistern sediment and Blind dup. sediment, were previously qualified and the post digestion spike met criteria no further action is necessary. Sediment (42.0%) and water (70.2%) matrix spike recoveries exceeded criteria for Cr^{+6}. Due to these excursion all Cr^{+6} results were qualified as estimated (UJ).

Laboratory Duplicate Analysis

The ICP chromium duplicate relative percent difference (RPD) (200.8%) for water sample East Pumphouse exceeded RPD criterion. Qualification of data was not required since both duplicate results were below the CRDL and one result was below the instrument detection limit (IDL). RPD criteria of twenty percent were exceeded for lead (29.7%) and sodium (23.2%) in duplicate ICP analyses of Cistern sediment. Qualification of sample data was not required since the RPD values were less than 100%.

Field Duplicate Analysis

Field duplicates were collected for water, filtered water, and sediment samples. Sample identifications are; B-13 and Blind dup. water, B-13 filtered and Blind dup. filtered water, and Cistern sediment and Blind dup. sediment, respectively. RPD criterion of less than 50% were met for the filtered water duplicates. The RPD criterion of less than 100% were exceeded for mercury (200.0%) for the sediment duplicates. RPD criterion were exceeded for chromium (114.0%), iron (123.9%), nickel (200.0%), and zinc (98.7%) in the water duplicates. Due to these excursions mercury results in both Cistern sediment and Blind dup. sediment were estimated (J). Qualification of B-13 water and Blind dup. water for chromium, lead, nickel, and zinc RPD excursions were not required since the data were previously qualified for preservation excursions.

ICP Serial Dilution Analysis

Serial dilution percent difference criterion of less than 100% were exceeded for iron (274.6%) in the East Pumphouse water sample. Due to this excursion, iron results were rejected (R) in B-9 water, B-13 water, Blind dup. water, Cistern water, Cistern filtered water, and East Pumphouse water. Zinc results for B-13 water, Blind dup. water, Cistern filtered water, East Pumphouse water, Cistern water, and West Pumphouse water were approximated (J) because the serial dilution percent difference for zinc (97.5%) was greater than 10%, but less than 100%. Only sample results greater than or equal to ten times the IDL were qualified for these excursions.

Percent Solids Quantitation and Content

Sediment samples, Cistern sediment and Blind dup. sediment, contained percent solids of 40.5% and 36.4% respectively. All inorganic results for these samples were qualified as estimated (UJ,J), since the percent solids were less than fifty percent.

Verification of Instrument Parameters

Instrument detection limits, ICP interelement correction factors, and ICP linear range verifications that were determined within three months of the sample analyses were submitted in the report and were found to meet criteria.

Documentation Completeness

Required forms, preparation logs, digestion logs, and analysis run logs, were included in the report. The request for the analysis of nickel was omitted on the "page 3 of 3" chain of custody form. The laboratory contacted the project manager to confirm the addition of nickel, thus it was added to the parameter list for the sediment samples before holding time criteria were affected.

Overall Data Assessment

The laboratory performed Superfund-CLP TAL metal and conventional inorganic analyses according to the requirements outlined in NYSDEC ASP Method 200.7 CLP-M, Method 239.2 CLP-M, Method 245.1 CLP-M, Method

245.5 CLP-M, and the QAPP. Two sample results for SO_4 analysis were qualified with a "U" due to equipment blank contamination. Sample results for various analytes listed on Tables 2 and 3 were qualified as estimated (UJ,J) for the following QA/QC excursions; sample preservation, CRDL standard analysis, matrix spike recovery, field duplicate analysis, and percent solids quantitation and content. Chromium results were rejected (R) for six samples due to ICP serial dilution percent difference excursions. Inorganic results for the sediment samples that were not previously qualified, were estimated (UJ,J) since the percent solids were less than fifty percent. Overall, 54.9% of the sample results were qualified as estimated, 4.2% were rejected and 95.8% of the sample results were determined to be useable for qualitative and quantitative purposes.

4.01.2 Superfund-CLP TCL Organic Analyses

One sediment and seven water samples were validated for TCL organics using the NYSDEC Superfund-CLP ASP 1991 protocol. The following QA/QC parameters were found to meet validation criteria: holding times, GC/MS instrument tuning criteria, surrogate recovery, matrix spike analysis, internal standards performance, compound identification and quantitation, tentatively identified compounds (TICs), and percent solids determination and content. Validated results are summarized on Table 4 and TIC results can be found in Appendix A. Excursions from QA/QC criteria are summarized below.

Calibrations

Initial calibration percent relative standard deviation (%RSD) criterion of less than 30% were exceeded for methylene chloride (58.8%) and acetone (34.5%) in the water calibration. The average relative response factor and %RSD could not be evaluated for the sediment calibration with the data provided. The relative response factors (RRFs) were incorrectly calculated by omitting the internal standard concentration/calibration standard concentration ratio from the RRF equations. The initial calibration data were recalculated to aid in the evaluation and are summarized on Table 1. Acetone (30.5%) exceeded %RSD criteria for the sediment initial calibration. Qualification of sample results were not required since the affected compounds were not detected above the contract required quantitation limits (CRQLs).

Continuing calibration percent difference (%D) criteria of less than 25% were exceeded for the water continuing calibration check standards analyzed on 6/3/92 and 6/11/92. On 6/3/92 methylene chloride (58.2%), acetone (27.0%), 2-butanone (40.3%), and 2-hexanone (29.3%) exceeded criterion. On 6/11/92 all compounds and surrogate compounds, excluding methylene chloride and bromofluorobenzene, exceeded percent difference criterion. Due to these excursions, results for all compounds in the water samples were estimated (UJ,J).

The %D criterion for the sediment continuing calibration standard analyzed on 6/10/92 could not be evaluated with the information provided. The average RRFs were incorrectly calculated from the initial calibration and

required recalculation to evaluate %D criterion. The average RRFs and %Ds were recalculated and are summarized on Table 1. Sediment continuing calibration %D criterion were met for all compounds.

Blank Analysis

Method blanks, equipment blanks, and trip blanks were analyzed at the required frequency. Methylene chloride was detected at a concentration of 3 ug/L in the equipment blank and 2 ug/L in the trip blank. Blank action levels were calculated at ten times the highest blank concentration. Sample results less than the CRQL and below the action level were replaced with the CRQL and qualified with a "U", indicating that the sample result may partially or wholly reflect blank contamination. Methylene chloride results for B-1D water, B-12D water, Blind dup. water, Blind dup. sediment, Cistern sediment, and East Pumphouse water were replaced with the method detection limit (MDL), since the MDL exceeded the CRQL for methylene chloride, and qualified with a "U".

Field Duplicate Analysis

Field duplicate analyses were performed utilizing samples; B-1D water and Blind dup. water, and Cistern sediment and Blind dup. sediment, for water and sediment samples respectively. RPD criterion of less than 100% were exceeded for xylene (200.0%) and chlorobenzene (200.0%) in the sediment duplicates. Qualification of sample data was not required since the detected results were previously qualified as estimated (J) since they are

greater than zero, but less than the CRQL. The percent difference of 8.5% between the percent moisture contents for Blind dup. sediment and Cistern sediment exceeded the percent difference criterion of less than one percent. The sediment duplicate results were calculated in mg/kg wet weight to evaluate duplicate RPD criteria. With the exception of xylene and chlorobenzene relative percent difference criterion were met for the sediment duplicate analysis.

System Performance

A quarterly method detection limit (MDL) study for water samples completed within three months of sample analysis was included. The MDL study consisted of only three replicate analyses and did not meet the required seven replicate criterion. Also, the standard deviations were multiplied by three and not the value of 6.965 as specified in *Test Methods for Evaluating Solid Waste: Physical/Chemical Methods*, SW-846, 3rd Edition, USEPA, September 1986, when only three replicates are used for MDL determinations. When calculated using the correct value of 6.965, several MDLs were greater than the CRQLS. The CRQLs were raised to the appropriate MDL value in water samples for the following compounds: methylene chloride (17 ug/L), 1,2-dichloroethene (12 ug/L), and tetrachloroethene (12 ug/L).

Documentation Completeness

Required forms were included in the report. Average RRFs were incorrectly reported on Form VI and Form VII for the sediment initial and

continuing calibrations. The correct average RRFs were calculated in order to evaluate the data and are presented on Table 1. Amended forms for the sediment initial and continuing calibrations were received from the laboratory on 12/10/92.

Overall Data Assessment

The laboratory performed Superfund-CLP TCL volatile analyses according to the requirements outlined in NYSDEC ASP Method 91.1 and the QAPP for this investigation. Results for all water samples were estimated (UJ,J) for continuing calibration percent difference excursions. Methylene chloride results for B-1D water, B-12D water, Blind dup. water, Blind dup. sediment, Cistern sediment, and East Pumphouse water were replaced with the MDL and qualified with a "U" since methylene chloride was detected in the equipment blank. CRQLs for methylene chloride, 1,2-dichloroethene, and tetrachloroethene were replaced with the MDLs, since the MDLs were greater than the CRQLs. Qualified sample results for volatile analyses are summarized on Table 4. Sample results detected below the CRQL, but greater than zero were also qualified as estimated (J). Overall, 83.8% of the data were qualified as estimated (UJ,J), and 100% of the data were determined to be usable for qualitative and quantitative purposes.

4.02 August 10, 1992 Round II

4.02.1 Superfund TAL Inorganic Analyses

QA/QC parameters for the following analytes were evaluated for one sediment, and six water samples; Cr^{+6}, Cr, Cd, Fe, Hg, Pb, Na, Zn, Ni, Cl, F, and SO_4 using the NYSDEC Superfund-CLP ASP 1991 protocol. The following QA/QC parameters were found to meet validation criteria: holding times and preservation, initial and continuing calibrations, ICP interference check sample analysis, laboratory duplicate analysis, laboratory control sample analysis, ICP serial dilution analysis, and element quantitation and reported detection limits. Validated sample results are tabulated on Tables 5 and 6. Excursions from QA/QC criteria are summarized below.

Blank Analysis

Calibration, preparation, and equipment blanks were analyzed at the required frequency. Hexavalent chromium was detected above the instrument detection limits (IDLs) in the equipment blank. A blank action level was calculated at five times the concentration detected in the equipment blank. Sample results above the IDL and below the action level were qualified with a "U", indicating that the sample result may partially or wholly reflect blank contamination. Hexavalent chromium results for B-9 water, B-13 water, and West Pumphouse water were qualified with a "U".

CRDL Standard Analysis

ICP contract required detection limit (CRDL) standards for cadmium, chromium, and nickel exceeded the percent recovery control limits of 80% to 100%. Sample results were only affected by the recovery of cadmium (122.5%) in the initial CRDL standard. Cadmium (40.9%), chromium (127.2%), and nickel (124.0%) exceeded criteria in the final CRDL standard, but did not affect the sample results. The cadmium result for Blind dup. sediment was estimated (J) for these excursions.

