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SUPERFUND STANDBY PROGRAM
New York State
Department of Environmental Conservation
625 Broadway
Albany, New York 12233-7016

SITE IDs 348-354: VILLAGE OF SOLVAY

SITE SUMMARY REPORT

Onondaga Lake Project
Task 5: 104(e) Review

Site No. 734030-002
Work Assignment Number D003060-27

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1.0 SITE DESCRIPTION

Two mailings were received from the Village of Solvay (Company ID 2061), one dated February 26, 1998 (Mailing No. 1) and the other dated August 23, 2000 (Mailing No. 2). The information referenced in this report was mainly obtained from these two mailings, as well as from a Consent Order for the Solvay Landfill (Site ID 354) (NYSDEC, February 1994) and from a Closure Investigation Report (CIR) for the Solvay Landfill (C&S Engineers, March 1995). Information obtained from other sources is noted, as necessary.

1.1 Location

The Village of Solvay, New York is located to the southwest of Onondaga Lake in Onondaga County. The Village has operated seven facilities within the Onondaga Lake project area. Three facilities are currently in operation: the Highway Department Garage (Site ID 348), the Electric Department Garage (Site ID 349), and the Village Hall/Police Department (Site ID 350). The Village also operated three firehouses including: the Tanner Street Firehouse (Site ID 351), the Mountain Top Firehouse (Site ID 352), and the Prospect Avenue Firehouse (Site ID 353). Since January 1, 1998, operation of these firehouses has been transferred to a private company. The final site operated by the Village of Solvay is the Solvay Landfill (Site ID 354), whose approximate dates of operation were from the early 1950s up until late 1991. The status of the landfill closure was not indicated in the documents available for review. As of August 2000, the Village currently operates a transfer station "not directly located on the landfill" (Mailing No. 2, p. 6). The exact location of the transfer station was not provided in the mailings. Figure 1 shows the location of all seven facilities. The location of the Village of Solvay Landfill is shown on the USGS topographic map in Figure 2. Due to the nature of these sites, as described in Section 2, the majority of the information presented in this Site Summary Report is for the Solvay Landfill.

Several other industrial facilities are located in the immediate vicinity of the Village of Solvay Landfill as shown in Figures 3 and 4 herein. The industrial facilities and their respective location relative to the Solvay Landfill include: the Honeywell (Allied) Matthews Avenue Landfill (Site ID 315) to the northeast, the Stanton Foundry facility (Site ID 310) to the southwest, the Pass and Seymour facility (Site ID 298) to the southeast, and the Frazer and Jones facility (Site ID 284) to the south. It should be noted that the surface water and groundwater monitoring locations as shown on Figure 3 herein (from C&S Engineers) are not accurate. It is believed that the correct locations are shown on the Surface Water and Groundwater Monitoring Location Plan appended to the CIR (Mailing No. 2, CIR Drawings, Sheet 5 of 9). Thus, Figure 3 was modified to show the correct locations (in parenthesis).

1.2 Geology

The surficial geology of the Syracuse area was strongly influenced by the most recent glacial advance (Wisconsin age, 12,000 to 14,500 years ago). The area occupies a region that was covered by glacial Lake Iroquois, a large water body situated in front of the ice margin. The broad flat-lying plains situated north from Syracuse to Lake Ontario were formed beneath Lake Iroquois and are characterized by lacustrine fine sand and silt deposits. Additional glacial features common to the region are moraines, drumlins, U-shaped valleys, and meltwater channels.

Onondaga Lake and all its major tributaries lie within glacial meltwater channels. These features originally were conduits carrying glacial meltwater at large volumes and high velocities. Sediment types characteristically found in meltwater channels are sands and gravels. These relict features form important water bearing and transmitting units which form an irregularly branching, net-like pattern.

The bedrock geology of the greater Syracuse area includes Lower to Middle Paleozoic age sedimentary rocks predominated by carbonate (dolostone and limestone) and shale, also

containing some sandstone, siltstone, and evaporites. Bedrock directly beneath the area (as well as underneath Onondaga Lake) is the Silurian age Vernon Shale (Rickard and Fischer, 1970), which consists of red soft shale, with beds of green shale, gypsum, and dolomite. The Vernon Shale has low permeability, but does possess secondary porosity due to fractures.

1.3 Hydrogeology

According to the Syracuse West USGS topographic map, the ground surface elevation in the Village of Solvay ranges from approximately 370 feet to 650 feet NGVD (see Figure 2). Ground surface elevation at the Village of Solvay Landfill is approximately 400 feet NGVD. Groundwater elevation data were provided for the Solvay Landfill as part of the CIR. These data are discussed below. Groundwater data were not provided for the other six sites identified by the Village. In general, groundwater information from several other sites within the area indicates that the regional shallow groundwater flow is toward Onondaga Lake.

Based on soil borings at the Solvay Landfill, sedimentary deposits are of glacial lacustrine and perhaps glacio-fluvial origin. Lacustrine silt and clay deposits from 4 to 11 feet thick overlie fluvial out wash sand and gravel deposits of indeterminate thickness. The CIR states that shallow groundwater elevations in September 1994 ranged from 395.69 feet (MW-3) downgradient of the landfill to 403.11 feet (MW-1) upgradient of the landfill (Mailing No. 1, CIR, p. 24). Slug tests performed on these wells indicate an average hydraulic conductivity of 8×10^{-4} cm/sec (Mailing No. 1, CIR, p. 23). The CIR states that these hydraulic conductivities are primarily representative of lateral or horizontal flow in shallow stratigraphic deposits (Mailing No. 1, CIR, p. 25).

1.4 Surface Water Hydrology

The Village of Solvay abuts the southwestern shore of Onondaga Lake, and contains a significant reach of Geddes Brook, which intersects Ninemile Creek northwest of the Village and eventually discharges into Onondaga Lake. A small portion of the Old Erie Canal is also found within the Village of Solvay, as are several small surface water bodies, including the Solvay Reservoir.

Surface drainage and runoff from the landfill flows in an outward radial direction from central portions of the landfill mass to lower-lying areas, as shown on the Shallow Groundwater Contour and Flow Direction figure provided in the CIR (Mailing No. 2, CIR, Sheet 6). The CIR states that "a slow flowing, small stream exists proximate [distance not provided] to the eastern perimeter of the landfill, and as evidenced during the Closure Investigation, becomes intermittent and eventually nonexistent proximate to the northeastern perimeter of the landfill. Geddes Brook exists more remotely to the west [approximately 1,000 feet] of the landfill site" (Mailing No. 1, CIR, p. 3).

Several wetland areas are situated along the perimeter of the Village of Solvay, including NYSDEC wetlands SYW-18, which lies northwest of the Village, near the confluence of Geddes Brook and Ninemile Creek; and SYW-14, which lies south of the Village, along the upper portions of Geddes Brook. There are several smaller wetland areas in the vicinity of the landfill, along the path of Geddes Brook.

2.0 SITE HISTORY

2.1 Owners/Operators

The Village of Solvay was established in 1894, and is located in Onondaga County. The estimated population of the Village is 6,717 people and it encompasses an area of approximately 1.6 square miles (Mailing No. 1, p. 2).

