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905020

ND-2900 D1667

ENGINEERING INVESTIGATIONS AT INACTIVE HAZARDOUS WASTE SITES

PHASE I INVESTIGATION

MICHAEL WOLFER, SITE NUMBER 905020
VILLAGE OF DELEVAN, CATTARAUGUS COUNTY

February 1990

Prepared for:

New York State Department of Environmental Conservation

50 Wolf Road, Albany, New York 12233

Thomas C. Jorling, Commissioner

Division of Hazardous Waste Remediation

Michael J. O'Toole, Jr., P.E., Director

Prepared by:

Ecology and Environment Engineering, P.C.

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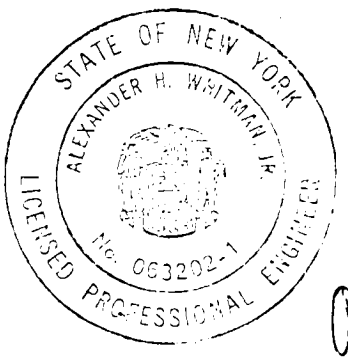

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BUFFALO CORPORATE CENTER

368 PLEASANTVIEW DRIVE, LANCASTER, NEW YORK 14086, TEL. 716/684-8060

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1. EXECUTIVE SUMMARY

1.1 SITE BACKGROUND

The Michael Wolfer site is a privately owned 13.5-acre tract of land used as a trailer park that is located in Delevan, Cattaraugus County, New York (see Figures 1-1 and 1-2). In 1978 the site owner, Michael Wolfer, received 15 to 20 55-gallon drums of Motorola drum waste. The oily waste in several of the drums was used on dirt roads within the site for dust control (Wolfer 1987). Some of the empty drums were removed from the property and returned to Motorola (Wolfer 1987). The remaining 6 to 8 drums of Motorola waste reportedly contain oily rags and paper debris and still remain stored on site. Mr. Wolfer has owned the property since 1965. In addition to Mr. Wolfer's permanent residence, nine trailer homes, which serve as permanent residences, and several outbuildings, are located on the site.

1.2 PHASE I EFFORTS

On June 16, 1987, Ecology and Environment, Inc., (E & E) conducted a site inspection in support of this investigation. Prior to the inspection, available federal, state, county, and municipal files were reviewed. The site inspection consisted of a visual survey of the property that included:

- Overall site conditions;
- Description of vegetation and a survey for stressed vegetation;