Matrix Spike Analysis

Matrix spike blanks and samples were analyzed at the required frequency. Cistern sediment and East Pumphouse water were utilized for the sediment and water matrix spike analyses, respectively. Chromium (417.5%), zinc (232.8%), and lead (750.3%) exceeded recovery criteria of 75% to 125% in the sediment spike, but did not require sample qualification since the unspiked sample results were greater than four times the spike concentration. Mercury results for Cistern sediment and Blind dup. sediment were estimated (J) since the sediment mercury spike recovery of 55.9% exceeded the recovery criteria of 75% to 125%. Chloride results were qualified as estimated (J) in Cistern sediment and Blind dup. sediment since the chloride matrix spike recovery of 20.5% exceeded the 75% to 125% recovery criteria.

Field Duplicate Analysis

Cistern sediment and Cistern water were utilized for Blind dup. sediment and Blind dup. water, respectively. Relative percent difference (RPD) criterion for duplicate analysis were met for both sediment and water samples. The percent difference of 35.1% between the percent solids content for Blind dup. sediment and Cistern sediment exceeded the percent difference criterion of less than one percent. The sediment duplicate results were calculated in mg/kg wet weight to evaluate duplicate RPD criterion. Relative percent difference criterion were met for the sediment duplicate analysis.

Furnace Atomic Absorption Analysis

Furnace analytical spike recovery criteria of 85% to 125% were exceeded for samples B-9 water (117.0%), B-13 water (119.0%), and Cistern water (45.0%) for lead analysis. The lead result for Cistern water was qualified as estimated (UJ), due to these excursions. Qualification of sample results for B-9 water and B-13 water were not required since the spike recoveries were greater than 115% and lead was not detected in the samples. Spike recovery criteria were also exceeded for the sediment blind duplicate, but sample result qualifications were not required since the sample was analyzed by the method of standard additions.

Percent Solids Quantitation and Content

Cistern sediment and Blind dup. sediment, contained percent solids of 49.0% and 31.8%, respectively. Inorganic results for these sediment samples

were qualified as estimated (UJ,J), since the percent solids were less than fifty percent.

Verification of Instrument Parameters

Instrument detection limits, ICP interelement correction factors, and ICP linear range verifications that were determined within three months of the sample analyses were submitted in the report and were found to meet criteria.

Documentation Completeness

The laboratory bench sheets for the sample digestion procedures were not included with the data package. Form VII did not include the results from the analysis of a water laboratory control sample. Updated forms were received from the laboratory on 12/10/92.

Overall Data Assessment

The laboratory performed Superfund-CLP TAL metal and conventional inorganic analyses according to the requirements outlined in NYSDEC ASP Method 200.7 CLP-M, Method 239.2 CLP-M, Method 245.1 CLP-M, Method 245.5 CLP-M, and the QAPP. Three water sample results for hexavalent chromium were qualified with a "U" due to equipment blank contamination. Sample results for various analytes listed on Tables 5 and 6 were qualified as estimated (UJ,J) for the following QA/QC excursions; CRDL standard analysis, matrix spike recovery, furnace analytical spike recovery, and percent

solids quantitation and content. Inorganic results for the sediment samples that were not previously qualified, were estimated (UJ,J) since the percent solids were less than fifty percent. Overall, 20.8% of the sample results were qualified as estimated and 100% of the sample results were determined to be useable for qualitative and quantitative purposes.

4.02.2 Superfund-CLP TCL Organic Analyses

One sediment and eight water samples were validated for TCL organics using the NYSDEC Superfund-CLP ASP 1991 protocol. The following QA/QC parameters were found to meet validation criteria: holding times, GC/MS instrument tuning criteria, internal standards performance, compound identification and quantitation, tentatively identified compounds (TICs), and percent solids determination and content. Validated results are summarized on Table 7 and TIC results can be found in Appendix B. Excursions from QA/QC criteria are summarized below.

Calibration

The percent relative standard deviation (%RSD) criterion of less than 30.0% were exceeded for acetone (81.3%) in the water initial calibration performed on 7/13/92. The calibration data, relative response factors (RRFs), and %RSD for acetone were calculated incorrectly from the supporting documentation. The correct RRFs, average RRF, and %RSD were calculated and are tabulated below. Qualification of sample data was not required, since the correct RRFs and %RSD met calibration criterion.

Compound	RRF10	RRF20	RRF50	RRF100	RRF200	AVG RRF	%RSD
Acetone	1.375	1.312	1.255	1.232	1.247	1.284	4.6

Percent relative standard deviation criterion were also exceeded for chloroethane (30.1%) and carbon disulfide (30.9%) in the sediment initial calibration performed on 8/14/92. The supporting documentation verified that the calibration data presented on Form VI were calculated correctly. Qualification of sample data were not required, since the excursions were minimal (less than 1%) and the affected compounds were not detected in the samples.

Continuing calibration percent difference (%D) criterion of less than 25% were exceeded for acetone (68.2%) and 2-butanone (26.6%) for the water calibration on 8/17/92. Due to these excursions, sample results for acetone and 2-butanone were qualified as estimated (UJ) in the following samples: B-1D water, Blind dup. water, B-9 water, B-10 water, B-12D water, B-13 water, Cistern water, Equipment blank, and Trip blank. Continuing calibration %D criterion were also exceeded for the water calibration on 8/18/92 for the following compounds: bromomethane (26.9%), acetone (75.2%), 2-butanone (32.4%), and 2-hexanone (26.7%). Bromomethane, acetone, 2-butanone, and 2-hexanone results were qualified as estimated (UJ) for East Pumphouse water and West Pumphouse water due to these excursions.

Sediment continuing calibration %D criterion were exceeded for chloromethane (32.8%), vinyl chloride (32.6%), acetone (27.8%), and carbon

disulfide (-29.2%). Results for these compounds were qualified as estimated (UJ) in Blind dup. sediment and Cistern sediment, due to these excursions.

Blank Analysis

Method blanks, equipment blanks, and trip blanks were analyzed at the required frequency. Sediment method blank VBLKG10 analyzed on 8/18/92 contained 5 mg/kg of both methylene chloride and acetone. Blank action levels were calculated at ten times the blank concentration for both compounds. Sample results less than the CRQL and below the action level were replaced with the CRQL and qualified with a "U". Sample results greater than the CRQL and less than the action level were flagged with a "U". The "U" qualifier indicates that the sample result may partially or wholly reflect blank contamination. Methylene chloride results for Blind dup. sediment and Cistern sediment were replaced with the CRQL and qualified with a "U". Acetone results for Blind dup. sediment and Cistern sediment were qualified with a "U". Chloroform was detected in the Equipment blank at 20 ug/L. Sample qualification was not required, since chloroform was not detected in the samples.

Surrogate Recovery

Bromofluorobenzene recoveries of 123% and 124% exceeded the recovery criteria of 59% to 113% for Cistern sediment matrix spike (MS) and Cistern sediment matrix spike duplicate (MSD), respectively. Qualification

of sample data was not required since the remaining surrogate compounds for the MS/MSD samples and all the surrogates in the unspiked Cistern sediment sample met surrogate recovery criteria.

Matrix Spike Analysis

Matrix spike blanks and matrix spike/matrix spike duplicates were analyzed at the required frequency for both sediment and water samples. The matrix spike blank samples met recovery criteria for both sediment and water samples. The samples utilized for the water and sediment matrix spike/matrix spike duplicate analyses were East Pumphouse water and Cistern sediment, respectively. Toluene recoveries of 126% for the matrix spike (MS) and 131% for the matrix spike duplicate (MSD) exceeded the 76% to 125% spike recovery criteria for the water sample. Chlorobenzene recoveries of -42% for the MS and 146% for the MSD exceeded the percent recovery criteria of 60% to 133% for the sediment sample. Relative percent difference (RPD) criteria of less than 22% and less than 21% for 1,1-dichloroethene (26%) and chlorobenzene (362%) respectively, were exceeded in the sediment MS/MSD analyses. Qualification of sample data were not required , since the affected compounds were not detected in the samples.

Field Duplicate Analysis

Samples B-1D water and Cistern sediment were utilized for the water and sediment field duplicate analyses, respectively. Relative percent difference (RPD) criterion were met for the water duplicate analysis. The

25.5% difference between the sediment percent moisture analyses exceeded the percent difference criterion of less than one percent. The sediment duplicate results were calculated in mg/kg wet weight to evaluate duplicate RPD criterion. Relative percent difference criterion were met for the sediment duplicate analysis.

System Performance

Quarterly method detection limit (MDL) studies for water and sediment samples completed within three months of sample analysis were included. The MDL studies consisted of only four replicate analyses and did not meet the required seven replicate criterion. Also, the standard deviations were multiplied by three and not the Student's *t* value of 4.541 as specified in *Definition and Procedure for the Determination of the Method Detection Limit-Revision 1.11*, Code of Federal Regulations, 40 CFR, Part 136, Appendix B, when only four replicates are used for MDL determinations. When calculated using the correct value of 4.541, several MDLs were greater than the CRQLS. The CRQLs were raised to the appropriate MDL values in water samples for the following compounds: acetone (15 ug/L), 2-butanone (13 ug/L), 4-methyl-2-pentanone (14 ug/L), 2-hexanone (23 ug/L), and 1,1,2,2-tetrachloroethane (11 ug/L). Chloroethane CRQL values were raised based on the MDL values provided and the % moisture of the samples to 180 ug/kg dry weight and 130 ug/kg dry weight in Blind dup. sediment and Cistern sediment, respectively.

Documentation Completeness

Required forms were included in the report. The RRFs and average RRF for acetone were incorrectly reported on Form VI and Form VII for the water initial and continuing calibrations. The correct average RRFs were calculated to evaluate the data and are presented in the Calibration Section above. Amended forms for the water initial and continuing calibrations were received from the laboratory on 12/14/92.

Overall Data Assessment

The laboratory performed Superfund-CLP TCL volatile analyses according to the requirements outlined in NYSDEC ASP Method 91.1 and the QAPP for this investigation. Results for both water and sediment samples were estimated (UJ) for continuing calibration percent difference excursions. Due to method blank contamination, methylene chloride results for Blind dup. sediment and Cistern sediment were replaced with the CRQL and qualified with a "U" and acetone results for Blind dup. sediment and Cistern sediment were qualified with a "U". CRQLs were raised to the appropriate MDL values in water samples for the following compounds: acetone, 2-butanone, 4-methyl-2-pentanone, 2-hexanone, and 1,1,2,2-tetrachloroethane and CRQLs were raised to the MDLs for chloroethane in Blind dup. sediment and Cistern sediment, since the MDL values were greater than the CRQLs. Qualified sample results for volatile analyses are summarized on Table 7. Sample results detected below the CRQL, but greater than zero were also qualified as estimated (J). Overall, 9.6% of the data were qualified as estimated (UJ,J), and 100% of the data were determined to be usable for qualitative and quantitative purposes.

SECTION 5 - SUMMARY AND DATA USEABILITY

These analytical data generated for the Alcan Aluminum Corporation, Site #828005 in Pittsford, New York, were validated based on QA/QC criteria established by New York State Department of Environmental Conservation Superfund-Contract Laboratory Program (CLP) (NYSDEC Analytical Services Protocol, December 1991) and QA/QC criteria presented in the QAPP for this investigation. Validation procedures were based on CLP data validation guidelines developed by USEPA Region II. Rejected data, which are considered unusable for either qualitative or quantitative purposes, resulted when a major deficiency was noted in the data generation process. Minor deficiencies in the data generation process resulted in approximation of sample data. Approximation of a data point indicates uncertainty in the reported concentration of the chemical, but not its assigned identity. The conservative assumptions used in the development of conclusions made based on these analytical results allow for the quantitative use of approximated analytical data while still adhering to the project data quality objectives. This approach to the use of analytical data is consistent with the guidance presented in *U.S. EPA Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual (Part A), 540/1-891002*, December 1989.