The Village of Solvay identified seven facilities, which have generated, handled, transported, treated, stored, or disposed of hazardous substances, and hazardous or industrial wastes. These include:

- Village of Solvay Highway Department Garage, 3145 Milton Ave., Site ID 348;
- Village of Solvay Electric Department Garage, 507 Charles St., Site ID 349;
- Village of Solvay Village Hall/Police Department, 1100 Woods Ave., Site ID 350;
- Village of Solvay Fire Department (3 firehouses): Tanner Street Firehouse, Site ID 351; Mountain Top Firehouse, Site ID 352; and Prospect Avenue Firehouse, Site ID 353; and
- Village of Solvay Landfill; corner of Boyd Ave. and Mathews Ave.; Site ID 354.

The Highway Department Garage, the Electric Department Garage, and the Village Hall/Police Department are still operated by the Village. The three Solvay Fire Department firehouses were operated by the Village until January 1, 1998, at which time the operations were turned over to a private company. The Village still owns the three firehouses. The Solvay Landfill was operated by the Village from the early 1950s up until 1991. Pursuant to a Consent Order (#R7-0680-92-02) issued by NYSDEC in February 1994, the Village of Solvay was required to investigate the environmental impacts of the landfill. A Closure Investigation Report (CIR) for the landfill was prepared by C&S Engineers in 1995 on behalf of the Village of Solvay. It is believed that NYSDEC has not issued an approval of the CIR.

No further information regarding the review status of the CIR was provided in the information available for review.

2.2 Site Operations

The Village Highway Department provides public works services to residents including trash removal, yard waste collection, street repair and maintenance, sewer maintenance, snow removal, and parks maintenance. The Highway Department Garage (Site ID 348) is used for office space, vehicle storage, light maintenance, and materials storage. A 2,000-gallon above ground storage tank at the facility is used for gasoline. The SIC code for the Highway Department Garage is 9229: Public Order and Safety (Mailing No. 1, p. 4).

The Village Electrical Department is responsible for the distribution of electrical service to the area. The Electrical Department Garage (Site ID 349) operations include the fueling and maintenance of vehicles, and storage of equipment and supplies. A 10,000-gallon diesel fuel tank is located at the facility. It is not specified whether the tank is above ground or underground. An underground oil-water separator is also located at the facility. The Electrical Department has been using this facility since approximately 1987, having been previously located at the Highway Department Garage. The previous tenant of the facility was Terpening Trucking Company (Mailing No. 1, p. 5). The RCRA ID for the Electrical Department Garage is NYD980774038, and the SIC code is 4911: Electrical Services (Mailing No. 1, p. 5).

The Village of Solvay Village Hall/Police Department (Site ID 350) houses the Mayor's Office, the Village Clerk, the Village Board meeting room, and the Solvay Police Department. The facility is utilized for the daily business activities of the Village including the payment of taxes, and electrical bills, as well as police business activities (with the exception of vehicle maintenance). The SIC code for the Village Hall is 9111: Executive

Offices, and the SIC code for the Police Department is 9221: Police Departments (Mailing No. 1, p. 5).

The operations of the Village of Solvay Fire Department firehouses (Tanner Street Firehouse, Site ID 351; Mountain Top Firehouse, Site ID 352; and Prospect Avenue Firehouse, Site ID 353) are managed by Fire Department, Inc., which is a private business entity. The Village turned over management of the Fire Department on January 1, 1998. The Village still owns the three firehouses. The operations carried out at the firehouses include, among others, storage of equipment and supplies. Fire fighting vehicles are washed at the firehouses, but no vehicular maintenance is performed there. The SIC code for the firehouses is 9224: Fire Departments, including volunteer - government (Mailing No. 1, p. 5).

The Village of Solvay Landfill operated as a solid waste disposal facility from the early 1950s up until late 1991. Wastes which were indicated to be received at the landfill include household waste, construction and demolition (C&D) debris, and yard waste. All waste was placed in the landfill in random order; i.e., there was no waste segregation. The SIC code for the Solvay Landfill is 4593: Landfill, Sanitary (Mailing No. 1, p. 5).

The Village of Solvay currently operates a transfer station believed to be located at the landfill site. The Village of Solvay stated that "the types of wastes accepted include: yard waste, brush, and large items such as furniture and mattresses. The yard waste and brush are composted while large items are consolidated and shipped to the Onondaga County Resource Recover[y] Agency (OCRRA) Ley Creek Transfer Station" (Mailing No. 2, p. 6). According to NYSDEC staff, during a routine visit on September 27, 2001, solid waste recycling practices and yard wastes dumping activities are still occurring at the landfill site (as per TAMS/NYSDEC field observations, September 27, 2001).

2.3 Generation and Disposal of Wastes

General Refuse

The Village Highway Department collects general refuse, and transports it to the Onondaga County Resource Recovery Agency Steam Plant, located at 5801 Rock Cut Road in Jamesville, NY. Yard waste and large items are also collected by the Highway Department and transported to the Ley Creek Transfer Station at 5158 Ley Creek Drive in Liverpool, NY. Data provided by the Village of Solvay indicate that the average yearly waste handled was 1,882 tons of general refuse (based on 1997 data) and 547 tons of yard waste and large materials (Mailing No. 1, p. 9).

Waste Oil (Non-Hazardous)

Non-hazardous waste oil resulting from vehicular maintenance activities is collected in 55-gallon drums at the Highway Department Garage and the Electric Department Garage. From there, the oil is regularly pumped into a licensed transporter truck and shipped to an off-site facility for disposal. The transporter identified by the Village of Solvay is Clean Harbors of Braintree, MA. The average annual quantity of waste oil handled and shipped off site by both garages based on 1997 data was 150 gallons (Mailing No. 1, p. 9).

Parts Cleaner

Both Village garages use a parts cleaning solvent, which is contained in a closed vessel. A contractor regularly services the equipment and disposes of spent solvent and waste material at an off-site facility. The contractor identified by the Village of Solvay is Safety-Kleen, Inc. of Philadelphia, PA. The average annual quantity of parts cleaning solvent recycled based on 1997 data was 14 gallons (Mailing No. 1, p. 9).

Bio-Hazard Waste Cleaning Material

The Village of Solvay stated that a "one-time clean-up and disposal of a biohazard waste was conducted by Loss Recovery Systems at the Village Police Department. The waste material, a 10 pound bag, was hauled by National Medical Waste and disposed of through a permitted environmental service/disposal company" (Mailing No. 1, p. 8). The source and date of the spill were not provided in the information available for review.

PCB Waste

Between 1986 and 1992, the Village of Solvay removed electrical equipment from service which contained PCBs. Copies of the shipping manifests are included in Mailing No. 1 (Appendix D). Approximately 150 tons of PCB-containing waste were collected and shipped under the Village Electrical Department's hazardous waste identification #NYD980774038. Five companies were used to transport the material to five disposal facilities located in Kansas, Pennsylvania, and West Virginia (Mailing No. 1, p. 10).

Solvay Landfill

Estimates of the quantities of potentially hazardous, non-hazardous, or other solid wastes disposed of at the Solvay Landfill were not provided in the Village's mailings nor the CIR.

Facility Permits

According to responses provided by the Village of Solvay, there are no discharge permits for any of the seven facilities. With the exception of the Solvay Landfill, sanitary wastewater and cleaning wastewater were discharged to the Onondaga County sewer system. Once in the system, the water flows to the Syracuse Metropolitan Sewage Treatment Plant (Metro) for treatment before being discharged into Onondaga Lake.