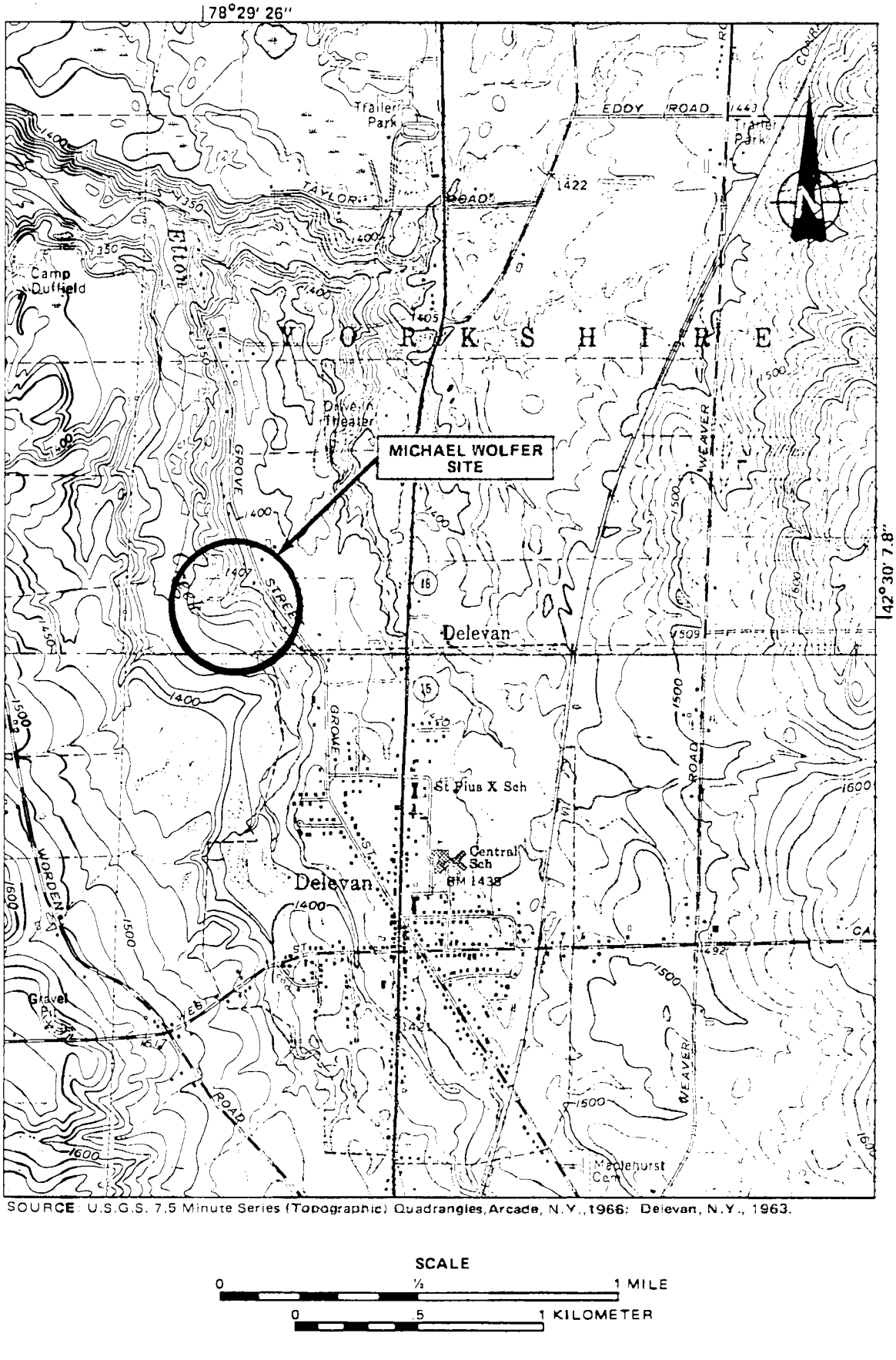
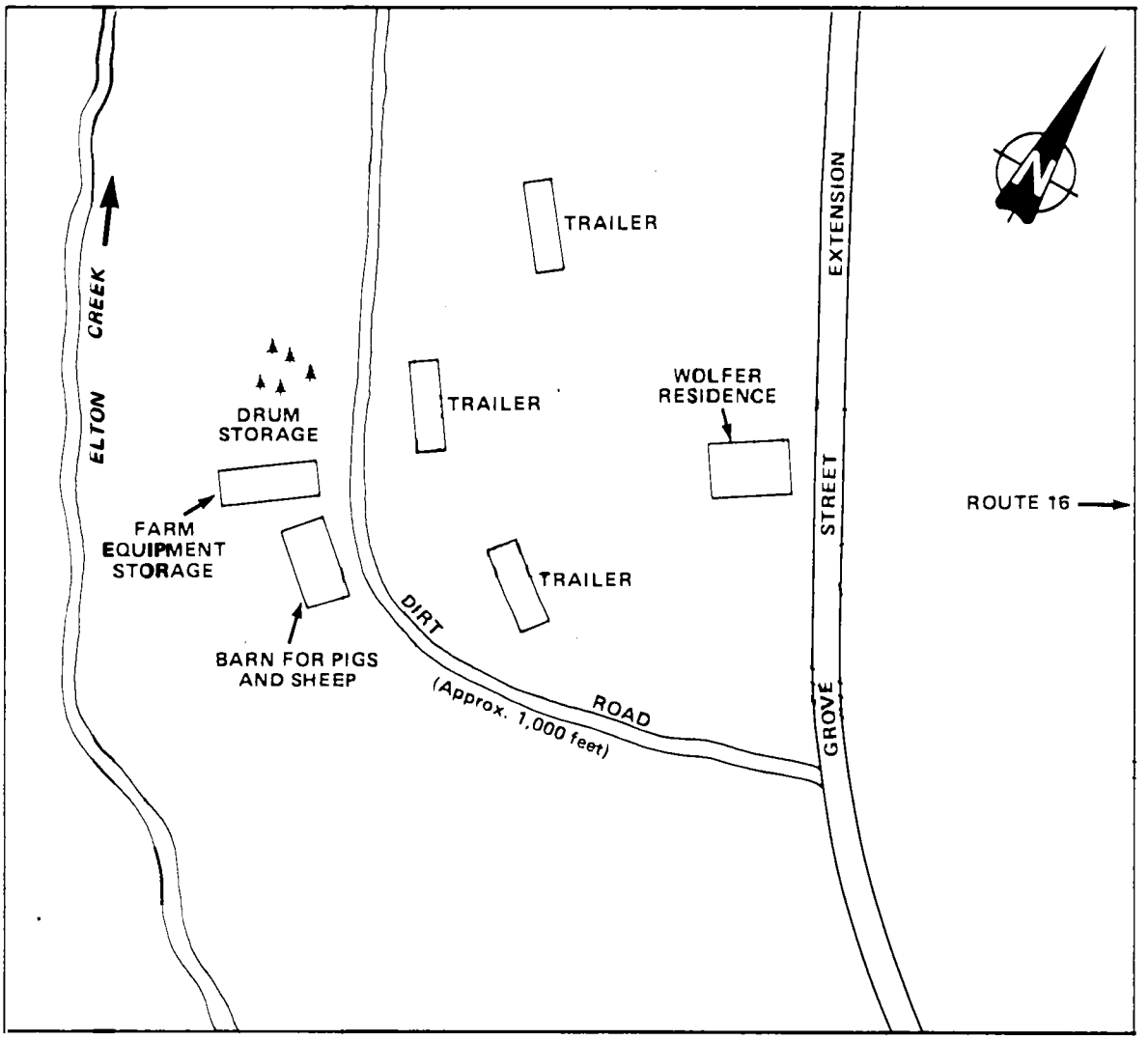


Figure 1–1 LOCATION MAP



NOT TO SCALE

Figure 1–2 SITE MAP - MICHAEL WOLFER SITE

- Presence of structures on the site;
- Distance to nearest residence;
- Location of nearest agricultural land;
- Location of nearest surface water and wells, and type of use;
- Visual delineation of former waste disposal areas;
- Air quality survey using an HNu photoionizer; and
- Photodocumentation of the site (see Appendix A).

All observations were recorded in a field logbook and in the EPA Site Inspection Report form.

1.3 ASSESSMENT

Motorola drums with oily waste contents are stored at the Michael Wolfer trailer property site in a reverting field. During the site inspection performed by E & E on June 16, 1987, no evidence of waste oil spillage was observed. Air monitoring was performed using an HNu photoionization detector and no readings above background were detected. No stressed vegetation was observed at the drum storage site nor along the dirt roads that received the Motorola oily waste for dust control.