Data quality objectives (DQOs) are quantitative and qualitative statements specifying the quality of the environmental data required to support the decision-making process. DQOs define the total uncertainty in the data that is acceptable. The DQO for this investigation is to keep the total uncertainty of the analytical data within an acceptable range so as not to hinder the intended use of the data. The

data collected during the course of this investigation will be used to answer the following questions:

1. Are volatile organics and metals present or absent? (Qualitative)

2. If volatile organics and metals are present, what are the types or classes? (Qualitative)

3. What quantities (concentrations) of volatile organics and metals are present? (Quantitative)

4. What are the environmental/public health risks? (Qualitative and quantitative)

5. What are the source pathway contaminant characteristics with respect to migration? (Qualitative and quantitative)

This section summarizes the analytical data in terms of its completeness and useability for site characterization. Data completeness is defined as the percentage of sample results that have been determined to be useable during the data validation process. Data completeness with respect to useability was calculated separately for inorganic and organic analyses for each round of sampling. A summary of specific QA/QC excursions that resulted in qualification of sample data is presented in Section 4.

5.01 Round I - June 3, 1992

One sediment and seven water samples collected on June 3, 1992 were analyzed for NYSDEC Superfund-CLP TAL metals (Cr, Cd, Fe, Hg, Pb, Na, Zn, and Ni), conventionals (Cr^{+6}, Cl, F, and SO_4), and volatiles. Approximately 54.9% of the inorganic sample results were qualified as estimated, 4.2% were rejected and approximately 95.8% of the sample results were determined to be useable for

qualitative and quantitative purposes. Iron results were rejected in B-9 water, B-13 water, Blind dup. water, Cistern water, Cistern filtered water, and East Pumphouse water and zinc results for B-13 water, Blind dup. water, Cistern filtered water, East Pumphouse water, Cistern water, and West Pumphouse water were approximated for ICP serial dilution percent difference excursions. Cistern filtered water and Cistern water sample results for SO_4 analysis were qualified with a "U" due to equipment blank contamination. Metal results, excluding Cr^{+6}, for the following samples; East Pumphouse water, West Pumphouse water, B-9 water, B-13 water, B-13 filtered water, and Blind dup. water, were estimated since the samples were not preserved to a pH less than two. Lead results for the sediment samples were estimated for ICP CRDL standard analysis percent recovery excursions. Sediment and water hexavalent chromium results were estimated for matrix spike analysis percent recovery excursions. Mercury results for the sediment samples were estimated for duplicate analysis relative percent difference excursions. All inorganic results for the sediment samples that were not previously qualified, were estimated since the percent solids were less than fifty percent. A summary of validated sample results for Round I inorganic analyses are presented on Tables 2 and 3.

Approximately 83.8% of the volatile organic data were qualified as estimated and 100% of the data were determined to be usable for qualitative and quantitative purposes. Volatile results for all water samples were estimated for continuing calibration percent difference excursions. Methylene chloride results for B-1D water, B-12D water, Blind dup. water, Blind dup. sediment Cistern sediment, and East Pumphouse water were replaced with the MDL and qualified with a "U" since methylene chloride was detected in the equipment blank. CRQLs for methylene

chloride, 1,2-dichloroethene, and tetrachloroethene were replaced with the MDLs, since the MDLs were greater than the CRQLs. Sample results detected below the CRQL, but greater than zero were also qualified as estimated. A summary of validated sample results for Round I volatile organic analyses are presented on Table 4.

5.02 Round II - August 10, 1992

The second round of sampling consisted of one sediment and eight water samples for volatile organic analyses and one sediment and six water samples for inorganic analyses collected on August 10, 1992. Approximately 20.8% of the inorganic sample results were qualified as estimated and 100% of the sample results were determined to be useable for qualitative and quantitative purposes. Three water sample results for hexavalent chromium were qualified with a "U" due to equipment blank contamination. The cadmium result for Blind dup. sediment was estimated for ICP CRDL standard analysis percent recovery excursions. Chloride and mercury results for the sediment samples were estimated for matrix spike recovery excursions. The lead result for Cistern water was estimated for furnace atomic absorption analytical spike recovery excursions. All inorganic results for the sediment samples that were not previously qualified, were estimated since the percent solids were less than fifty percent. A summary of validated sample results for Round II inorganic analyses are presented on Tables 5 and 6.

Approximately 9.6% of the volatile organic data were qualified as estimated and 100% of the data were determined to be usable for qualitative and quantitative purposes. Results for both water and sediment samples were estimated for

continuing calibration percent difference excursions. Due to method blank contamination, methylene chloride results for Blind dup. sediment and Cistern sediment were replaced with the CRQL and qualified with a "U" and acetone results for Blind dup. sediment and Cistern sediment were qualified with a "U". CRQLs were raised to the appropriate MDL values in water samples for the following compounds: acetone, 2-butanone, 4-methyl-2-pentanone, 2-hexanone, and 1,1,2,2-tetrachloroethane and CRQLs were raised to the MDLs for chloroethane in Blind dup. sediment and Cistern sediment, since the MDL values were greater than the CRQLs. Sample results detected below the CRQL, but greater than zero were also qualified as estimated (J). A summary of validated sample results for Round II volatile organic analyses are presented on Table 7.

Respectfully submitted,

O'BRIEN & GERE ENGINEERS, INC.

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TABLE 1

Initial and Continuing Calibration Data
Soil Volatile Analysis
June 10. 1992

Compound	RRF10	RRF20	RRF50	RRF100	RRF200	AVG RRF	%RSD	RRF50	%D
chloromethane	2.370	1.943	1.928	1.931	1.988	2.032	8.4	2.065	-1.6
bromomethane	2.310	2.310	2.509	2.642	3.092	2.573	11.2	2.652	-3.1
vinyl chloride	1.995	1.953	2.043	2.078	2.349	2.083	6.7	2.388	-14.6
chloroethane	1.335	1.303	1.342	1.339	1.372	1.338	1.7	1.507	-12.6
methylene chloride	2.990	2.378	2.327	2.297	2.257	2.450	11.2	2.633	-7.5
acetone	0.730	0.393	0.360	0.371	0.425	0.456	30.5	0.364	20.1
carbon disulfide	3.005	3.450	3.652	3.946	4.360	3.682	12.4	3.821	-3.8
1,1-dichloroethene	1.785	1.885	2.021	2.026	2.092	1.962	5.7	2.039	-3.9
1,1-dichloroethane	3.800	3.973	4.068	4.056	4.241	4.028	3.6	4.241	-5.3
1,2-dichloroethene	2.045	2.113	2.253	2.184	2.243	2.168	3.7	2.274	-4.9
chloroform	3.585	3.788	3.939	3.967	4.020	3.860	4.1	3.991	-3.4
1,2-dichloroethane	2.285	2.150	2.242	2.206	2.302	2.237	2.5	2.174	2.8
2-butanone	0.730	0.695	0.733	0.763	0.861	0.756	7.5	0.674	10.9
1,1,1-trichloroethane	0.490	0.505	0.514	0.548	0.576	0.527	5.9	0.561	-6.5
carbon tetrachloride	0.400	0.438	0.488	0.507	0.525	0.471	9.8	0.500	-6.1
bromodichloromethane	0.575	0.625	0.717	0.738	0.763	0.684	10.5	0.732	-7.1
1,2-dichloropropane	0.610	0.585	0.626	0.640	0.664	0.625	4.3	0.667	-6.7
cis-1,3-dichloropropene	0.550	0.590	0.681	0.771	0.843	0.687	15.9	0.741	-7.9
trichloroethene	0.605	0.605	0.635	0.626	0.630	0.620	2.0	0.641	-3.4
dibromochloromethane	0.480	0.523	0.620	0.654	0.679	0.591	13.0	0.597	-1.0
1,1,2-trichloroethane	0.455	0.470	0.491	0.479	0.490	0.477	2.8	0.485	-1.7
benzene	1.480	1.383	1.414	1.403	1.433	1.423	2.3	1.479	-4.0
trans-1,3-dichloropropene	0.360	0.388	0.476	0.538	0.598	0.472	18.9	0.508	-7.7
bromoform	0.285	0.328	0.411	0.462	0.481	0.393	19.3	0.377	4.1
4-methyl-2-pentanone	0.480	0.440	0.519	0.530	0.547	0.503	7.6	0.443	11.9
2-hexanone	0.295	0.273	0.339	0.350	0.394	0.330	12.9	0.287	13.0
tetrachloroethene	0.600	0.565	0.596	0.596	0.579	0.587	2.3	0.570	2.9
1,1,2,2-tetrachloroethane	0.670	0.668	0.754	0.763	0.777	0.726	6.5	0.684	5.8
toluene	0.975	0.925	0.971	0.965	0.954	0.958	1.9	0.969	-1.1
chlorobenzene	1.350	1.268	1.347	1.349	1.307	1.324	2.5	1.331	-0.5
ethylbenzene	0.615	0.603	0.643	0.650	0.641	0.630	2.9	0.640	-1.5
styrene	1.130	1.143	1.226	1.195	1.150	1.169	3.1	1.139	2.5
xylene (total)	0.775	0.745	0.722	0.712	0.707	0.732	3.4	0.741	-1.2
toluene-d8	1.745	1.523	1.495	1.499	1.421	1.536	7.1	1.527	0.6
bromofluorobenzene	0.915	0.748	0.709	0.706	0.648	0.745	12.2	0.782	-4.9
1,2-dichloroethane-d4	1.850	1.878	1.764	1.818	1.767	1.815	2.5	1.819	-0.2

TABLE 2

Validated Sample Results for Round I Metal Analyses

Focused Remedial Investigation
Alcan Aluminum Corporation Site #828005

Sample ID	Matrix	Analyte Concentration (ug/L)							
		Cadmium	Chromium	Iron	Lead	Mercury	Nickel	Sodium	Zinc
B-9	Water	3.8 UJ	3.9 UJ	897 R	3.0 UJ	0.20 UJ	30.6 UJ	10300 J	30.1 J
B-13	Filtered Water	3.8 UJ	3.9 UJ	11.2 UJ	3.0 UJ	0.20 UJ	30.6 UJ	238000 J	4.5 UJ
B-13 Blind dup.	Filtered Water	3.8 U	3.9 U	11.2 U	3.0 U	0.20 U	30.6 U	241000	4.5 U
B-13	Water	3.8 UJ	114 J	143000 R	29.6 J	0.20 UJ	101 J	220000 J	395 J
B-13 Blind dup.	Water	3.8 UJ	31.2 J	33600 R	7.8 J	0.20 UJ	30.6 UJ	207000 J	134 J
Cistern	Filtered Water	3.8 U	3.9 U	998 R	3.0 U	0.20 U	30.6 U	2450 J	48.6 J
Cistern	Water	3.8 U	214	4930 R	77.8	0.20 U	30.6 U	2350 J	673 J
East Pumphouse	Water	3.8 UJ	3.9 UJ	136 R	3.0 UJ	0.20 UJ	30.6 UJ	21400 J	52.3 J
West Pumphouse	Water	3.8 UJ	3.9 UJ	63.7 J	3.0 UJ	0.20 UJ	30.6 UJ	10900 J	106 J
Equipment Blank	Water	3.8 U	3.9 U	11.2 U	3.0 U	0.20 U	30.6 U	482 U	5.3 J
Cistern	Soil (1)	1.9 UJ	2410 J	29700 J	722 J	0.52 J	70.0 J	778 J	3110 J
Cistern Blind dup.	Soil (1)	2.1 UJ	1390 J	33400 J	516 J	0.27 UJ	66.3 J	480 J	2530 J

(1) Units are mg/kg dry weight.
U Not detected at the indicated quantitation limit.
UJ Not detected quantitation limits are estimated.
J Detected results are estimated.
R Detected results are rejected.