Discharges identified in the mailings from each facility include:

Highway Department

Sanitary wastewater and wastewater associated with the steam cleaning of equipment are discharged to the municipal sewer. A mild detergent solution is used in the steam cleaning process. There is no reported analysis of wastewater discharged from the facility.

Electric Department

Sanitary and maintenance wastewater is discharged to the municipal sewer. This facility has an oil/water separator that is used for pretreatment prior to discharge to the sewer. The Village did not provide information related to the maintenance of the oil/water separator nor did it provide an analysis of effluent from the oil/water separator.

Village Offices/Police Department

According to responses from the Village, the Village offices discharge only sanitary wastewater to the sewer system. In addition, the Police Department discharges a breathalyzer solution to the sanitary system which includes 133.5 ml/yr of sulfuric acid, 66.75 ml/yr of potassium dichromate, and 66.75 ml/yr of silver nitrate (Mailing No. 1, p. 12).

Fire Departments

Discharges from the three firehouses include sanitary wastewater and wash water from vehicle maintenance. An analysis of the wastewater discharge was not provided by the Village.

3.0 POTENTIAL PATHWAYS FOR RELEASE OF HAZARDOUS SUBSTANCES TO THE LAKE SYSTEM

Based on information provided by the Village of Solvay, the potential is minimal for a significant release of contaminants to the Onondaga Lake system from the Highway Garage (Site ID 348), the Electric Garage (Site ID 349), the Village Hall/Police Department (Site ID 350), the Tanner Street Firehouse (Site ID 351), the Mountain Top Firehouse (Site ID 352), and the Prospect Avenue Firehouse (Site ID 353). At these facilities, incidental spills may have occurred as a consequence of vehicle maintenance, however, based on the Village's responses, these spills were considered to be minor. There was a 1989 incident of a test failure from a 3,000-gallon petroleum tank registered to the Village, however, there was no documented release of material (Mailing No. 1, p. 11).

Therefore, these six sites will not be discussed in the following sections. The remaining site, the Village of Solvay Landfill (Site ID 354), will be the focus of the discussion below.

3.1 Soil

Soils within and adjacent to the landfill area could have been contaminated from the disposal of wastes and from erosion of wastes or contaminated soil. Three subsurface borings were completed for the purpose of delineating the vertical extent of the landfill waste and 25 test trenches were excavated along the perimeter of the landfill for the purpose of delineating the horizontal extent of waste. The subsurface borings were completed using continuous sampling techniques, however, analytical/chemical testing was not performed. Likewise, no analytical testing of soil samples from the test trenches was performed. Analytical testing of leachate samples that were collected from water that infiltrated the trenches during excavation was performed. The results of the leachate testing are discussed in Section 3.3.

The vertical extent of the waste was visually determined from boring locations TB-1 through TB-3 completed in September 1994 (Mailing No. 2, CIR, Sheets 7 through 9). Boring TB-1 was completed on the northern portion of the landfill and consisted of waste from elevation 419 feet to elevation 397 feet (22 feet in depth) with underlying brown hard silt (Mailing No. 2, CIR, Sheet 9). Boring TB-2 was completed in the central portion of the landfill and the depth of waste was 25 feet below elevation 423 feet with underlying soils consisting of brown to medium sand and some silt (Mailing No. 2, CIR, Sheet 9). Boring TB-3 was completed in the western portion of the landfill and consisted of 38.5 feet of waste below elevation 439 feet with underlying soils consisting of grey stiff clay (Mailing No. 2, CIR, Sheet 7).

Test pits were completed at 25 locations around the edge of the landfill in August 1994. The CIR states that "in general, the waste mass horizontal limits investigation, completed proximate to the landfill perimeter, indicated that the limits of solid waste at the site are confined to the apparent waste mass, within the toe of slope" (Mailing No. 1, CIR, p. 29). The CIR also states that "the primary waste type identified at the landfill, as part of the waste mass horizontal limits, consisted of C&D debris. Household wastes were, however, identified as the predominant waste type within test trenches completed proximate to the access area located between the eastern-most lobe of the landfill and the main body of the landfill" (Mailing No. 1, CIR, p. 29).

Based on descriptions in the CIR (Mailing 1, Appendix B), the soil cover on the landfill is discontinuous and the landfill wastes are exposed in some areas. Since the Solvay Landfill operated back in the 1950s, it is likely that the C&D waste contained asbestos-containing material (ACM). It is therefore likely that the ACM located near the surface of the landfill was readily available for airborne transport.

No analytical samples of either subsurface soils or cover soils were collected as part of the closure investigation, and, therefore, the presence or absence of contamination in soil cannot be determined.

3.2 Surface Water

Geddes Brook is located approximately 1,000 to 1,200 feet west of the Village of Solvay Landfill, a section of the Old Erie Canal is located approximately 400 feet north of the landfill, and the West Flume is located approximately 2,000 feet north of the landfill. The confluence of Geddes Brook and the West Flume is approximately 3,000 feet northwest of the landfill. Geddes Brook flows into Ninemile Creek which empties into Onondaga Lake (the mouth of Ninemile Creek is approximately 1.75 miles from the landfill). In addition, a small stream flowing in a northwesterly direction toward Geddes Brook is directly adjacent to the landfill, along its eastern border. Portions of the landfill's waste are exposed along this boundary. No leachate or other runoff from the landfill into the stream was reported in the CIR. The stream was sampled upgradient and downgradient of the landfill as part of the closure investigation in September 1994. The CIR states that "surface water samples will be analyzed for the baseline list of parameters as included within 6NYCRR 360-2.11" (Mailing No. 1, CIR, p. 8). The baseline list of parameters includes conventional parameters, inorganics (including TAL metals), and volatile organic compounds (VOCs). Semi-volatile organic compounds (SVOCs), pesticides, and PCB results were not included in the information available for review. These parameters are not included in the baseline list of parameters as defined in 6NYCRR Part 360-2.11 and, as a result, were likely not analyzed.

The CIR states that "with regard to applicable Class C Surface Water Quality Standards and Guidance Values, the surface water sample collected from the SW-1 (upstream) location exhibited a sodium concentration of 30 mg/l, which exceeded the respective 20 mg/l Part 703.1 standard for sodium. The surface water sample collected from the SW-2 (downstream) location exhibited sodium and iron concentrations of 51.7 mg/l and 0.4 mg/l, which exceeded

the respective 20 mg/l and 0.3 mg/l Part 703.1 Standards for these parameters" (Mailing No. 1, CIR, p. 31). It was speculated that the elevated sodium concentrations could be the result of residual effects from the releases of salt and/or byproducts from salt drying beds that were known to exist within the immediate vicinity of the landfill site prior to and after the turn of the century (Mailing No. 1, CIR, p. 34).

The CIR states that some residual leachate migration impacts may exist near the test trench at the northwest corner of the landfill, but its impacts would be offset by the effects of shallow groundwater dilution within the lowland areas (Mailing No. 1, CIR, p. 32). The lowland area referenced is likely the NYSDEC wetlands located northwest of the landfill. The impacts of potential leachate migration into the wetland area were not evaluated in the CIR. No surface soil or water samples were collected in the wetlands as part of the closure investigation.