Soil at the Michael Wolfer site has not been analyzed. However, Motorola drummed wastes and soil waste samples from the Tidd Junkyard site have been laboratory tested by Termini Associates in 1983. The Tidd site is located in Yorkshire, New York. Waste machining oil drum samples and surface soil samples in contact with Motorola waste oil at the Tidd site were analyzed and did not exhibit the hazardous waste characteristics of ignitability, corrosivity, reactivity, or EP Toxicity, although the machining oils themselves contained chlorinated hydrocarbons and up to 2% lead. Some drums contained waste trichloroethane and trichloroethylene degreasers.

1.4 HAZARD RANKING SYSTEM SCORE

A preliminary application of the Hazard Ranking System (HRS) was completed to quantify risks associated with the site. A detailed environmental site assessment to fully evaluate the site was not conducted because the Phase I investigation is limited in scope. However, a preliminary HRS score was completed on the basis of the

available data. It should be noted that without a full environmental assessment, an unrealistically low HRS score may result.

Under the HRS, three numerical scores are computed to express the site's relative risk or damage to the population and the environment. The three scores are described below:

- S_M reflects the potential for harm to humans or the environment from migration of a hazardous substance away from the facility via groundwater, surface water, or air. It is a composite of separate scores for each of the three routes (S_{gw} = groundwater route score, S_{sw} = surface water route score, and S_a = air route score).

- S_{FE} reflects the potential for harm from substances that can explode or cause fires.

- S_{DC} reflects the potential for harm from direct contact with hazardous substances at the facility (i.e., no migration need be involved).

The preliminary HRS score was:

S_M = 28.02 (S_{gw} = 48.12; S_{sw} = 5.85; S_a = 0)
S_{FE} = Not scored
S_{DC} = 37.5

2. PURPOSE

This Phase I investigation was conducted under contract to the New York State Department of Environmental Conservation (NYSDEC) Superfund Program. The purpose of the investigation was to provide a preliminary evaluation of the potential hazardous waste present at the site, to estimate the potential pollutant migration pathways leading off site, and to determine the natural resources or extent of the human population that might be affected by the pollutants. This initial investigation consisted of conducting a detailed file review of available information and a site inspection. The evaluation includes preparation of a narrative site description, initial characterization of the hazardous substances on site, and calculation of a preliminary HRS score. This assessment will be used to determine what additional actions, if any, should be conducted at the site.

3. SCOPE OF WORK

The Phase I effort involved the following tasks:

- A review of available information from state, county, municipal, and private files;
- Interviews with individuals knowledgeable of the site; and
- Physical inspection of the site that included review of USGS 7.5-minute topographic maps. No samples were collected, although air monitoring was performed using an HNu photoionizing organic vapor detector.

Photographs were taken and are included in Appendix A. Table 3-1 lists sources contacted for the Phase I investigation. References are included in Section 7.

Table 3-1

SOURCES CONTACTED FOR THE NYSDEC PHASE I
INVESTIGATION AT THE MICHAEL WOLFER SITE

Agencies Contacted

U.S. Environmental Protection Agency
Region II Office
26 Federal Plaza, Room 900
New York, New York 10278
Contact: Ben Conetta
Telephone number: (212) 264-2525
Date: 5/20/87
Information Gathered: File search for Michael Wolfer and Motorola--no files found.

New York State Department of Environmental Conservation
Division of Solid and Hazardous Waste
50 Wolf Road
Albany, New York 12233-0001
Contact: Raymond Lupe
Telephone number: (518) 474-2121
Date: 6/22/87
Information Gathered: File search for Michael Wolfer and Motorola--no files found.

New York State Department of Environmental Conservation, Region 9
Solid and Hazardous Waste Division and Permitting Division
600 Delaware Avenue
Buffalo, New York 14202
Contact: Lawrence Clare, Paul Eismann
Telephone number: (716) 847-4585
Date: 4/29/87
Information Gathered: File search for Michael Wolfer and Motorola--Motorola file obtained and xeroxed. No files obtained from permitting division.

New York State Department of Environmental Conservation
Lands and Forests Division
128 South Street
Olean, New York 14760
Contact: David Kieel, Joe Evans, Ken Taft, Tom Jurczak
Telephone number: (716) 372-0888
Date: 5/15/87
Information Gathered: Significant habitats, fisheries resources, plant species of concern, wetlands in the vicinity of the Michael Wolfer site.

State of New York
Department of Health
Corning Tower
The Governor Nelson A. Rockefeller Empire State Plaza
Albany, New York 12237
Telephone number: (518) 458-6310
Contact: Lani Rafferty
Date Contacted: 4/5/89, 4/6/89
Information Gathered: File search for site history, correspondence, background information.

New York State Department of Health
Regional Toxic Program Office
584 Delaware Avenue
Buffalo, New York 14202
Contact: Linda Rusin and Cameron O'Connor
Telephone number: (716) 847-4365
Dates Contacted: May 5, June 4, 1987 and April 13, 1989
Information Gathered: Contact with NYSDOH on May 5, 1987, indicated that files were being tranferred from Albany to Buffalo so the files were not accessible. Further correspondence in June 1987, indicated that the office was newly established and file information was extremely limited; therefore, the county health departments were visited in lieu of NYSDOH. NYSDOH files were searched April 13, 1989.

Table 3-1 (Cont.)

Federal Emergency Management Agency
Flood Map Distribution Center
6930(A-F) San Tomas Road
Baltimore, Maryland 21227
Contact: Not known
Telephone number: (301) 926-5110
Date: 6/87
Information Gathered: Flood insurance rate maps.

Cattaraugus County Health Department
302 Laurens Street
Olean, New York
Contact: Walt Riesner
Telephone number: (716) 375-4121
Date: 5/6/87
Information Gathered: Interview and file search on Michael Wolfer and Motorola.