TABLE 3

Validated Sample Results for Round I Inorganic Analyses

Focused Remedial Investigation
Alcan Aluminum Corporation Site #828005

Sample ID	Matrix	Analyte Concentration (mg/L)			
		Cr+6	Cl	F	SO4
B-9	Water	0.01 UJ	7	0.14	31
B-13	Filtered Water	0.01 UJ	311	0.11	101
B-13 Blind dup.	Filtered Water	0.01 UJ	314	0.12	104
B-13	Water	0.01 UJ	314	0.13	116
B-13 Blind dup.	Water	0.01 UJ	334	0.13	124
Cistern	Filtered Water	0.01 UJ	1 U	0.07	7 U
Cistern	Water	0.01 UJ	2	0.10	6 U
East Pumphouse	Water	0.01 UJ	16	0.25	24
West Pumphouse	Water	0.01 UJ	7	0.27	34
Equipment Blank	Water	0.01 UJ	1 U	0.01 U	3
Cistern	Soil (1)	0.10 UJ	2940 J	0.56 J	ND
Cistern Blind dup.	Soil (1)	0.10 UJ	1380 J	0.47 J	ND

(1) Units are mg/kg dry weight.
U Not detected at the indicated quantitation limit.
UJ Not detected quantitation limits are estimated.
ND Not determined for this sample.

TABLE 4

Validated Sample Results for Round I Organic Analyses

Focused Remedial Investigation
Alcan Aluminum Corporation Site #828005

Compound	Analyte Concentration (ug/L)						
	B-1D Water	B-1D Blind dup. Water	B-9 Water	B-12D Water	B-13 Water	Cistern Water	East Pumphouse Water
chloromethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
bromomethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
vinyl chloride	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
chloroethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
methylene chloride	17 UJ	17 UJ	17 UJ	17 UJ	17 UJ	17 UJ	17 UJ
acetone	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
carbon disulfide	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,1-dichloroethene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,1-dichloroethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,2-dichloroethene	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ
chloroform	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,2-dichloroethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
2-butanone	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,1,1-trichloroethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
carbon tetrachloride	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
bromodichloromethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,2-dichloropropane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
cis-1,3-dichloropropene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
trichloroethene	13 J	12 J	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
dibromochloromethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
1,1,2-trichloroethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
benzene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
trans-1,3-dichloropropene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
bromoform	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
4-methyl-2-pentanone	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
2-hexanone	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
tetrachloroethene	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ
1,1,2,2-tetrachloroethane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
toluene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
chlorobenzene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
ethylbenzene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
styrene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
xylene (total)	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ

UJ Not detected quantitation limits are estimated.
J Detected results are estimated.

Validated Sample Results for Round I Organic Analyses

Focused Remedial Investigation
Alcan Aluminum Corporation Site #828005

Compound	Analyte Concentration (ug/L)				
	West Pumphouse Water	Equipment Blank Water	Trip Blank Water	Cistern Soil (1)	Cistern Blind dup. Soil (1)
chloromethane	10 UJ	10 UJ	10 UJ	24 U	28 U
bromomethane	10 UJ	10 UJ	10 UJ	24 U	28 U
vinyl chloride	10 UJ	10 UJ	10 UJ	24 U	28 U
chloroethane	10 UJ	10 UJ	10 UJ	24 U	28 U
methylene chloride	17 UJ	3 J	2 J	24 U	28 U
acetone	10 UJ	10 UJ	10 UJ	24 U	28 U
carbon disulfide	10 UJ	10 UJ	10 UJ	24 U	28 U
1,1-dichloroethene	10 UJ	10 UJ	10 UJ	24 U	28 U
1,1-dichloroethane	10 UJ	10 UJ	10 UJ	24 U	28 U
1,2-dichloroethene	12 UJ	12 UJ	12 UJ	24 U	28 U
chloroform	10 UJ	10 UJ	10 UJ	24 U	28 U
1,2-dichloroethane	10 UJ	10 UJ	10 UJ	24 U	28 U
2-butanone	10 UJ	10 UJ	10 UJ	24 U	28 U
1,1,1-trichloroethane	10 UJ	10 UJ	10 UJ	24 U	28 U
carbon tetrachloride	10 UJ	10 UJ	10 UJ	24 U	28 U
bromodichloromethane	10 UJ	10 UJ	10 UJ	24 U	28 U
1,2-dichloropropane	10 UJ	10 UJ	10 UJ	24 U	28 U
cis-1,3-dichloropropene	10 UJ	10 UJ	10 UJ	24 U	28 U
trichloroethene	10 UJ	10 UJ	10 UJ	24 U	28 U
dibromochloromethane	10 UJ	10 UJ	10 UJ	24 U	28 U
1,1,2-trichloroethane	10 UJ	10 UJ	10 UJ	24 U	28 U
benzene	10 UJ	10 UJ	10 UJ	24 U	28 U
trans-1,3-dichloropropene	10 UJ	10 UJ	10 UJ	24 U	28 U
bromoform	10 UJ	10 UJ	10 UJ	24 U	28 U
4-methyl-2-pentanone	10 UJ	10 UJ	10 UJ	24 U	28 U
2-hexanone	10 UJ	10 UJ	10 UJ	24 U	28 U
tetrachloroethene	12 UJ	12 UJ	12 UJ	24 U	28 U
1,1,2,2-tetrachloroethane	10 UJ	10 UJ	10 UJ	24 U	28 U
toluene	10 UJ	10 UJ	10 UJ	24 U	28 U
chlorobenzene	10 UJ	10 UJ	10 UJ	5 J	28 U
ethylbenzene	10 UJ	10 UJ	10 UJ	24 U	28 U
styrene	10 UJ	10 UJ	10 UJ	24 U	28 U
xylene (total)	10 UJ	10 UJ	10 UJ	24 U	7 J

(1) Units are mg/kg dry weight
U Not detected at the indicated quantitation limit.
UJ Not detected quantitation limits are estimated.
J Detected results are estimated.

TABLE 5

Validated Sample Results for Round II Metal Analyses

Focused Remedial Investigation
Alcan Aluminum Corporation Site #828005

Sample ID	Matrix	Analyte Concentration (ug/L)							
		Cadmium	Chromium	Iron	Lead	Mercury	Nickel	Sodium	Zinc
B-9	Water	5.0 U	6.0 U	1410	3.0 U	0.20 U	17.0 U	15000	16.4 J
B-13	Filtered Water	5.0 U	6.0 U	19.6 J	15.0 U	0.20 U	17.0 U	172000	15.8 J
B-13	Water	5.0 U	6.4 J	3820	15.0 U	0.20 U	17.0 U	169000	15.8 J
Cistern	Water	5.0 U	6.0 U	74.4 J	3.0 UJ	0.20 U	17.0 U	990 U	310
Cistern Blind dup.	Water	5.0 U	6.0 U	51.7 J	3.7	0.20 U	17.0 U	990 U	327
East Pumphouse	Water	5.0 U	6.0 U	204	3.0 U	0.20 U	17.0 U	19000	56.7
West Pumphouse	Water	5.0 U	6.0 U	935	3.0 U	0.20 U	17.0 U	10700	60.7
Equipment Blank	Water	5.0 U	6.0 U	11.0 U	3.0 U	0.20 U	17.0 U	990 U	4.0 U
Cistern	Soil (1)	2.0 UJ	1170 J	29700 J	412 J	0.27 J	62.9 J	540 J	2510 J
Cistern Blind dup.	Soil (1)	5.8 J	1640 J	32100 J	658 J	0.35 J	95.7 J	648 J	5520 J

(1) Units are mg/kg dry weight.
U Not detected at the indicated quantitation limit.
UJ Not detected quantitation limits are estimated.
J Detected results are estimated.
R Detected results are rejected.

TABLE 6

Validated Sample Results for Round II Inorganic Analyses

Focused Remedial Investigation
Alcan Aluminum Corporation Site #828005

Sample ID	Matrix	Analyte Concentration (mg/L)			
		Cr+6	Cl	F	SO4
B-9	Water	0.01 U	7	0.11	30
B-13	Filtered Water	0.01 U	241	0.10	51
B-13	Water	0.02 U	238	0.11	52
Cistern	Water	0.01 U	1 U	0.05	3 U
Cistern Blind dup.	Water	0.01 U	1 U	0.04	3 U
East Pumphouse	Water	0.01 U	10	0.21	16
West Pumphouse	Water	0.01 U	4	0.22	28
Equipment Blank	Water	0.01	1 U	0.01 U	3 U
Cistern	Soil (1)	0.86 J	61 J	0.44 J	6 UJ
Cistern Blind dup.	Soil (1)	1.19 J	208 J	1.00 J	6 UJ

(1) Units are mg/kg dry weight.
U Not detected at the indicated quantitation limit.
UJ Not detected quantitation limits are estimated.
ND Not determined for this sample.

TABLE 7

Validated Sample Results for Round II Organic Analyses

Focused Remedial Investigation
Alcan Aluminum Corporation Site #828005

Compound	Analyte Concentration (ug/L)						
	B-1D Water	B-1D Blind dup. Water	B-9 Water	B-10 Water	B-12D Water	B-13 Water	Cistern Water
chloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bromomethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
vinyl chloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U
chloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
methylene chloride	2 J	10 U	2 J	10 U	10 U	3 J	10 U
acetone	15 UJ	15 UJ	15 UJ	15 UJ	15 UJ	15 UJ	15 UJ
carbon disulfide	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-dichloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-dichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-dichloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
chloroform	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-dichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-butanone	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ	12 UJ
1,1,1-trichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
carbon tetrachloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bromodichloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-dichloropropane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trichloroethene	9 J	7 J	10 U	10 U	10 U	10 U	10 U
dibromochloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-trichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
benzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bromoform	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-methyl-2-pentanone	14 U	14 U	14 U	14 U	14 U	14 U	14 U
2-hexanone	23 U	23 U	23 U	23 U	23 U	23 U	23 U
tetrachloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-tetrachloroethane	11 U	11 U	11 U	11 U	11 U	11 U	11 U
toluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
chlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
ethylbenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
styrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
xylene (total)	10 U	10 U	10 U	10 U	10 U	10 U	10 U

U Not detected at the indicated quantitation limit.
UJ Not detected quantitation limits are estimated.
J Detected results are estimated.