3.3 Groundwater

Data from one round of groundwater sampling conducted in September 1994 were provided from the four monitoring wells installed around the perimeter of the Solvay Landfill. Wells were constructed as 2-inch PVC installed in the annular space of 6.25-inch hollow stem augers. The wells were screened from the approximate location of the upper surface of the water table from 4 to 8 feet below ground surface (bgs), to depths of 15 to 23 feet. The CIR states that "the geology during the completion of the subsurface borings included a sequence of approximately 4 to 11 feet of glacial lacustrine silts and clays, underlain by a fine to glacial fluvial outwash coarse sand and medium gravel layer" (Mailing No. 1, CIR, p. 35).

All groundwater samples were analyzed for conventional parameters, inorganics (including TAL metals), and VOCs and results were compared to Class GA groundwater quality standards and guidance values, which are presented in parentheses in the discussion below. SVOCs, pesticides, and PCB results were not included in the information available for

review. All monitoring well groundwater samples exhibited exceedances of the standards or guidance values for color (15 color units standard), total dissolved solids (500 mg/L), iron (0.3 mg/L), and sodium (20 mg/L). These data are presented in Table 1. In addition to these exceedances, the groundwater sample collected from upgradient monitoring well MW-1 exceeded the standards for ammonia (2 mg/L), sulfate (250 mg/L), and cadmium (0.01 mg/L). The groundwater sample collected from well MW-2 also exceeded the standards for bromide (2 mg/L), magnesium (35 mg/L), and manganese (0.3 mg/L). The groundwater sample collected from well MW-3 also exceeded the standard for cadmium (0.01 mg/L). The groundwater sample collected from well MW-4 also exceeded the standards for chloride (250 mg/L), ammonia (2 mg/L), magnesium (35 mg/L), and sulfate (250 mg/L). The only VOC detected was 1,1-dichloroethene (35 μg/L) at well MW-4, located at the northwestern corner of the landfill. The Class GA groundwater standard for this compound is 5 μg/L.

The CIR states that "in general, it appears that although the groundwater downgradient of the landfill (MW-2, MW-3 and MW-4) exhibit inorganic parameter concentrations which exceed Class GA groundwater standards, the elevated presence of these parameters is native to the lowland area, as evidenced by the concurrent elevated presence of these parameters within the upgradient background monitoring well (MW-1) groundwater sample" (Mailing No. 1, CIR, p. 39).

Table 1: Groundwater Results, Solvay Landfill

Parameter	Class GA Standard (mg/L)	MW-1 (mg/L)	MW-2 (mg/L)	MW-3 (mg/L)	MW-4 (mg/L)
Color (color unit standard)	15	100	50	75	150
Bromide	2	0.65	2.4	0.8	0.6
Chloride	250	230	150	230	850
Ammonia	2	3.02	0.32	1.32	8.53
Sulfate	250	617	236	41.8	263
Cadmium	0.01	0.015	<0.01	0.011	<0.01
Magnesium	35	7.02	37.9	16.4	69
Manganese	0.3	<0.02	0.58	0.22	0.26
TDS	500	1316	1096	808	2324
Iron	0.3	3.02	4.4	1.23	12.8
Sodium	20	123	90.4	54.8	588

Source: Mailing No. 1, CIR, Table 3.

Leachate samples were collected from two test pits, TT-1 and TT-24, completed during the closure investigation in August 1994 and analyzed for conventional parameters, inorganics (including TAL metals), and VOCs. Since the presence of leachate seeps or discharges was not identified during the site reconnaissance, representative samples of leachate were collected using an excavation/infiltration technique. This technique consisted of excavation to a depth of 4.8 feet bgs which allowed groundwater to infiltrate into the open trench. Once enough water had collected at the bottom of the test trench, a sample was collected (Mailing No. 1, CIR, p. 8). The CIR states that "it appears that the elevated calcium, magnesium, alkalinity, chloride, and hardness concentrations exhibited by each of the leachate-water samples is related to the soil chemistry of the area. The soils of Onondaga County typically exhibit elevated concentrations of calcium, magnesium, and alkalinity as related to the native presence of the decomposed or glacial deposited/glaciofluvial limestone or dolostone remnants" (Mailing No. 1, CIR, p. 31). Elevated levels of biochemical oxygen demand (BOD_5), chemical oxygen demand (COD), ammonia, and total Kjeldahl nitrogen (TKN) were identified in leachate-water sample TT-24. This sample did not contain elevated levels of more prominent leachate indicator parameters such as phenols, total organic carbon (TOC), arsenic, cadmium, chromium, iron or lead (Mailing No. 1, CIR, p. 31).

3.4 Air

Air emissions represent a local source of contaminants to the atmosphere with potential deposition to the ground surface and subsequent transport to Geddes Brook via surface runoff. No ambient air monitoring of the landfill was conducted during the closure investigation, perhaps, in part, due to the difficulty in distinguishing airborne contamination emanating from the Solvay Landfill from that of the surrounding industries.

An explosive gas investigation was performed in August 1994 as part of the closure investigation. This was performed by hand augering into the subsurface materials at 16 locations, with a 4-inch diameter steel auger and inserting a 2-foot long piece of 2-inch, 20

slot PVC well screen. The screen was attached to a PVC riser with an end cap, which was constructed such that the top extended above the ground surface. The well screen was placed in the open hole and subsequently backfilled with a sand pack and a bentonite seal. Fugitive gases escaping from the landfill were expected to collect in the PVC riser, from where they could be monitored. Actual gas monitoring was performed on three separate occasions. Results of this investigation, as presented by the Village, indicate that there is no explosive gas condition which exists at the landfill (Mailing No. 1, CIR, p. 30).

3.5 County Sewer System

As noted in Section 2.3, all Village of Solvay facilities discharge sanitary wastewater to the municipal sewer system for treatment at the Metro plant. Since the discharges from the facilities do not consist of industrial process wastewater (only sanitary), industrial wastewater discharge permits from the Onondaga County Department of Drainage and Sanitation (OCDDS) have not been required. It was indicated in the mailings that wastewater discharged to the OCDDS system has never been sampled (Mailing No 1, p. 12).

4.0 LIKELIHOOD OF RELEASE OF HAZARDOUS SUBSTANCES TO THE LAKE SYSTEM

4.1 Documented Releases

Documented Spills

As noted in Section 2.3, a one-time spill of a bio-hazard occurred at the Village of Solvay Police Department. The release was cleaned up by a licensed subcontractor and the waste was disposed at a licensed facility. The name of the disposal facility was not provided.

In addition, the Village provided limited information about a 3,000-gallon petroleum underground storage tank (UST) that failed a tank test in 1989. The Village reports that no material was released to the environment (Mailing No. 1, p. 11), but does not address the fate of the tank or measures taken to correct the problem.

Ongoing/Recent Releases

The Village believes the only release of hazardous substances it may be responsible for is leachate from the Solvay Landfill (Mailing No. 1, p. 11). The Village stated that "according to the Closure Investigation Report (CIR) for the Village of Solvay landfill included in Appendix B, surface water, leachate, and hydrogeological investigations, which were completed near the perimeter of the landfill waste mass, do not appear to indicate that the groundwaters proximate to the landfill have been significantly impacted by leachate migration from the landfill waste mass" (Mailing No. 1, p. 11). However, the significance of potential leachate migration which may impact wetlands, as discussed in Section 3.1, has not been determined. No information was provided in the mailings which addresses the long-term monitoring of the landfill.