United States Department of Agriculture (USDA)
Soil Conservation Service
Parkside Drive
Ellicottville, New York 14731
Contact: Bruce Hopkins
Telephone number: (716) 699-2326
Date: 7/6/87
Information Gathered: Agricultural district lands and distance to productive prime agricultural lands.

National Weather Service
Buffalo Airport, East Terminal
Buffalo, New York 14225
Contact: Donald Wuerch
Telephone number: (716) 632-1319
Date: 7/7/87
Information Gathered: Weather statistics.

Delevan Water District
Delevan Municipal Building
P.O. Box 216
Delevan, New York 14042
Contact: Gordan McEtheny, Superintendant of Public Works
Telephone number: (716) 773-9663
Date: 8/24/87
Information Gathered: Location and characteristic information on municipal wells and springs.

Interviews

Contact: Mr. Michael Wolfer
Agency: Owner of Property
Grove Street Extension
Delevan, New York
Telephone number: (716) 492-2394
Date: 6/16/87
Information Gathered: Site history and property ownership.

Contact: Dennis Flehn, Plant Manager
Agency: Motorola Inc.
400 W. Main
Arcade, New York 14009
Telephone number: (716) 492-1234
Date: 7/21/87
Information Gathered: Requested information on history of Motorola drums deposited in Cattaraugus Co. Mr. Flehn stated that he had no knowledge about these wastes.

Table 3-1 (Cont.)

Contact: Mr. Walter Riesner
Agency: Cattaruagus County Department of Health
102 Laurens Street
Olean, New York
Telephone number: (716) 375-4121
Date: 5/6/87
Information Gathered: Site history and storage locations of Motorola drum wastes in Cattaraugus County.

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4. SITE ASSESSMENT

4.1 SITE HISTORY

Motorola Inc., located in Arcade, New York, contracted with unregistered waste haulers to haul 2,500 drums of industrial waste from their facility in 1977. These drums were subsequently deposited at various sites in Cattaraugus County. The drums were believed to have contained machining oils, epoxies, epoxy solvent, flux, flux thinner, degreasers, polyurethane varnishes, toluene, xylene, freon, dilute hydrochloric acid, metal grindings, and metal. The waste haulers attempted to sell the drums to Cattaraugus County residents, claiming that the oily substance in the drums could be used for dust control (Reisner 1987; Halgas 1978).

From May 1977 to March 1978, approximately 1,000 drums were removed from Motorola by Donald Tillinghast, a resident of Machias, and deposited at several sites in the Machias area, including the Michael Wolfer site. Michael Wolfer, the owner of the property, stated that he accepted approximately 15 55-gallon drums of Motorola waste in 1978 (Wolfer 1987). Several of these drums contained oil which was used on a dirt road within the property site for dust control. This dirt road is about 1,000 feet in length and services nine trailers on the property which are year-round residences. Seven rusted Motorola drums reportedly containing oily rags and paper debris were observed on the site (Wolfer 1987; E & E 1987).

4.2 SITE TOPOGRAPHY

The Michael Wolfer site is located north of the Village of Delevan on Grove Street Extension in the Township of Yorkshire, Cattaraugus County, New York. The relief of the immediate area is flat with an average slope of 3%, oriented west, at an elevation of 1,375 feet. Site topography is characteristic of the unconsolidated moraine and glacial outwash deposits found in the Machias, New York, vicinity that results in hummocky land surfaces. The regional topography is characterized by rounded and heavily scoured uplands separated from elongated north-south lowlands (Frimpter 1974).

4.2.1 Soils

Soil types at the 13.5-acre site include Chenango gravelly loam and Caneadea silt loam. The Chenango series has an 8-inch surface layer of gravelly loam with a subsurface layer of gravelly silt loam that extends to a depth of 20 inches (Pearson et al. 1940). Chenango soils are well drained with a permeability range of 0.6 to 6.0 inches per hour. Caneadea silt loam shows considerable mottling with stratified silt and very fine sand that is imperfectly and poorly drained. Soil permeability for Caneadea soils ranges from less than 0.06 to 2.0 inches per hour.

4.2.2 Wetlands

State wetlands are classified by NYSDEC into four ranked groups based on the relative value and the degree of benefits supplied by the wetland. A Class I wetland is considered the most valuable wetland type while a Class IV wetland lacks the characteristics justifying a higher classification (e.g., habitat for endangered species, proximity to reservoirs, etc.); however, a Class IV wetland still qualifies as a regulated wetland. State wetlands are a minimum of 12.4 acres in size. Federal inventory maps have not yet been completed for Cattaraugus County.

A state-designated wetland coded as AR-6 is located 1.2 miles northeast of the Michael Wolfer site near the intersection of Route 16 and Taylor Road. This wetland, known as the Twin Lakes Swamp, is a Class III wetland encompassing 17.8 acres. Cover types in this wetland include deciduous (31%) and coniferous (69%) swamps. No

endangered, threatened or rare plant or animal species has been observed at this wetland (NYSDEC 1987b).

4.2.3 Surface Waters

Elton Creek is the closest perennial stream to the Michael Wolfer site. It is located 0.06 miles west of the site and is part of the Erie-Niagara drainage basin. The creek is classified by NYSDEC as a C(t) stream and is annually stocked with trout. Class C inland waters are suitable for fish and wildlife habitat and recreational boating and have good aesthetic value. Elton Creek is a tributary of Cattaraugus Creek which is approximately 1 mile north of the site. Cattaraugus Creek is also a C(t) stream.