TABLE 7

Validated Sample Results for Round II Organic Analyses

Focused Remedial Investigation
Alcan Aluminum Corporation Site #828005

Compound	Analyte Concentration (ug/L)					
	East Pumphouse Water	West Pumphouse Water	Equipment Blank Water	Trip Blank Water	Cistern Soil (1)	Cistern Blind dup. Soil (1)
chloromethane	10 U	10 U	10 U	10 U	100 UJ	140 UJ
bromomethane	10 UJ	10 UJ	10 U	10 U	100 U	140 U
vinyl chloride	10 U	10 U	10 U	10 U	100 UJ	140 UJ
chloroethane	10 U	10 U	10 U	10 U	130 U	180 U
methylene chloride	10 U	10 U	10 U	10 U	100 U	140 U
acetone	15 UJ	15 UJ	15 UJ	15 UJ	140 UJ	210 UJ
carbon disulfide	10 U	10 U	10 U	10 U	100 UJ	140 UJ
1,1-dichloroethene	10 U	10 U	10 U	10 U	100 U	140 U
1,1-dichloroethane	10 U	10 U	10 U	10 U	100 U	140 U
1,2-dichloroethene	10 U	10 U	10 U	10 U	100 U	140 U
chloroform	10 U	10 U	20	10 U	100 U	140 U
1,2-dichloroethane	10 U	10 U	10 U	10 U	100 U	140 U
2-butanone	12 UJ	12 UJ	12 UJ	12 UJ	100 U	140 U
1,1,1-trichloroethane	10 U	10 U	10 U	10 U	100 U	140 U
carbon tetrachloride	10 U	10 U	10 U	10 U	100 U	140 U
bromodichloromethane	10 U	10 U	10 U	10 U	100 U	140 U
1,2-dichloropropane	10 U	10 U	10 U	10 U	100 U	140 U
cis-1,3-dichloropropene	10 U	10 U	10 U	10 U	100 U	140 U
trichloroethene	10 U	10 U	10 U	10 U	100 U	140 U
dibromochloromethane	10 U	10 U	10 U	10 U	100 U	140 U
1,1,2-trichloroethane	10 U	10 U	10 U	10 U	100 U	140 U
benzene	10 U	10 U	10 U	10 U	100 U	140 U
trans-1,3-dichloropropene	10 U	10 U	10 U	10 U	100 U	140 U
bromoform	10 U	10 U	10 U	10 U	100 U	140 U
4-methyl-2-pentanone	14 U	14 U	14 U	14 U	100 U	140 U
2-hexanone	23 U	23 U	23 U	23 U	100 U	140 U
tetrachloroethene	10 U	10 U	10 U	10 U	100 U	140 U
1,1,2,2-tetrachloroethane	11 U	11 U	11 U	11 U	100 U	140 U
toluene	10 U	10 U	10 U	10 U	13 J	9 J
chlorobenzene	10 U	10 U	10 U	10 U	1300	750
ethylbenzene	10 U	10 U	10 U	10 U	39 J	22 J
styrene	10 U	10 U	10 U	10 U	100 U	140 U
xylene (total)	10 U	10 U	10 U	10 U	340	150

(1) Units are mg/kg dry weight
U Not detected at the indicated quantitation limit.
UJ Not detected quantitation limits are estimated.
J Detected results are estimated.

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

TRIPBLK01

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 10856 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1361604

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C8771

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. ____ Date Analyzed: 08/17/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

CISTERNS

Lab Name: NYTEST ENV INC Contract: 9219095

Lab Code: NYTEST Case No.: 13616 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 1361614

Sample wt/vol: 1.0 (g/mL) G Lab File ID: G8157

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. 51 Date Analyzed: 08/18/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	25.11	5100	J
2.		UNKNOWN CYCLOALKANE	25.37	3200	J
3.		UNKNOWN ALKANE	25.52	4900	J
4.		UNKNOWN ALKANE	26.24	7300	J
5.		UNKNOWN	26.72	9000	J
6.		UNKNOWN	27.56	5700	J
7.		UNKNOWN	27.76	12000	J
8.		UNKNOWN	28.72	13000	J
9.		UNKNOWN	29.41	6400	J
10.		UNKNOWN CYCLOALKANE	29.59	4100	J

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BLINDDUP

Lab Name: NYTEST ENV INC Contract: 9219095

Lab Code: NYTEST Case No.: 13616 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 1361617

Sample wt/vol: 1.0 (g/mL) G Lab File ID: G8156

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. 64 Date Analyzed: 08/18/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN ALKANE	25.12	2200	J
2.		UNKNOWN ALKANE	25.39	1200	J
3.		UNKNOWN ALKANE	25.54	1800	J
4.		UNKNONW	26.74	3300	J
5.		UNKNOWN	27.56	2100	J
6.		UNKNOWN	27.76	7600	J
7.		UNKNOWN ALKANE	28.69	7800	J
8.		UNKNOWN	28.94	1000	J
9.		UNKNOWN	29.39	2400	J
10.		UNKNOWN CYCLOALKANE	29.59	1600	J

APPENDIX A

ROUND I VOLATILE ORGANIC TIC RESULTS

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B-1D

Lab Name: NYTEST ENV INC Contract: 9219001

Lab Code: NYTEST Case No.: 12764 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1276415

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D0301

Level: (low/med) LOW Date Received: 06/04/92

% Moisture: not dec. ____ Date Analyzed: 06/11/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 1

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	76-13-1	FREON 113	14.04	9	JN

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B-DUP-W

Lab Name: NYTEST ENV INC Contract: 9219001

Lab Code: NYTEST Case No.: 12764 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1276409

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D0299

Level: (low/med) LOW Date Received: 06/04/92

% Moisture: not dec. ____ Date Analyzed: 06/11/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 76-13-1	FREON 113	14.04	10	JN

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B-9

Lab Name: NYTEST ENV INC Contract: 9219001

Lab Code: NYTEST Case No.: 12764 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1276406

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D0296

Level: (low/med) LOW Date Received: 06/04/92

% Moisture: not dec. ____ Date Analyzed: 06/11/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 1 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 76-13-1	FREON 113	14.20	11	JN

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B-12D

Lab Name: NYTEST ENV INC Contract: 9219001

Lab Code: NYTEST Case No.: 12764 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1276414

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D0300

Level: (low/med) LOW Date Received: 06/04/92

% Moisture: not dec. ____ Date Analyzed: 06/11/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 76-13-1	FREON 113	14.04	10	JN

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B-13

Lab Name: NYTEST ENV INC Contract: 9219001

Lab Code: NYTEST Case No.: 12764 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1276408

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D0298

Level: (low/med) LOW Date Received: 06/04/92

% Moisture: not dec. ____ Date Analyzed: 06/11/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 1

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	76-13-1	FREON 113	14.04	6	JN

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CISTERN-W

Lab Name: NYTEST ENV INC Contract: 9219001

Lab Code: NYTEST Case No.: 12764 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1276407

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D0297

Level: (low/med) LOW Date Received: 06/04/92

% Moisture: not dec. ____ Date Analyzed: 06/11/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 1

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	76-13-1	FREON 113	14.17	5	JN

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EAST-PH

Lab Name: NYTEST ENV INC Contract: 9219001

Lab Code: NYTEST Case No.: 12764 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1276401

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D0292

Level: (low/med) LOW Date Received: 06/04/92

% Moisture: not dec. ____ Date Analyzed: 06/11/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

WEST-PH

Lab Name: NYTEST ENV INC Contract: 9219001

Lab Code: NYTEST Case No.: 12764 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1276404

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D0295

Level: (low/med) LOW Date Received: 06/04/92

% Moisture: not dec. _____ Date Analyzed: 06/11/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 1

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 76-13-1	FREON 113	14.17	5	JN

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EQUIPBLK

Lab Name: NYTEST ENV INC Contract: 9219001

Lab Code: NYTEST Case No.: 12764 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1276405

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D0291

Level: (low/med) LOW Date Received: 06/04/92

% Moisture: not dec. ____ Date Analyzed: 06/11/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

TRIPBLK

Lab Name: NYTEST ENV INC Contract: 9219001

Lab Code: NYTEST Case No.: 12764 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1276416

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: D0290

Level: (low/med) LOW Date Received: 06/04/92

% Moisture: not dec. ____ Date Analyzed: 06/11/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CISTERN

Lab Name: NYTEST ENV INC Contract: 9219001

Lab Code: NYTEST Case No.: 12764 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 1276410

Sample wt/vol: 5.0 (g/mL) G Lab File ID: D0272

Level: (low/med) LOW Date Received: 06/04/92

% Moisture: not dec. 59 Date Analyzed: 06/10/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	76-13-1	FREON 113	14.20	21	JN
2.		UNKNOWN	34.04	15	J
3.		UNKNOWN	36.11	60	J

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B-DUPS

Lab Name: NYTEST ENV INC Contract: 9219001

Lab Code: NYTEST Case No.: 12764 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 1276413

Sample wt/vol: 5.0 (g/mL) G Lab File ID: 00275

Level: (low/med) LOW Date Received: 06/04/92

% Moisture: not dec. 64 Date Analyzed: 06/10/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 8 CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	76-13-1	FREON 113	14.20	26	JN
2.		UNKNOWN CYCLOALKANE	27.61	24	J
3.		UNKNOWN	29.61	15	J
4.		UNKNOWN	30.84	31	J
5.		UNKNOWN	33.07	16	J
6.		UNKNOWN	34.04	44	J
7.		UNKNOWN	35.04	19	J
8.		UNKNOWN	36.11	120	J

APPENDIX B

ROUND II VOLATILE ORGANIC TIC RESULTS

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B-1D

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 10856 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1361603

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C8778

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. ____ Date Analyzed: 08/17/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BLINDDUP

Lab Name: NYTEST ENV INC Contract:

Lab Code: NYTEST Case No.: 10856 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 1361607

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C8780

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. Date Analyzed: 08/17/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 2

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	5.43	6	J
2.		UNKNOWN	31.31	9	J

1E

EPA SAMPLE NO.