4.2 Threat of Release to the Lake System

4.2.1 Extent of Site Contamination

Based on the material submitted by the Village, the only potential site contamination is leachate migration and surface runoff from the Solvay Landfill, especially in the area of exposed waste material near the stream adjacent to the landfill.

Soil

Soil sampling data were not provided, as no soils were collected for analysis during the landfill closure investigation. Based on the analytical results of groundwater samples, it is possible that the surface and subsurface soils contain elevated levels of contaminants, especially inorganic compounds.

Groundwater

Groundwater samples collected in 1994 from four wells surrounding the Village of Solvay Landfill indicate that several inorganic parameters exhibited concentrations greater than NYSDEC's Class GA groundwater standards or guidance values. Table 1 in Section 3.3 summarizes the results of this sampling. SVOCs, pesticides, and PCB analyses are not included in the baseline list of parameters of 6NYCRR Part 360-2.11 and it is likely that these parameters were not analyzed as part of the closure investigation.

Surface Water/Sediment

As part of the landfill closure investigation, two surface water samples were collected in the small stream adjacent to the landfill. The analytical results from these samples indicate that iron was detected (0.4 mg/L in SW-2) above the standard of 0.3 mg/L, and sodium (30

mg/L in SW-1 and 51.7 mg/L in SW-2) was detected above the standard of 20 mg/L. No volatile organic compounds were detected in either sample. No information was provided in either of the mailings regarding stormwater management at the sites and the Village of Solvay claims that there are no recorded spills of record for the facilities.

NYSDEC collected sediment samples in Geddes Brook upstream of the Old Erie Canal and upstream of the West Flume in 1996 and 1997. A summary of these data is not provided herein since two other industrial facilities, Frazer & Jones Company (Site ID 284) and Stanton Foundry, Inc. (Site ID 310), are also situated in this area near Geddes Brook. Summaries of these data are provided in the Site Summary Reports for Frazer & Jones (TAMS, 2000a) and Stanton Foundry (TAMS, 2000b).

NYSDEC collected additional sediment samples in 2000 from Geddes Brook as well as in a ditch south of the Village of Solvay Landfill and north of the Pass & Seymour site. This ditch also flows adjacent to the Frazer & Jones and Stanton Foundry sites and then discharges to Geddes Brook. Sample FJ-02 (ID B395-04) was collected by NYSDEC on June 20, 2000 in this ditch directly southeast of the Village of Solvay Landfill, east of the Frazer & Jones Landfill, and northwest of the Pass & Seymour site (see Figure 4 herein). Only metals were analyzed in this surface sediment sample (collected from 0 to 7.6 cm). Metals detected above NYSDEC's sediment screening criteria (NYSDEC, 1999) include: cadmium (1.3 mg/kg compared to the NYSDEC Low Effect Level [LEL] of 0.6 mg/kg and the Severe Effect Level [SEL] of 9 mg/kg); copper (60.8 mg/kg compared to the LEL of 16 mg/kg and the SEL of 110 mg/kg); lead (32 mg/kg compared to the LEL of 31 mg/kg and SEL of 110 mg/kg); mercury (0.24 mg/kg compared to the LEL of 0.15 mg/kg and SEL of 1.3 mg/kg); silver (3.2 mg/kg compared to the LEL of 1 mg/kg and SEL of 2.2 mg/kg); and zinc (226 mg/kg compared to the LEL of 120 mg/kg and SEL of 270 mg/kg). Of these metals, silver is the only parameter that exceeds the SEL screening criteria.

Sewer Discharges

As stated in Section 2.3, sanitary wastewater is discharged to the OCDDS sewer system from the Village of Solvay facilities, with the exception of the Solvay Landfill.

4.2.2 Migration Potential of Contaminants

There are no known contaminants of major concern at the Village of Solvay Landfill, as detected volatile organic and inorganic compounds were either at low levels or slightly above the NYSDEC standards. Data for SVOCs, pesticides, and PCBs were not included in the documents reviewed.

Wastes disposed in the landfill include household waste, construction and demolition debris, and yard waste. Of these, the C&D debris would potentially cause the greatest impact. Leachate was observed during the test pit excavation which was conducted as part of the closure investigation. It is likely that this leachate has been migrating into the adjacent wetlands. Analytical results from the leachate indicate that it contains relatively low levels of a few inorganic parameters. Most notably, the leachate exhibited elevated levels of hardness (1,010 mg/L from TT-1, 634 mg/L from TT-24), total dissolved solids (1,500 mg/L from TT-1, 2,532 mg/L from TT-24), calcium (312 mg/L from TT-1, 159 mg/L from TT-24), and sodium (142 mg/L from TT-1, 529 mg/L from TT-24). There were no VOCs detected in either of the leachate samples.

The status and nature of the closure of the landfill were not indicated in the CIR nor in the Village of Solvay's mailings.

5.0 POTENTIAL FOR ADVERSE IMPACTS TO LAKE SYSTEM DUE TO A RELEASE OR THREAT OF A RELEASE

5.1 Hazardous Substance Characteristics

The leachate, surface water, and groundwater samples were analyzed for the baseline list of parameters contained in 6NYCRR Part 360-2.11, which includes conventional parameters, inorganics (including TAL metals), and VOCs. Relatively low levels of contaminants were detected in samples collected during the Solvay Landfill closure investigation. These included iron and sodium from surface water samples; bromide, ammonia, sulfate, cadmium, iron, magnesium, manganese, and sodium from groundwater samples; and calcium and sodium from leachate samples. The only VOC detected in the leachate, surface water, and groundwater samples was 1,1-dichloroethene in groundwater from well MW-4.

For the majority of the parameters, with the exception of chloride, ammonia, sulfate, total dissolved solids, iron, magnesium, and sodium, the detected levels were only slightly elevated relative to the NYSDEC groundwater standards. With the exception of sulfate, the highest value for each of these parameters was detected at well MW-4, which is also the well where 1,1-dichloroethene was detected. This well is situated along the northwestern edge of the landfill in the lowland area (see Figure 3).

Since the compounds detected were at trace levels (e.g., cadmium), do not exhibit hazardous characteristics (e.g., TDS, sodium), or cannot be unequivocally shown to be from the Solvay Landfill (e.g., 1,1-dichloroethene), a detailed discussion of mobility, toxicity, persistence, and bioaccumulation of contaminants of concern is not presented in this report.

5.2 Quantity of Substances

Estimates of the quantities of hazardous, non-hazardous or other solid wastes disposed into the Village of Solvay Landfill are not documented in the CIR provided in Mailing No. 1 (Appendix B). This is most likely due to inadequate record-keeping during the period of active waste disposal. According to NYSDEC staff, during a routine visit on September 27, 2001, solid waste recycling practices and yard wastes dumping activities are still occurring at the landfill.

5.3 Levels of Contaminants

A discussion of the extent of on-site contamination, based on the materials provided by the Village, is included in Sections 3.2, 3.3, and 4.2. Limited analytical data were provided in the CIR, including two leachate samples, two surface water samples, and four groundwater samples. These results indicate that the primary contaminants are inorganic compounds, most of which are found at low levels. The only volatile organic compound detected was 1,1-dichloroethene, however, its source is not known. SVOCs, pesticides, and PCB results were not included in the information available for review.