NYSDEC icthyologists have caught several fish species in the Elton Creek, and a fish survey from 1956 yielded the following species: brown trout (Salmo trutta), rainbow trout (Salmo gairdneri), eastern blacknose dace (Rhinichthys atiatulus), longnose dace (Rhinichthys cataractae), central stoneroller (Campostoma anomalum), common shiner (Notropis cornutus), rainbow darter (Etheostoma caeruleum), and bluegill (Lepomis macrochirus) (NYSDEC 1987). No fish surveys have been conducted at this creek since 1956.

4.2.4 Land Use

The site is located in a semi-rural area north of the Village of Delevan. Prime agricultural farmland in production is 1,320 feet from the site (USDA Soil Conservation Service 1987). The total population within 3 miles of the site is 5,036 people (General Service Corporation 1986). Nine trailer homes used as year-round residences are located on the property. In addition to a full-time job, Mr. Wolfer raises pigs and sheep. He has two barns along the west side of his property for this purpose (see Figure 1-2).

4.2.5 Critical and Sensitive Habitats

There are no critical habitats or plant species of concern within 3 miles of the Michael Wolfer site (NYSDEC 1987) nor are there any buildings in this area that are included on the National Register of Historic Places (New York State Office of Parks, Recreation, and Historic Preservation 1980; Murtagh 1976). The Michael Wolfer site is

not within a 100-year floodplain (Federal Emergency Management Agency 1982).

4.3 SITE HYDROLOGY

4.3.1 Regional Geology and Hydrology

The geology of Cattaraugus County is well defined as a result of the numerous geologic investigations conducted in this region.

Unconsolidated moraine and outwash deposits comprise the greater part of the surficial deposits in Cattaraugus County. These unconsolidated glacial deposits consist of Wisconsinan glacial deposits. In the valleys of the region, thick saturated deposits of sand and gravel outwash are present and comprise the most productive aquifers in the area (Frimpter 1974). The thickness and the composition of glacial deposition varies, but generally the glacial mantle is thin on hilltops and consists of unsorted till, whereas the valley glacial deposits are thick and consist of highly permeable sand and gravel. The unconsolidated deposit is interbedded with Lacustrine clays and silts deposited during glacial retreat.

The bedrock geology of Cattaraugus County is characterized by about 2,500 feet of upper Devonian period siltstone and shale associated with the marine environments of the Catskill clastic wedge (Tesmer 1975). A generalized stratigraphic column of the bedrock in Cattaraugus County is presented as Figure 4-1.

Groundwater wells drilled in the Devonian shales and siltstones generally yield adequate quantities of good quality groundwater for low yield residential use. The Devonian shales and siltstones exhibit low primary porosity and, therefore, have low permeability and yield, precluding the possibility of tapping this strata for large quantities of water. The groundwater yield in the Devonian is a result of secondary porosity jointing (Frimpter 1974).

No major faults or fold structures are indicated in this region based on the near surface bedrock geology (Tesmer 1975). Regional bedrock dips to the south or southwest approximately 40 feet per mile.

4.3.2 Site Hydrogeology

Little specific information on hydrology is available for this site. There are no wells on site and no known wells in the immediate