B-9

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 10856 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1361605

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C8779

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. ____ Date Analyzed: 08/17/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B-10

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 10856 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1361602

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C8775

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. ____ Date Analyzed: 08/17/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

B-12D

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 10856 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1361601

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C8774

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. ____ Date Analyzed: 08/17/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

B-13

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 10856 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1361613

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C8777

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. ____ Date Analyzed: 08/17/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

CISTERNW

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 10856 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1361612

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C8776

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. ____ Date Analyzed: 08/17/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

WESTPUMP

Lab Name: NYTEST ENV INC Contract:

Lab Code: NYTEST Case No.: 10856 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 1361608

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C8794

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. Date Analyzed: 08/18/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

EASTPUMP

Lab Name: NYTEST ENV INC Contract:

Lab Code: NYTEST Case No.: 10856 SAS No.: SDG No.:

Matrix: (soil/water) WATER Lab Sample ID: 1361609

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C8793

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. Date Analyzed: 08/18/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EQUIPBLK

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 10856 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1361606

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C8772

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. ____ Date Analyzed: 08/17/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 3

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

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		CHLOROPROPENE ISOMER	8.30	24	J
2.		CHLOROPROPENE ISOMER	8.92	37	J
3.		CHLOEOPROPENE ISOMER	10.60	41	J

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

TRIPBLK01

Lab Name: NYTEST ENV INC Contract: _____

Lab Code: NYTEST Case No.: 10856 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 1361604

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: C8771

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. ____ Date Analyzed: 08/17/92

GC Column: PACK ID: 2.00 (mm) Dilution Factor: 1.0

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

Number TICs found: 0

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

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

CISTERNS

Lab Name: NYTEST ENV INC Contract: 9219095

Lab Code: NYTEST Case No.: 13616 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 1361614

Sample wt/vol: 1.0 (g/mL) G Lab File ID: G8157

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. 51 Date Analyzed: 08/18/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN	25.11	5100	J
2.		UNKNOWN CYCLOALKANE	25.37	3200	J
3.		UNKNOWN ALKANE	25.52	4900	J
4.		UNKNOWN ALKANE	26.24	7300	J
5.		UNKNOWN	26.72	9000	J
6.		UNKNOWN	27.56	5700	J
7.		UNKNOWN	27.76	12000	J
8.		UNKNOWN	28.72	13000	J
9.		UNKNOWN	29.41	6400	J
10.		UNKNOWN CYCLOALKANE	29.59	4100	J

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BLINDDUP

Lab Name: NYTEST ENV INC Contract: 9219095

Lab Code: NYTEST Case No.: 13616 SAS No.: _____ SDG No.: _____

Matrix: (soil/water) SOIL Lab Sample ID: 1361617

Sample wt/vol: 1.0 (g/mL) G Lab File ID: G8156

Level: (low/med) LOW Date Received: 08/11/92

% Moisture: not dec. 64 Date Analyzed: 08/18/92

GC Column: CAP ID: 0.530 (mm) Dilution Factor: 1.0

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

Number TICs found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

	CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.		UNKNOWN ALKANE	25.12	2200	J
2.		UNKNOWN ALKANE	25.39	1200	J
3.		UNKNOWN ALKANE	25.54	1800	J
4.		UNKNONW	26.74	3300	J
5.		UNKNOWN	27.56	2100	J
6.		UNKNOWN	27.76	7600	J
7.		UNKNOWN ALKANE	28.69	7800	J
8.		UNKNOWN	28.94	1000	J
9.		UNKNOWN	29.39	2400	J
10.		UNKNOWN CYCLOALKANE	29.59	1600	J

APPENDIX C
Laboratory Chain of Custody Forms

O'BRIEN & GERE ENGINEERS, INC.

Job No. 305 7.0-

Sheet 1 of 2

Office: SYRACUSE, NY
Address: 5000 BRITTONFIELD PKWY
Phone: (315)-437-6100

CHAIN OF CUSTODY

CLIENT: JAHL/ALCAN SITE
LOCATION: PITTSFORD, NY

COLLECTED BY: (Signature) JAMES A. MOORE

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
B-12D	8/10/92	1110	WATER	GRAB	2	TCL VOLATILES
B-[redacted] 10 JAM	8/10/92	1220	WATER	GRAB	2	TCL VOLATILES
B-9	8/10/92	[redacted] JAM	WATER	GRAB	2	TCL VOLATILES
EQUIPMENT BLANK	8/10/92	1615	WATER	GRAB	2	TCL VOLATILES
B-1D	8/10/92	1555	WATER	GRAB	2	TCL VOLATILES
BLIND DUPLICATE	8/10/92	—	WATER	GRAB	2	TCL VOLATILES
WEST-PUMPHOUSE	8/10/92	1615	WATER	GRAB	2	TCL VOLATILES
EAST-PUMPHOUSE	8/10/92	1645	WATER	GRAB	2	TCL VOLATILES
EAST-PUMPHOUSE (MS&MSD)	8/10/92	1645	WATER	GRAB	4	TCL VOLATILES
CISTERN	8/10/92	1715	WATER	GRAB	2	TCL VOLATILES
CISTERN	8/10/92	1730	SOIL	GRAB	2	TCL VOLATILES
CISTERN (MS&MSD)	8/10/92	1730	SOIL	GRAB	2	TCL VOLATILES (NOTE 1 EACH)
BLIND DUPLICATE	8/10/92	—	SOIL	GRAB	2	TCL VOLATILES
TRIP BLANK (LAB)	—	—	WATER	GRAB	2	TCL VOLATILES
JAM B-13	8/10/92	1310	WATER	GRAB	2	TCL VOLATILES

[1] Matrix = water, wastewater, air, sludge, sediment, etc.
[2] Type = grab, composite

Relinquished by:	Date	Time	Received by:	Date	Time
of: O'BRIEN & GERE ENGINEERS INC.	8/10/92	1900	of:		
Relinquished by:			Received by:		
of:			of:		
Relinquished by:			Received by:		
of:			of:		
Use this space if shipped via courier (e.g. Fed Ex) Relinquished by:			Courier Name:		
of: FEDERAL EXPRESS	8/10/92	1900	*Attach delivery/courier receipt to Chain of Custody		
Relinquished by:			Received by:		
of:			of:		

O'BRIEN & GERE ENGINEERS, INC.

Job No. 3057.032

Sheet 2 of 2

Office: SYRACUSE, NY

Address: 5000 BRITTONFIELD PKWY

Phone: (315) - 437-6100

CHAIN OF CUSTODY

CLIENT: JAEL / ALCAN SITE

LOCATION: PATTSFORD, NY

COLLECTED BY: (Signature) A. Moore JAMES A. MOORE

SAMPLE DESCRIPTION	Date	Time	Sample Matrix[1]	Sample Type[2]	No. of Containers	ANALYSIS REQUESTED
B-18	9/10/92	1310	WATER	GRAB	2	Cr+6, Cr, Cd, Fe, Hg, Pb, Ni, Al, Cl, SO4, F, Zn
B-13	9/10/92	1310	FILTERED WATER	GRAB	2	
B-9	9/10/92	1445	WATER	GRAB	2	
EQUIPMENT BLANK	9/10/92	1515	WATER	GRAB	2	
WEST - PUMP HOUSE	9/10/92	1615	WATER	GRAB	2	
EAST - PUMPHOUSE	9/10/92	1645	WATER	GRAB	2	
EAST - PUMPHOUSE (MS & MSD)	9/10/92	1645	WATER	GRAB	4	
CISTERN	9/10/92	1715	WATER	GRAB	2	
CISTERN	9/10/92	1730	SOIL	GRAB	1	
CISTERN (MS & MSD)	9/10/92	1730	SOIL	GRAB	2	
BLIND DUP	9/10/92	—	SOIL	GRAB	1	
BLIND DUP	9/10/92	—	WATER	GRAB	2	

[1] Matrix = water, wastewater, air, sludge, sediment, etc.
[2] Type = grab, composite

	Date	Time		Date	Time
Relinquished by: A. Moore			Received by:		
of: O'BRIEN & GERE ENGINEERS, INC.	9/10/92		of:		
Relinquished by:			Received by:		
of:			of:		
Relinquished by:			Received by:		
of:			of:		
Use this space if shipped via courier (e.g., Fed Ex) Relinquished by:			Courier Name:		
of: FEDERAL EXPRESS	9/14/92		*Attach delivery/courier receipt to Chain of Custody		
Relinquished by:			Received by:		
of:			of:		

APPENDIX D
Wildlife Species Potentially Present at the Site

SUCCESSIONAL NORTHERN HARDWOODS

MAMMALS

- Opossum
- Masked Shrew
- Smoky Shrew
- Least Shrew
- Shorttail Shrew
- Starnose Mole
- Eastern Mole
- Hairytail Mole
- Little Brown Myotis
- Keen Myotis
- Indiana Myotis
- Silver-haired Bat
- Eastern Pipistrelle
- Big Brown Bat
- Red Bat
- Hoary Bat
- Black Bear
- Raccoon
- Fisher
- Shorttail Weasel
- Longtail Weasel
- Mink
- River Otter
- Striped Skunk
- Coyote
- Red Fox
- Gray Fox
- Bobcat
- Woodchuck
- Eastern Chipmunk
- Gray Squirrel
- Fox Squirrel
- Red Squirrel
- Southern Flying Squirrel
- Beaver
- Deer Mouse
- White-footed Mouse
- Southern Bog Lemming
- Boreal Red-backed Vole
- Meadow Vole
- Pine Vole
- Meadow Jumping Mouse
- Woodland Jumping Mouse
- Porcupine
- Snowshoe Hare
- Eastern Cottontail
- New England Cottontail
- White-tailed Deer

BIRDS

- Great Blue Heron
- Green Heron
- Little Blue Heron
- Great Egret
- Snowy Egret
- Louisiana Heron
- Black-crowned Night Heron
- Yellow-crowned Night Heron
- Mallard
- American Black Duck
- Wood Duck
- Common Merganser
- Hooded Merganser
- Turkey Vulture
- Northern Goshawk
- Cooper's Hawk
- Red-tailed Hawk
- Red-shouldered Hawk
- Broad-winged Hawk
- Bald Eagle
- Osprey
- Peregrine Falcon
- American Kestrel
- Ruffed Grouse
- Common Bobwhite
- American Woodcock
- Mourning Dove
- Yellow-billed Cuckoo
- Black-billed Cuckoo
- Barn Owl
- Common Screech Owl
- Great Horned Owl
- Barred Owl
- Long-eared Owl
- Saw-whet Owl
- Whip-poor-will
- Common Nighthawk
- Ruby-throated Hummingbird
- Common Flicker
- Pileated Woodpecker
- Red-bellied Woodpecker
- Red-headed Woodpecker
- Yellow-bellied Sapsucker
- Hairy Woodpecker
- Downy Woodpecker
- Eastern Kingbird
- Great Crested Flycatcher
- Eastern Phoebe
- Acadian Flycatcher
- Willow Flycatcher
- Alder Flycatcher
- Least Flycatcher
- Eastern Pewee
- Tree Swallow
- Blue Jay
- Northern Raven
- American Crow
- Black-capped Chickadee
- Tufted Titmouse
- White-breasted Nuthatch
- Brown Creeper
- House Wren
- Winter Wren
- Carolina Wren
- Northern Mockingbird
- Gray Catbird
- Brown Thrasher
- American Robin
- Wood Thrush
- Veery
- Eastern Bluebird
- Blue-gray Gnatcatcher
- Cedar Waxwing
- Loggerhead Shrike
- White-eyed Vireo
- Yellow-throated Vireo
- Red-eyed Vireo
- Warbling Vireo
- Black and White Warbler
- Prothonotary Warbler
- Worm-eating Warbler
- Golden-winged Warbler
- Blue-winged Warbler
- Nashville Warbler
- Yellow Warbler
- Cerulean Warbler
- Chestnut-sided Warbler
- Prairie Warbler
- Ovenbird
- Northern Waterthrush
- Louisiana Waterthrush
- Mourning Warbler
- Kentucky Warbler
- Common Yellowthroat
- Yellow Breasted Chat
- Hooded Warbler
- Canada Warbler
- American Redstart
- Orchard Oriole
- Northern Oriole
- Rusty Blackbird
- Common Grackle
- Brown-headed Cowbird
- Scarlet Tanager
- Northern Cardinal
- Rose-breasted Grosbeak
- Indigo Bunting
- American Goldfinch
- Rufous-sided Towhee
- Chipping Sparrow
- Field Sparrow
- White-throated Sparrow
- Swamp Sparrow
- Song Sparrow

RED MAPLE – AMERICAN ELM (CONT'D)

REPTILES

Common Snapping Turtle
Bog Turtle
Wood Turtle
Eastern Box Turtle
Eastern Painted Turtle
Five-lined Skink
Coal Skink
Northern Water Snake
Queen Snake
Northern Brown Snake
Northern Redbelly Snake
Eastern Garter Snake
Shorthead Garter Snake
Eastern Ribbon Snake
Eastern Hognose Snake
Northern Ringneck Snake
Eastern Worm Snake
Northern Black Racer
Eastern Smooth Green Sna
Black Rat Snake
Eastern Milk Snake
Northern Copperhead
Eastern Massasauga
Timber Rattlesnake

AMPHIBIANS

Marbled Salamander
Jefferson Salamander
Spotted Salamander
Eastern Tiger Salamander
Red-spotted Newt
Northern Dusky Salamander
Mountain Dusky Salamander
Redback Salamander
Slimy Salamander
Four-toed Salamander
Northern Spring Salamander
Northern Red Salamander
Northern Two-lined Salamander
American Toad
Fowler's Toad
Northern Spring Peeper
Gray Treefrog
Western Chorus Frog
Bullfrog
Green Frog
Mink Frog
Wood Frog
Northern Leopard Frog
Southern Leopard Frog
Pickerel Frog

Source: Chambers, 1983.