5.4 Impacts on Special Status Areas

The Village of Solvay Landfill is situated in an area where direct adverse impact to regulated wetlands or protected streams could occur. Geddes Brook near the site is a Class C waterbody with C(T) standards (6NYCRR Part 895.4) and, thus, is considered a "protected stream" in this area (6NYCRR Part 608).

According to the Syracuse West National Wetlands Inventory map (USDOI, 1978), a federal wetland exists approximately 1,000 ft southwest of the Solvay Landfill and is designated as PEM5E (Palustrine, Emergent Marsh). Geddes Brook, adjacent to the site, is designated as

R2OWH (Riverine, Lower Perennial, Open Water). A New York State freshwater wetland designated SYW 15 is located immediately adjacent to and downgradient of the landfill. The state wetland area is located within the flow path of Geddes Brook.

As of August 1996, the New York State "Natural Heritage Sensitive Element" nearest to the Solvay Landfill was located approximately 1.4 miles northwest of the site, adjacent to Ninemile Creek and upstream of the confluence with Geddes Brook. Thus, it is not likely that this area would be affected by contamination from the Village of Solvay Landfill.

Surface water, leachate, and groundwater discharges from the landfill could adversely affect the downgradient wetlands and Geddes Brook. Only limited groundwater and surface water data from the site were included in the documents reviewed. The NYSDEC surface sediment data collected in this area do not suggest that the landfill is a significant source of contamination to Geddes Brook. However, the extent of contamination in the adjacent wetland, if any, could not be determined based on the data included in the documents reviewed.

6.0 SUMMARY OF CONCERNS

Based on the data and information provided by the Village of Solvay and NYSDEC, the following concerns are identified:

- Low levels of inorganic parameters and one volatile organic compound were detected in samples of groundwater, surface water, or leachate collected during the closure investigation. The status and nature of the landfill closure were not indicated in the documents reviewed.

- Only one round of groundwater, surface water, and leachate sample results were presented by the Village in the submissions to NYSDEC. No soil samples or representative fill samples were collected during the course of the landfill closure investigation. Due to the location of the Village of Solvay Landfill with respect to several other sites which surround it (Honeywell's Mathews Ave. Landfill, Frazer & Jones, Stanton Foundry, and Pass & Seymour), this limited data set is not adequate to warrant the dismissal of the site as causing an impact to the Onondaga Lake system, including the adjacent state regulated wetlands. Recommended sampling would include: at least one additional round of groundwater samples from existing wells; surface water and sediment samples upstream and adjacent to the Solvay Landfill (especially from the stream where C&D fill is exposed along the bank); the installation of at least two monitoring wells, one on the landfill and upgradient of well MW-4, and the other between MW-4 and Honeywell's Mathews Ave. Landfill; several soil borings with the purpose of collecting representative soil samples of cover materials and landfill waste; and soil/sediment samples in the wetland around the perimeter of the landfill. Toxicity Characteristics Leaching Procedure (TCLP) analysis should be performed on the waste materials and/or contaminated soils.

- The documents provided by the Village indicate that the soil cover is thin and that waste materials are often exposed at the surface. A detailed study is warranted to assess the adequacy of the cover and define and remediate those areas where waste is exposed.

- The Village of Solvay Landfill is situated in an area that was formerly a freshwater wetland. The high water table and saturated soil conditions typically associated with wetlands indicate that groundwater transport of potential landfill contamination is a likely path of release to Geddes Brook and the Onondaga Lake system. The landfill continues to be an area of active dumping and recycling, with no apparent control or restriction. More stringent control needs to be placed on access to the area.

- In addition to the Village of Solvay Landfill, there are at least four other nearby disposal areas: Stanton Foundry dump site; the Frazer and Jones landfill; the Pass and Seymour landfill; and the Honeywell Mathews Avenue Landfill. The relative location of the Geddes Brook tributary that receives runoff and possibly groundwater discharge from the Solvay Landfill was not indicated in the materials submitted by the Village, so it is unclear whether only the Solvay Landfill impacts the tributary, or if it is receiving runoff and/or groundwater from all five disposal areas.

REFERENCES

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Rickard, L.V. and Fisher, D.W. 1975. Correlation of the Silurian and Devonian Rocks in New York State. New York State Museum and Science Service Map and Chart Series Number 24. 16p. 1975.

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TAMS. 2000b. Stanton Foundry, Inc. Site Summary Report. Prepared for NYSDEC. November 2000.

United States Department of Interior (USDOI) Fish and Wildlife Service. 1978. National Wetland Inventory Maps. Syracuse West, NY (1:24000).

Village of Solvay. 1998. Responses to Joint Request for Information Concerning Disposal of Hazardous Substances at Onondaga Lake. February 26, 1998.

Village of Solvay. 2000. Responses to Supplemental Request for Information Concerning the Facilities of the Village of Solvay. August 23, 2000.