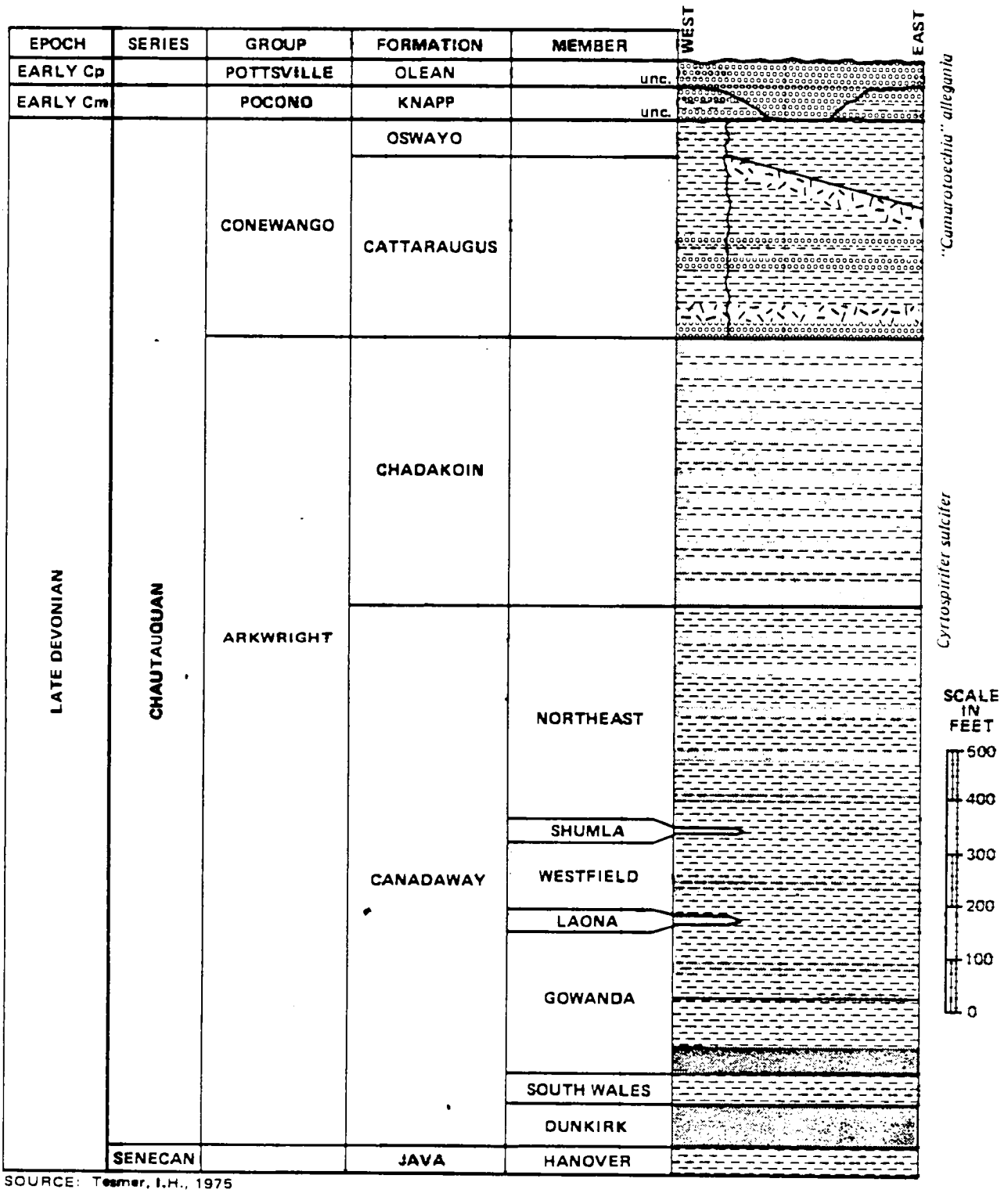


Figure 4–1 GENERALIZED STRATIGRAPHIC COLUMN OF CATTARAUGUS COUNTY, NEW YORK

vicinity of the site. The closest well which provides hydraulic data is a private family well used for drinking water located 0.2 miles south of the site. The water level is 30 feet below ground level at an elevation of 1,400 feet (LaSala 1968). Depth to bedrock is not known for this well. The presence of glacial deposits may impede downward flow of groundwater but there is insufficient data to adequately assess the hydraulic gradients and dominant flow patterns at this site.

The Village of Delevan has one municipal well within the village that is 112 feet deep. The well is located about 1.3 miles southeast of the Michael Wolfer site on Church Street. The village also has one municipal spring just southwest of the village and 1.2 miles south of the site. The well and spring supply municipal water to 1,050 people (New York State Department of Health 1982, McElheny 1987).

To more accurately determine the site hydrogeology, extensive subsurface investigations will need to be performed, including installation of monitoring wells both upgradient and downgradient of the site.

4.3.3 Hydraulic Connections

No specific information regarding hydraulic connections is available for this site. However, a thick deposit of sand and gravel is the primary aquifer in valleys that surround and include the site location (Frimpter 1974). This sand and gravel aquifer is highly permeable and groundwater transport to the underlying Devonian shale and siltstone is probable. Vertical and horizontal joints in the Devonian rock could facilitate groundwater transport.

4.4 SITE CONTAMINATION

No previous sampling programs have been conducted at this site, with the exception of an air quality survey conducted by E & E using an HNu photoionizer during E & E's site investigation on June 16, 1987. No readings above background were noted.

Background information indicates that the Motorola drums deposited in Cattaraugus County in 1977 and 1978 contained machining oils, epoxies, epoxy solvent, flux, flux thinner, degreasers, polyurethane varnishes, toluene, xylene, freon, diluted hydrochloric acid,

metal grindings, and debris. The machining oils are known to contain chlorinated organics and up to 2% lead. The degreasers used were trichloroethane and trichloroethylene (Halgas 1978). Motorola drums containing these oil wastes were deposited at numerous sites in Cattaraugus County, including Tidd's Junkyard in the Town of Yorkshire, where over 600 drums were placed. In 1982, NYSDEC authorized a remedial action plan that included a waste characterization analyses of both drum contents and soil at the junkyard. Composites of samples from drums containing machining oils were analyzed for EP Toxicity (metals) and were found to generate 0.13 to 2.15 ppm lead in the leachate. The presence of TCE was confirmed in drums containing degreaser wastes. Powdered and ganular wastes were found not to exhibit EP Toxicity.