SUCCESSIONAL SOUTHERN HARDWOODS

ASPEN

MAMMALS

Masked Shrew
Smoky Shrew
Northern Water Shrew
Least Shrew
Shorttail Shrew
Hairytail Mole
Little Brown Myotis
Keen Myotis
Small-footed Myotis
Silver-haired Bat
Eastern Pipistrelle
Big Brown Bat
Red Bat
Hoary Bat
Black Bear
Raccoon
Fisher
Shorttail Weasel
Longtail Weasel
Mink
River Otter
Striped Skunk
Coyote
Red Fox
Gray Fox
Bobcat
Woodchuck
Eastern Chipmunk
Red Squirrel
Southern Flying Squirrel
Northern Flying Squirrel
Beaver
Deer Mouse
White-footed Mouse
Southern Bog Lemming
Boreal Red-backed Vole
Meadow Vole
Pine Vole
Meadow Jumping Mouse
Woodland Jumping Mouse
Porcupine
Snowshoe Hare
Eastern Cottontail
New England Cottontail
White-tailed Deer

BIRDS

Great Blue Heron
Green Heron
Little Blue Heron
Great Egret
Snowy Egret
Louisiana Heron
Black-crowned Night Heron
Yellow-crowned Night Heron
Mallard
American Black Duck
Wood Duck
Common Merganser
Hooded Merganser
Northern Goshawk
Cooper's Hawk
Red-tailed Hawk
Red-shouldered Hawk
Broad-winged Hawk
Bald Eagle
Osprey
Peregrine Falcon
American Kestrel
Ruffed Grouse
Common Bobwhite
American Woodcock
Mourning Dove
Yellow-billed Cuckoo
Black-billed Cuckoo
Barn Owl
Common Screech Owl
Great Horned Owl
Long-eared Owl
Saw-whet Owl
Whip-poor-will
Common Nighthawk
Common Flicker
Pileated Woodpecker
Red-bellied Woodpecker
Red-headed Woodpecker
Yellow-bellied Sapsucker
Hairy Woodpecker
Downy Woodpecker
Eastern Kingbird
Great Crested Flycatcher
Eastern Phoebe
Acadian Flycatcher
Willow Flycatcher
Alder Flycatcher
Least Flycatcher
Eastern Pewee
Tree Swallow
Blue Jay
American Crow
Black-capped Chickadee
White-breasted Nuthatch
Brown Creeper
House Wren
Winter Wren
Carolina Wren
Gray Catbird
Brown Thrasher
American Robin
Wood Thrush
Hermit Thrush
Swainson's Thrush
Veery
Eastern Bluebird
Cedar Waxwing
Loggerhead Shrike
White-eyed Vireo
Yellow-throated Vireo
Red-eyed Vireo
Philadelphia Vireo
Warbling Vireo
Black and White Warbler
Worm-eating Warbler
Golden-winged Warbler
Blue-Winged Warbler
Tennessee Warbler
Nashville Warbler
Yellow Warbler
Chestnut-sided Warbler
Prairie Warbler
Ovenbird
Mourning Warbler
Common Yellowthroat
Yellow Breasted Chat
Canada Warbler
American Redstart
Common Grackle
Brown-headed Cowbird
Scarlet Tanager
Northern Cardinal
Rose-breasted Grosbeak
Indigo Bunting
American Goldfinch
Rufous-sided Towhee
Chipping Sparrow
Field Sparrow
White-throated Sparrow
Swamp Sparrow
Song Sparrow

REPTILES

Common Snapping Turtle	Northern Water Snake	Northern Black Racer
Bog Turtle	Northern Brown Snake	Eastern Smooth Green Snake
Wood Turtle	Northern Redbelly Snake	Black Rat Snake
Eastern Box Turtle	Eastern Garter Snake	Eastern Milk Snake
Five-lined Skink	Northern Ringneck Snake	Northern Copperhead
Coal Skink	Eastern Worm Snake	Eastern Massasauga

AMPHIBIANS

Jefferson Salamander	American Toad	Wood Frog
Redback Salamander		

Source: Chambers, 1983.

FRESHWATER STREAM HABITATS

Fishes
Alligator Gar
American Eel
American Shad
Apache Trout
Atlantic Salmon
Black Crappie
Bluegill
Brook Silverside
Brook Stickleback
Brook Trout
Brown Trout
Chain Pickerel
Channel Catfish
Chestnut Lamprey
Common Carp
Common Shiner
Cutthroat Trout
Desert Pupfish
Fathead Minnow
Gizzard Shad
Golden Shiner
Grass Carp
Green Sunfish
Johnny Darter
Lake Trout
Longear Sunfish
Mosquitofish
Mottled Sculpin
Mozambique Tilapia
Muskellunge
Northern Pike
Paddlefish
Pirate Perch
Plains Killifish
Pugnose Minnow
Pumpkinseed
Quillback
Rainbow Trout
Rio Grande Cichlid
Rock Bass
Sauger
Shovelnose Sturgeon
Smallmouth Bass
Smallmouth Buffalo
Snail Darter
Sockeye Salmon
Speckled Chub
Spotted Bass
Spotted Sucker
Starhead Topminnow
Stippled Darter
Striped Bass
Swamp Darter
Tadpole Madtom
Taillight Shiner
Walleye
White Bass
White Perch
White Sucker
Yellow Bullhead
Yellow Perch

Amphibians
Black-spotted Newt
Black Toad
Bullfrog
California Newt
Dusky Salamander
Hellbender
Many-lined Salamander
Mud Salamander

Mudpuppy
Northern Cricket Frog
Pacific Giant Salamander
Pickerel Frog
Red Salamander
Rio Grande Leopard Frog
River Frog
Southern Cricket Frog

Tiger Salamander

Two-lined Salamander

Reptiles
Brown Water Snake
Cottonmouth

Eastern Mud Turtle
Flattened Musk Turtle
Florida Redbelly Turtle
Glossy Crayfish Snake
Map Turtle
Mud Turtle
Northern Water Snake
Painted Turtle

Queen Snake
Razorback Musk Turtle
Slider
Spiny Softshell
Spotted Turtle
Stinkpot

Wildflowers, Ferns, and Grasses
American Lotus
Arrowleaf Groundsel
Cardinal Flower
Checkermallow
Duckweed
Fire Flags
Heartleaved Bittercress
Monkey flower
Mountain Bluebell
Mountain Globemallow
Red Osier Dogwood
Seep Spring
Monkeyflowers
True Forget-me-not
Turtlehead
Umbrella Plant
Water Buttercup
Water Hyacinth
Water Willow
Watercress
Wild Rice
Wood Nettle
Yellow Pond Lily

Insects and Spiders
Betten's Silverstreak Caddisfly
Black Fly
Brown Darner
California Acroneuria
Common Backswimmer
Common Water Strider
Comstock's Net-winged Midge
Crane Fly
Eastern Dobsonfly

Elisa Skimmer
Fishfly
Giant Water Scavenger Beetle
Green Darner
Kirby's Backswimmer
Large Whirligig Beetle
Marsh Fly
Purplish-blue Cricket Hunter
Red Freshwater Mite
Short-stalked Damselfly
Six-spotted Fishing Spider
Small Mayfly
Swamp Milkweed Leaf Beetle
Swift Long-winged Skimmer
Twelve-spot Skimmer
Waterlily Leaf Beetle
Willow Borer
Willow Leaf Beetle

Butterflies and Moths
Cerisy's Sphinx
Least Skipperling
Milbert's Tortoiseshell
Viceroy
Western Tiger Swallowtail
Zebra Swallowtail

Trees
Baldcypress
Black Willow
Dahoon
Possumhaw
Red Alder
Red Maple
Silver Maple
Swamp Cottonwood
Sycamore
Water Tupelo

Birds
American Black Duck
American Dipper
Bald Eagle
Bank Swallow
Belted Kingfisher
Black Crowned Night-Heron
Bonaparte's Gull
Canada Goose
Caspian Tern
Common Loon
Common Merganser
Common Tern
Common Yellowthroat
Double-crested Cormorant
Eastern Phoebe
Great Blue Heron
Green-backed Heron
Harlequin Duck
Herring Gull
Hooded Merganser
Lesser Scaup
Louisiana Waterthrush
Mute Swan
Northern Rough-wing Swallow
Osprey
Ring-billed Gull
Ring-necked Duck
Semipalmated Sandpiper
Spotted Sandpiper
White-Fronted Goose

Mammals
Beaver
Mountain Beaver
Pacific Shrew
Pacific Water Shrew
River Otter
Smoky Shrew
Star-nosed Mole
Water Shrew
Water Vole

Source: Niering, 1985.