Site Locations: Village of Solvay

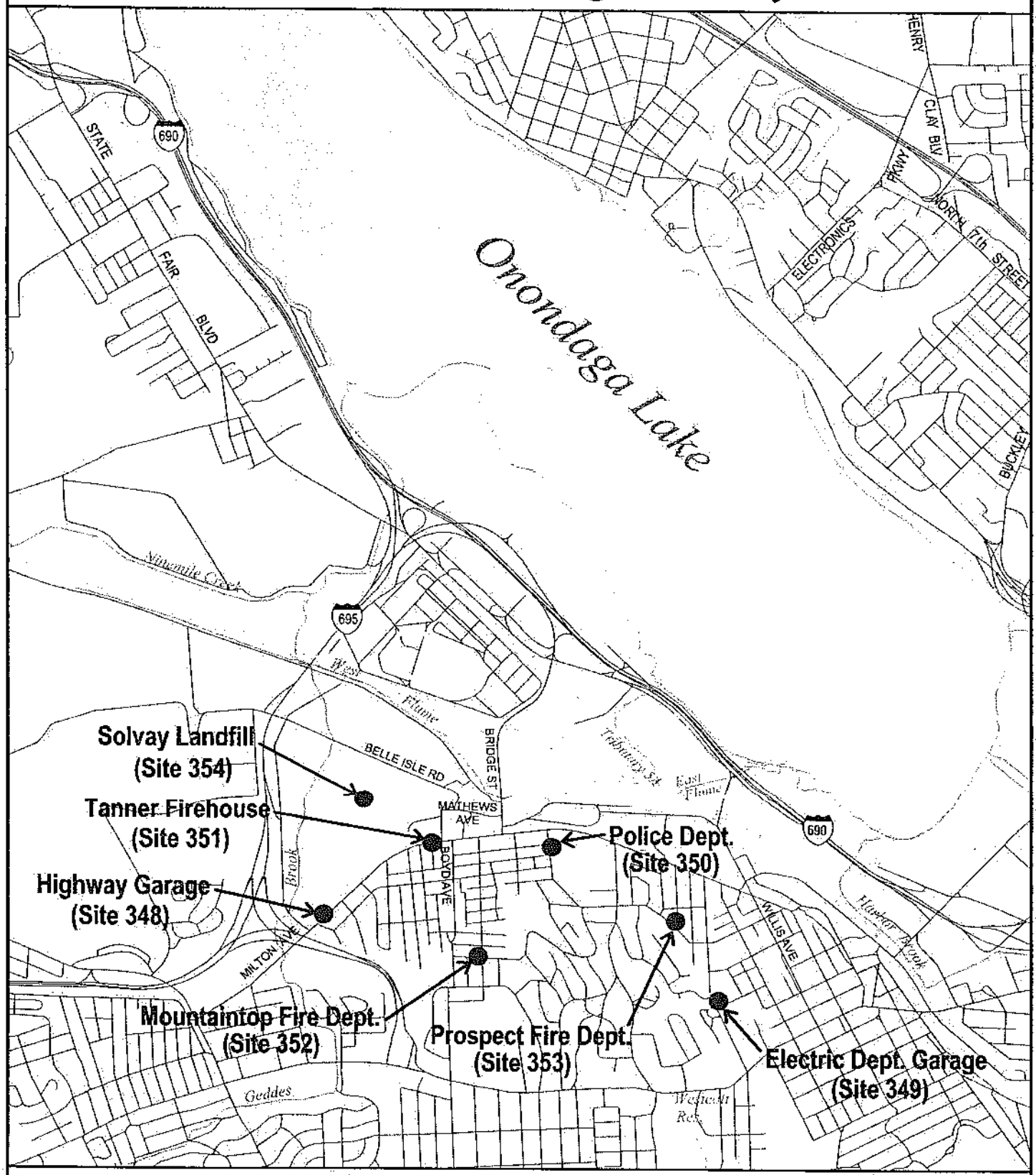
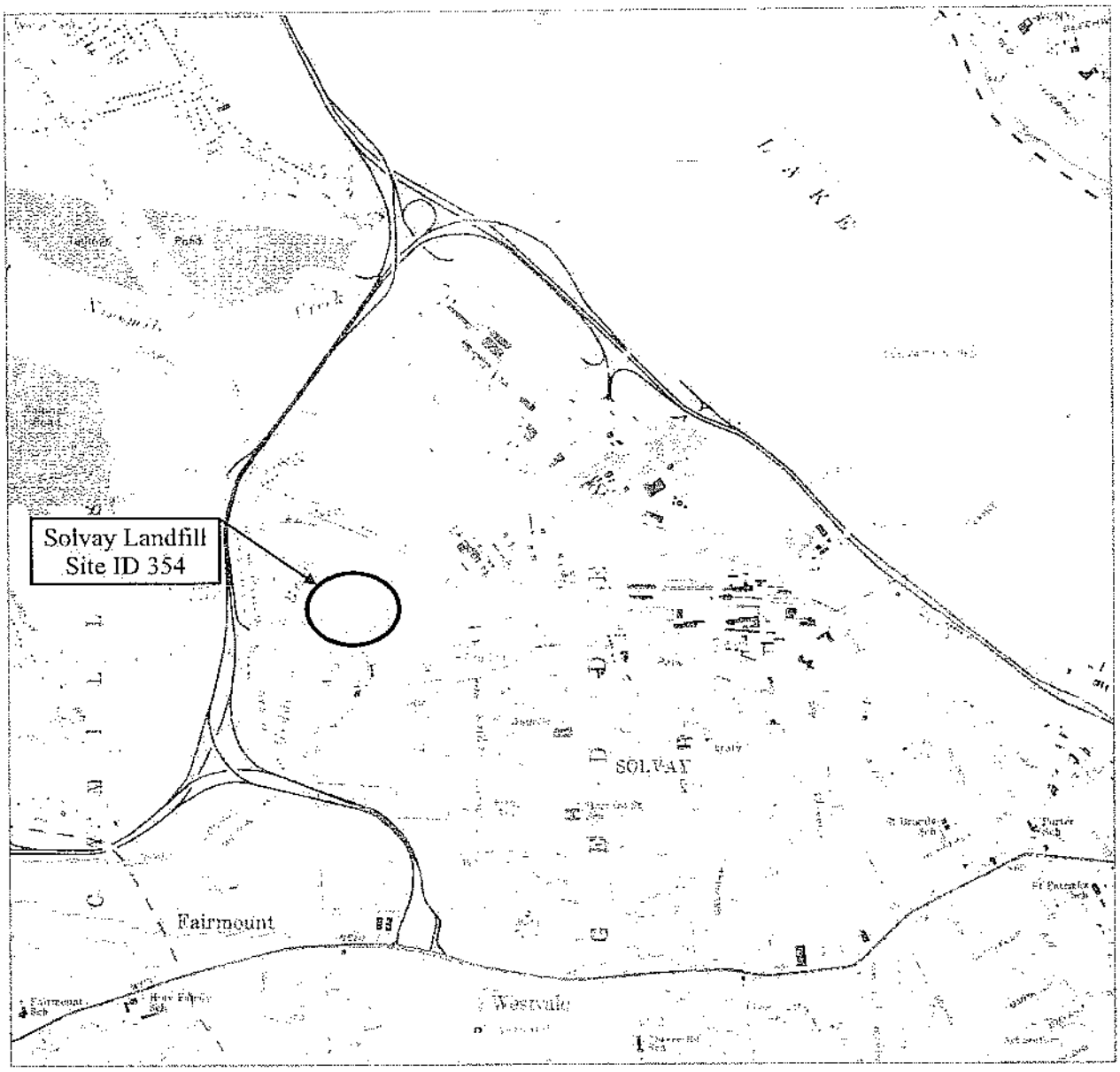