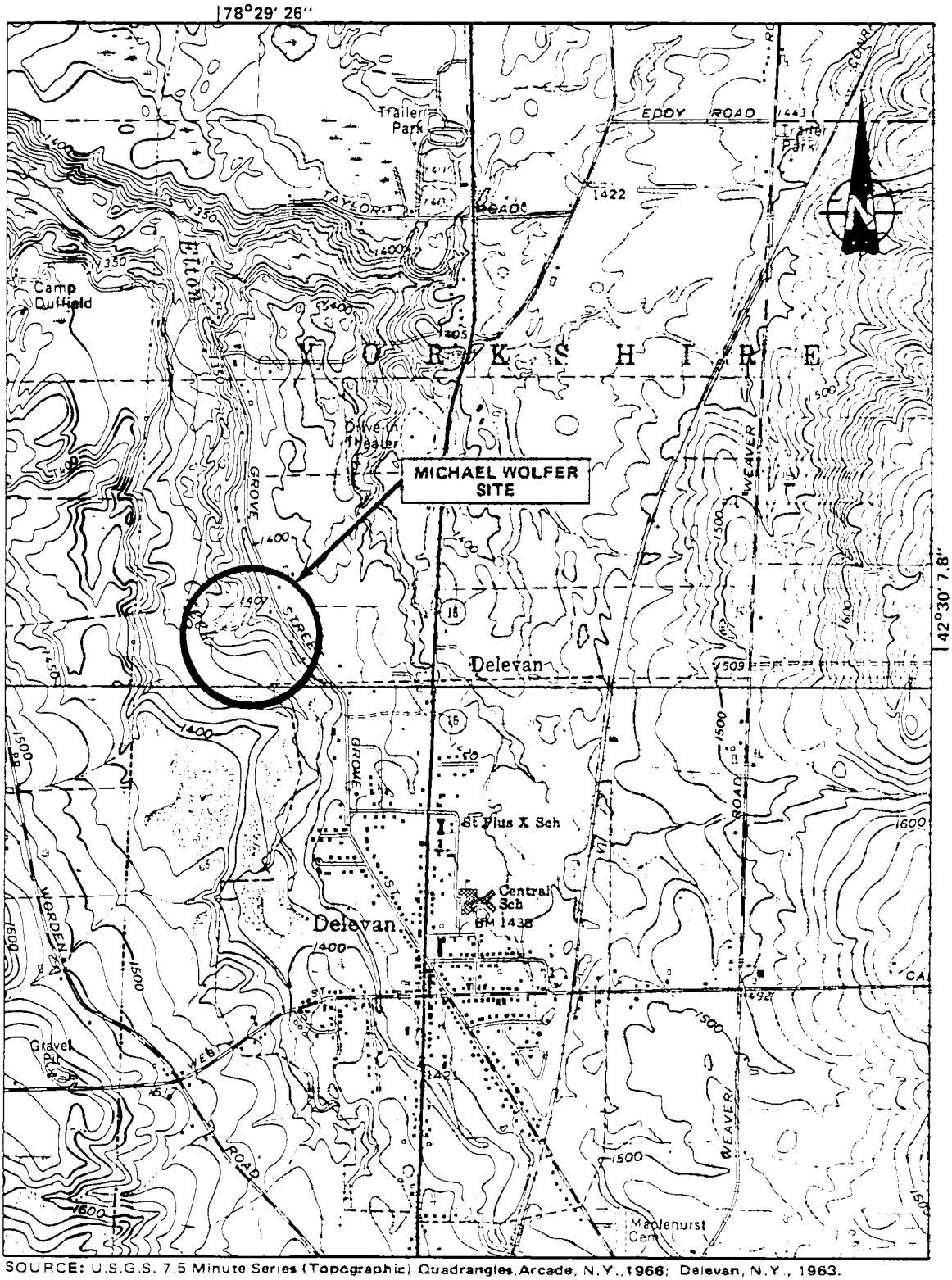
Soil samples from the Tidd Junkyard site were found not to exhibit the hazardous waste characteristics of ignitability, corrosivity, or reactivity, or EP Toxicity (Termini Associates 1983).

E & E employees conducting the Michael Wolfer site investigation on June 16, 1987 observed seven drums on site. These drums were rusted but not leaking. According to the site owner, Mr. Michael Wolfer, the remaining drums contained oily rags and paper products. No placards or labels were seen on the drums. No stressed vegetation was observed, either at the drum storage site or adjacent to the 1,000 foot length of dirt road upon which 8 to 13 drums of Motorola oil waste were deposited in 1978. The site is indistinguishable from surrounding residential vegetation. The amount of groundwater and surface water contamination, if any, is unknown, and there is insufficient data to evaluate the migration pathways of any possible contaminants at this site.

5. PRELIMINARY APPLICATION OF THE HRS

5.1 NARRATIVE SUMMARY

The Michael Wolfer site is an active 13.5-acre privately owned trailer compound located near Grove Street Extension in the Village of Delevan, Cattaraugus County, New York (see Figure 5-1). The site is a semirural, flat to gently sloping area outside the Town of Delevan. The population, including the Town of Delevan, within a 3-mile radius of this site is approximately 5,036. In 1978, 15 to 20 55-gallon drums of waste oil were transferred to Michael Wolfer for use as dust control on his dirt road. About half the drum contents reportedly were deposited on his road and the empty drums removed to an unknown location. The remaining drums remain stored on his property. No groundwater, surface water, soil, or drum content samples were collected at this site, although an HNu photoionization detector utilized during the site investigation conducted by E & E on June 16, 1987 recorded no readings above background. No visual evidence of soil contamination was observed during the site investigation.



SOURCE: U.S.G.S. 7.5 Minute Series (Topographic) Quadrangles, Arcade, N.Y., 1966; Delevan, N.Y., 1963.

SCALE

0 ½ 1 MILE

0 .5 1 KILOMETER

Figure 5–1 LOCATION MAP

FIGURE 1

HRS COVER SHEET

Facility Name: Michael Wolfer

Location: Grove Street Extension, Delevan, New York

EPA Region: Region II

Person(s) in Charge of Facility: Mr. Michael Wolfer

Name of Reviewer: Mark Cotter Date: 8/20/87

General Description of the Facility:

(For example: landfill, surface impoundment, pile, container; types of hazardous substances; location of the facility; contamination route of major concern; types of information needed for rating; agency action; etc.)

The Michael Wolfer site is a privately owned 13.5-acre trailer park that received 15-20 55-gallon drums of Motorola waste oil in 1978. The oil reportedly was used for dust control on a dirt road inside the trailer compound. The contents of these drums are unknown but other drums containing Motorola waste oil were tested at a nearby location and found to contain hazardous substances. No sampling has been conducted at this site.

Scores: S_M = 28.02 (S_{gw} = 48.12 S_{sw} = 5.85 S_a = 0)

S_{FE} = Not scored

S_{DC} = 37.5

Ground Water Route Work Sheet						
Rating Factor	Assigned Value (Circle One)		Multi-plier	Score	Max. Score	Ref. (Section)
[1] Observed Release	(0)	45	1	0	45	3.1
If observed release is given a score of 45, proceed to line [4]. If observed release is given a score of 0, proceed to line [2].						
[2] Route Characteristics						3.2
Depth to Aquifer of Concern	0 1 (2) 3		2	4	6	
Net Precipitation	0 1 (2) 3		1	2	3	
Permeability of the Unsaturated Zone	0 1 (2) 3		1	2	3	
Physical State	0 1 2 (3)		1	3	3	
Total Route Characteristics Score				11	15	
[3] Containment	0 1 2 (3)		1	3	3	3.3
[4] Waste Characteristics						3.4
Toxicity/Persistence	0 3 6 9 12 15 (18)		1	18	18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8		1	1	8	
Total Waste Characteristics Score				19	26	
[5] Targets						3.5
Ground Water Use	0 1 2 (3)		3	9	9	
Distance to Nearest Well/Population Served	0 4 6 8 10 12 16 18 20 24 30 32 (35) 40		1	35	40	
Total Targets Score				44	49	
[6] If line [1] is 45, multiply [1] x [4] x [5] If line [1] is 0, multiply [2] x [3] x [4] x [5]				27,588	57,330	
[7] Divide line [6] by 57,330 and multiply by 100			S_{gw} = 48.12			