PINE-NORTHERN HARDWOOD FOREST

WHITE PINE - NORTHERN HARDWOOD

MAMMALS

Masked Shrew
Smoky Shrew
Least Shrew
Shorttail Shrew
Starnose Mole
Hairytail Mole
Little Brown Myotis
Keen Myotis
Silver-haired Bat
Eastern Pipistrelle
Big Brown Bat
Red Bat
Hoary Bat
Black Bear
Raccoon
Marten
Fisher
Shorttail Weasel
Longtail Weasel
Mink
River Otter
Striped Skunk
Coyote
Red Fox
Gray Fox
Bobcat
Woodchuck
Eastern Chipmunk
Gray Squirrel
Red Squirrel
Southern Flying Squirrel
Deer Mouse
White-footed Mouse
Southern Bog Lemming
Boreal Red-backed Vole
Meadow Vole
Yellownose Vole
Pine Vole
Meadow Jumping Mouse
Woodland Jumping Mouse
Porcupine
Snowshoe Hare
Eastern Cottontail
New England Cottontail
White-tailed Deer

BIRDS

Great Blue Heron
Green Heron
Little Blue Heron
Great Egret
Snowy Egret
Louisiana Heron
Black-crowned Night Heron
Yellow-crowned Night Heron
Mallard
American Black Duck
Wood Duck
Common Merganser
Hooded Merganser
Turkey Vulture
Northern Goshawk
Sharp-shinned Hawk
Cooper's Hawk
Red-tailed Hawk
Red-shouldered Hawk
Broad-winged Hawk
Bald Eagle
Osprey
Peregrine Falcon
American Kestrel
Ruffed Grouse
Common Bobwhite
Mourning Dove
Yellow-billed Cuckoo
Barn Owl
Common Screech Owl
Great Horned Owl
Barred Owl
Long-eared Owl
Saw-whet Owl
Whip-poor-will
Chuck-will's-widow
Common Nighthawk
Ruby-throated Hummingbird
Common Flicker
Pileated Woodpecker
Red-bellied Woodpecker
Red-headed Woodpecker
Yellow-bellied sapsucker
Hairy Woodpecker
Downy Woodpecker
Eastern Kingbird
Great Crested Flycatcher
Eastern Phoebe
Acadian Flycatcher
Willow Flycatcher
Alder Flycatcher
Least Flycatcher
Eastern Pewee
Tree Swallow
Blue Jay
Northern Raven
American Crow
Black-capped Chickadee
Tufted Titmouse
White-breasted Nuthatch
Red-breasted Nuthatch
Brown Creeper
House Wren
Gray Catbird
Brown Thrasher
American Robin
Wood Thrush
Hermit Thrush
Eastern Bluebird
Blue-gray Gnatcatcher
Cedar Waxwing
Loggerhead Shrike
White-eyed Vireo
Yellow-throated Vireo
Solitary Vireo
Red-eyed Vireo
Warbling Vireo
Black and White Warbler
Worm-eating Warbler
Golden-winged Warbler
Blue-winged Warbler
Tennessee Warbler
Nashville Warbler
Northern Parula Warbler
Yellow Warbler
Black-throated Green Warbler
Cerulean Warbler
Chestnut-sided Warbler
Pine Warbler
Prairie Warbler
Ovenbird
Northern Waterthrush
Mourning Warbler
Kentucky Warbler
Common Yellowthroat
Yellow Breasted Chat
Hooded Warbler
Canada Warbler
American Redstart
Northern Oriole
Common Grackle
Brown-headed Cowbird
Northern Cardinal
Rose-breasted Grosbeak
Indigo Bunting
Purple Finch
American Goldfinch
Rufous-sided Towhee
Northern Junco
Chipping Sparrow
Field Sparrow
White-throated Sparrow
Swamp Sparrow

SUCCESSIONAL OLD FIELD

EARLY STAGE

MAMMALS
Meadow Vole
Eastern Cottontail
New England Cottontail

BIRDS
Ruffed Grouse
Bobwhite Quail
American Woodcock
Mourning Dove
Yellow-billed Cuckoo
Black-billed Cuckoo
Eastern Kingbird
Eastern Phoebe
Willow Flycatcher
Alder Flycatcher
Northern Mockingbird
Gray Catbird
Brown Thrasher
Eastern Bluebird
Cedar Waxwing
Loggerhead Shrike
White-eyed Vireo
Golden-winged Warbler
Blue-winged Warbler
Tennessee Warbler
Nashville Warbler
Yellow Warbler
Magnolia Warbler
Bay-breasted Warbler
Chestnut-sided Warbler
Prairie Warbler
Mourning Warbler
Common Yellowthroat
Yellow Breasted Chat
Northern Cardinal
Indigo Bunting
American Goldfinch
Rufous-sided Towhee
Northern Junco
Chipping Sparrow
Field Sparrow
White-throated Sparrow
Swamp Sparrow
Song Sparrow

REPTILES
Bog Turtle

AMPHIBIANS
Gray Treefrog

Source: Chambers, 1983.

REPTILES

Common Snapping Turtle
Wood Turtle
Eastern Box Turtle
Five-lined Skink
Coal Skink
Northern Water Snake
Northern Brown Snake
Northern Redbelly Snake
Eastern Garter Snake
Eastern Ribbon Snake
Northern Ringneck Snake
Northern Black Racer
Eastern Smooth Green Snake
Black Rat Snake
Eastern Milk Snake
Timber Rattlesnake

AMPHIBIANS

Jefferson Salamander
Blue-spotted Salamander
Spotted Salamander
Eastern Tiger Salamander
Red-spotted Newt
Northern Dusky Salamander
Mountain Dusky Salamander
Redback Salamander
Slimy Salamander
Four-toed Salamander
Northern Spring Salamander
Northern Red Salamander
Northern Two-Lined Salamander
American Toad
Bullfrog
Green Frog
Mink Frog
Wood Frog
Northern Leopard Frog
Southern Leopard Frog
Pickerel Frog

Source: Chambers, 1983.

APPENDIX E
Response to NYSDEC Comments on Focused RI Report

APPENDIX E
RESPONSE TO NYSDEC COMMENTS ON FOCUSED RI REPORT

I GENERAL COMMENTS

1-3. See May 5, 1993 letter.

4. Comment noted. Addendum will be signed by a licensed engineer.

5. As previously agreed, the RI Addendum includes an updated evaluation of the on-site buildings and structures based on the second round of data.

II. SPECIFIC COMMENTS

6. Comment noted.

7. See response to general comment #1.

8. See response to general comment #3.

9. Comment noted and accepted.

10. Comment noted. The impoundments were subsequently graded, not covered during the course of the closure.

11. Comment noted and accepted.

12. Comment noted and accepted.

13. See response to general comment #2.

14. See response to general comment #1.

15. Comment noted. Surface water occassionally has been observed in the ditch which forms the boundary between the Alcan site and the Sigismondi Landfill. Surface water is also present in the unnamed tributary to Irondequoit Creek.

16. The available data does not indicate that B-2S is seasonally downgradient of the former impoundments. Rather B-2S is usually at a higher ground water elevation than other shallow wells. The term "naturally occurring" should be replaced by the term "upgradient."

    The ground water elevation data collected to date demonstrates that there is little if any ground water in the shallow zone under the building. The lack of water or low water levels in the monitoring wells installed adjacent to the buildings indicates that the presence of the buildings is restricting infiltration. Given this lack of or limited amount of ground water under the buildings, contaminants would not be expected to migrate in the shallow ground water zone from beneath the building.

17. Comment noted and accepted.

18. Comment noted and accepted.

19. Comment noted.

20. Comment noted.

21. This statement is based upon visual observation.

22. The presence of metal fragments and a green sheen are noted. It is speculation that the presence of these materials indicate that the cistern was part of the facility process wastewater system. We do not know the source of these materials.

23. Comment noted and accepted.

24. This judgement was based upon a comparison of the impoundments with various natural objects and site structures in the photographs.

25. The term unstable refers to chemical instability.

26. Our records show that a NYSDEC representative was not present during the entire impoundment sampling effort. The commment is noted.

27. Comment noted.

28. Page 23: Comment noted.

    Page 26: The NYSDEC collected split samples to provide a QA/QC check on the work being completed by Alcan. It is not the intention of Alcan nor a requirement of the RI Work Plan that the NYSDEC samples be included in the RI report.

29. See response to general comment #3 and comment regarding page 26 following comment 28.

30. See May 5, 1993 letter.

31. The cistern is not connected with the ground water system. The drainage systems discussed on page 39 are related to the drainage swale which impacts the ground water elevations near well B-2S.

    Site Ground Water Budget: See response to comment 30.

32. In item II Outflow Calculations for Shallow Zone in Appendix F there is a typo in line B. The geometric mean hydraulic conductivity: $K = 2.4 \times 10^{-4}$ cm/sec should be $K = 2.4 \times 10^{-6}$ cm/sec. The geometric mean hydraulic conductivity is correctly stated elsewhere in the report. The vertical hydraulic conductivity value, which is clearly and correctly stated in the actual calculation in this section, is two orders of magnitude lower than the horizontal hydraulic conductivity.

33. A different base map would make our use of the "L" shape outflow more logical. We used the "L" shape to account for the somewhat radial flow from the impoundments which was

documented on other dates. Specifically the "L" shape outflow area was used to address the potential shallow ground water flow to the east.

Even if a radial flow pattern were incorporated into the ground water budget, it is inaccurate to state that a significant portion of the shallow ground water would flow to the east. When a radial flow pattern exists a significant portion of the shallow ground water does not flow toward the east. Rather only about one quarter of the flow would be toward the east. The inclusion of radial flow in the ground water budget calculation would result in less than 5% of the shallow water being discharged to the east.

34. The 45% porosity for the shallow ground water zone is a reasonable estimate (Davis & DeWiest, 1966, page 394). Furthermore, it is clear in the presentation in Appendix F that the porosity value is only used to estimate the ground water flow velocity and is not used to calculate the ground water budget.

35. This is not true. The boring logs demonstrate that there is an unsaturated zone beneath the shallow ground water zone. Ground water in the unsaturated zone is no longer affected by the hydraulic head in the shallow zone. Therefore the bottom of the shallow ground water zone is an appropriate base level for the evaluation of the hydraulic head in the shallow zone. If there is ten feet of water in the shallow zone and the bottom of the shallow zone has a head of zero then the head at the top of saturation will be ten feet. A ten foot head change across a ten foot length of flow equals a hydraulic gradient of 1 ft/ft.

36. See the response to comment 33. Do note that when a radial flow pattern exists the majority of the shallow ground water does not flow toward the east.

37. See May 5, 1993 letter.

Although it would not be expected that all of the shallow ground water would percolate to the deep ground water zone, the fact that the total amount of shallow ground water is only about 5% of the deep ground water flow make it unlikely that the deep ground water zone would show concentrations in excess of ground water standards.

Laboratory Results, Page 43: See response to comment regarding page 26 following comment 28.

38. See response to comment regarding page 26 following comment 28.

39. Comment noted. Since Freon 113 was only detected during the first sampling round and was not detected by the NYSDEC laboratory it is likely that the presense of Freon 113 was an artifact of sampling or laboratory handling.

40. Comment noted.

41. Comment noted.

42. Comment noted.

43. Comment noted and corrected in the Addendum.

44. Comment noted.

45. Comment noted. See response to comment 22. The depth to the bottom of the cistern was measured before sampling. The construction of the cistern was also noted.

46. Comment noted.

47. Comment noted. These concentrations are below typical values for soils in the U.S.

48. Comment noted. Comment was incorporated in the RI Addendum.

49. Comment noted. Clarification will be provided upon reciept of NYSDEC response to the May 5, 1993 letter.

50. Comment noted.

51. See May 5, 1993 letter.

52. The available information developed by NYSDEC and observations by O'Brien & Gere indicate that this spring is at least partially fed by the deep ground water zone identified beneath the Jarl and Sigismondi Landfill sites.

53. See response to general comment #3.

54. Additional information was discussed. Further discussion of this item can be provided following reciept of NYSDEC responce to the May 5, 1993 letter. See also response to comment 30.

55. Comment noted.

56. See response to comment regarding page 26 following comment 28.

57. The fact that the cistern is not responding to changes in ground water elevation changes is indication that the cistern is not in hydraulic connection with the shallow ground water system.

58. Comment noted.

59. The analytical results from surface soil sample #1 was included in this revised risk assessment.

60. We do not agree that the newly erected fence should be shown on report figures. The presence of the fence will not change the substance of the RI report and to survey the location of the fence and include it on figures is an unwarranted expense.