Figure 1



SCALE 1:24 000

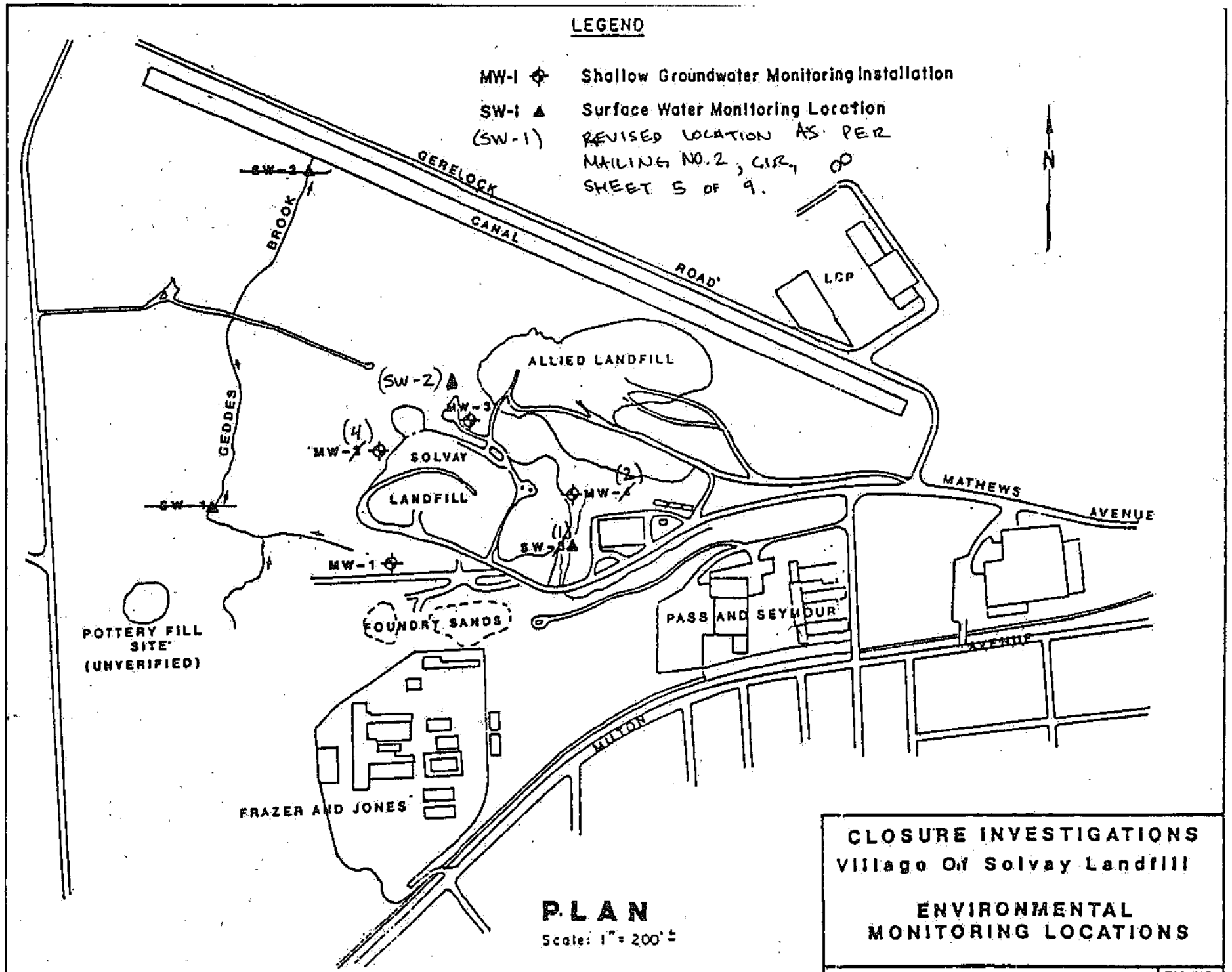
CONTOUR INTERVAL 10 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929
DEPTH CURVES AND SOUNDINGS IN FEET—DATUM IS 363 FEET IN ONONDAGA LAKE

United States Geological Survey
Syracuse West Quadrangle
Onondaga County, New York

N

TAMS

Figure 2
Village of Solvay
Solvay Landfill
Site ID 354


LEGEND
MW-1 Shallow Groundwater Monitoring Installation
SW-1 Surface Water Monitoring Location
(SW-1) REVISED LOCATION AS PER MAILING NO. 2, CIR., 80 SHEET 5 OF 9.
N
GERELOCK CANAL ROAD
BROOK
GEDDES
SW-2
SW-1
(SW-2)
MW-3
(4)
MW-4
SOLVAY LANDFILL
ALLIED LANDFILL
LCP
(2)
MW-2
MATHEWS AVENUE
(1)
SW-3
MW-1
POTTERY FILL SITE (UNVERIFIED)
FOUNDRY SANDS
PASS AND SEYMOUR
AVENUE
MILTON
FRAZER AND JONES
PLAN
Scale: 1" = 200' ±
CLOSURE INVESTIGATIONS
Village Of Solvay Landfill
ENVIRONMENTAL MONITORING LOCATIONS
C&S Engineers, Inc.
FIG. NO. 3

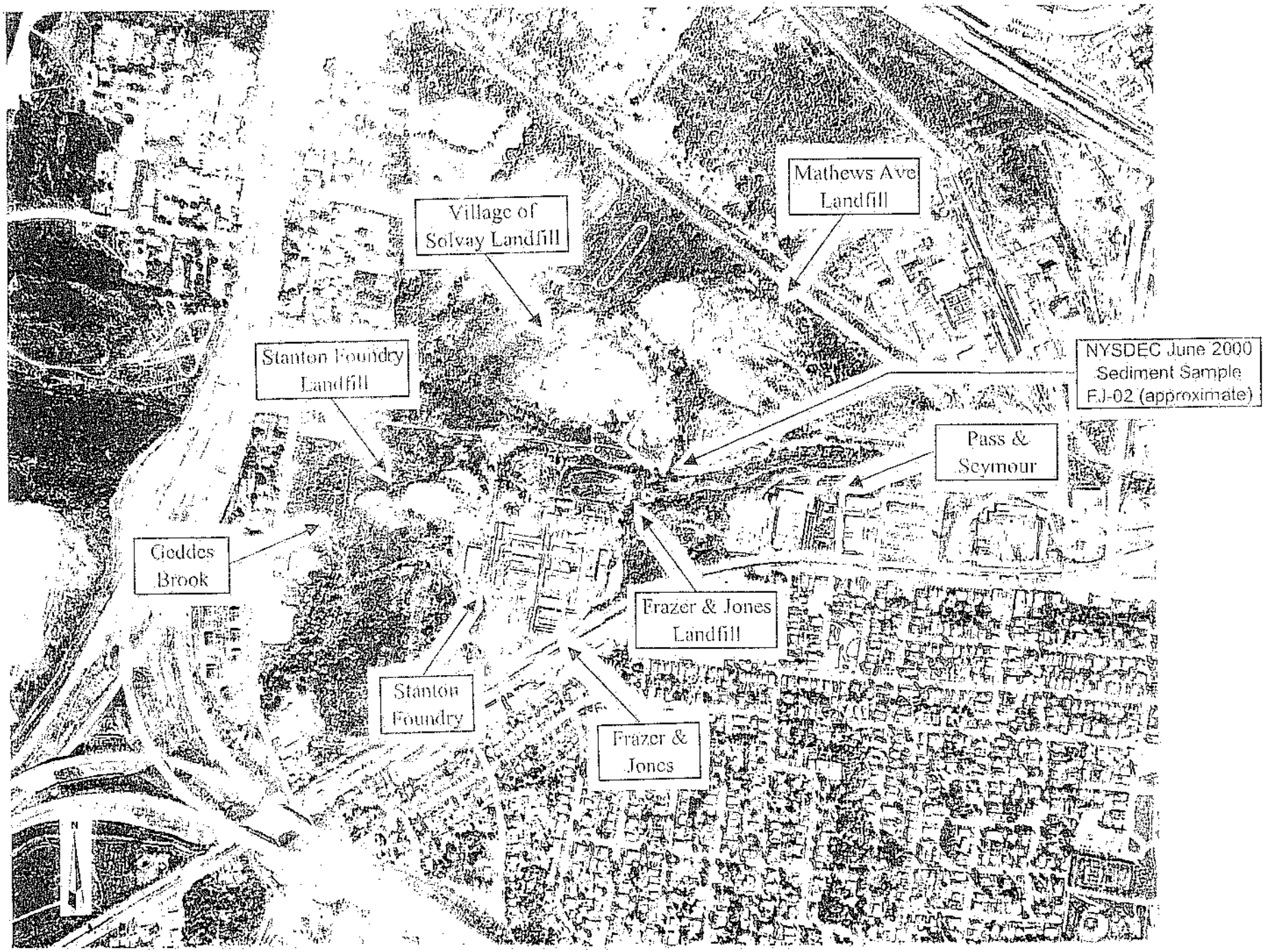


Figure 4: Aerial Photograph (Date Unknown), Village of Solvay Landfill and Surrounding Area