FIGURE 2
GROUND WATER ROUTE WORK SHEET

Surface Water Route Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0) 45	1	0	45	4.1
If observed release is given a value of 45, proceed to line 4. If observed release is given a value of 0, proceed to line 2.					
2 Route Characteristics					4.2
Facility Slope and Intervening Terrain	(0) 1 2 3	1	0	3	
1-yr. 24-hr. Rainfall	0 1 (2) 3	1	2	3	
Distance to Nearest Surface Water	0 1 2 (3)	2	6	6	
Physical State	0 1 2 (3)	1	3	3	
Total Route Characteristics Score			11	15	
3 Containment	0 1 2 (3)	1	3	3	4.3
4 Waste Characteristics					4.4
Toxicity/Persistence	0 3 6 9 12 15 (18)	1	18	18	
Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1	1	8	
Total Waste Characteristics Score			19	26	
5 Targets					4.5
Surface Water Use	0 1 (2) 3	3	6	9	
Distance to a Sensitive Environment	(0) 1 2 3	2	0	6	
Population Served/Distance to Water Intake Downstream	(0) 4 6 8 10 12 16 18 20 24 30 32 35 40	1	0	40	
Total Targets Score			6	55	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			3,762	64,350	
7 Divide line 6 by 64,350 and multiply by 100		S_{gw} = 5.85			

FIGURE 7
SURFACE WATER ROUTE WORK SHEET

Air Route Work Sheet						
Rating Factor	Assigned Value (Circle One)		Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Release	(0)	45	1	0	45	5.1
Date and Location:						
Sampling Protocol:						
If line 1 is 0, the S_a = 0. Enter on line 5. If line 1 is 45, then proceed to line 2.						
2 Waste Characteristics						5.2
Reactivity and Incompatibility	0 1 2 3		1		3	
Toxicity	0 1 2 3		3		9	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8		1		8	
	Total Waste Characteristics Score				20	
3 Targets						5.3
Population Within 4-Mile Radius	0 9 12 15 18 21 24 27 30		1		30	
Distance to Sensitive Environment	0 1 2 3		2		6	
Land Use	0 1 2 3		1		3	
	Total Targets Score			0	39	
4 Multiply 1 x 2 x 3				0	35,100	
5 Divide line 4 by 35,100 and multiply by 100			S_a =	0		

FIGURE 9
AIR ROUTE WORK SHEET

	S	S^2
Groundwater Route Score (S_{gw})	48.12	2,315.53
Surface Water Route Score (S_{sw})	5.85	34.22
Air Route Score (S_a)	0	0
$S_{gw}^2 + S_{sw}^2 + S_a^2$		2,349.75
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2}$		48.47
$\sqrt{S_{gw}^2 + S_{sw}^2 + S_a^2} \,/\, 1.73 = S_M =$		28.02

FIGURE 10
WORKSHEET FOR COMPUTING S_M

Fire and Explosion Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Containment	1 3	1		3	7.1
2 Waste Characteristics					7.2
Direct Evidence	0 3	1		3	
Ignitability	0 1 2 3	1		3	
Reactivity	0 1 2 3	1		3	
Incompatibility	0 1 2 3	1		3	
Hazardous Waste Quantity	0 1 2 3 4 5 6 7 8	1		8	
Total Waste Characteristics Score				20	
3 Targets					7.3
Distance to Nearest Population	0 1 2 3 4 5	1		5	
Distance to Nearest Building	0 1 2 3	1		3	
Distance to Sensitive Environment	0 1 2 3	1		3	
Land Use	0 1 2 3	1		3	
Population Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Buildings Within 2-Mile Radius	0 1 2 3 4 5	1		5	
Total Targets Score				24	
4 Multiply 1 x 2 x 3				1,440	
5 Divide line 4 by 1,440 and multiply by 100		S_{FE} = Not scored			

FIGURE 11
FIRE AND EXPLOSION WORK SHEET

Direct Contact Work Sheet					
Rating Factor	Assigned Value (Circle One)	Multi-plier	Score	Max. Score	Ref. (Section)
1 Observed Incident	(0) 45	1	0	45	8.1
If line 1 is 45, proceed to line 4 If line 1 is 0, proceed to line 2					
2 Accessibility	0 1 2 (3)	1	3	3	8.2
3 Containment	0 (15)	1	15	15	8.3
4 Waste Characteristics Toxicity	0 1 2 (3)	5	15	15	8.4
5 Targets					8.5
Population Within a 1-Mile Radius	0 1 2 (3) 4 5	4	12	20	
Distance to a Critical Habitat	(0) 1 2 3.	4	0	12	
Total Targets Score			12	32	
6 If line 1 is 45, multiply 1 x 4 x 5 If line 1 is 0, multiply 2 x 3 x 4 x 5			8,100	21,600	
7 Divide line 6 by 21,600 and multiply by 100		S_{OC} = 37.5			

FIGURE 12
DIRECT CONTACT WORK SHEET

DOCUMENTATION RECORDS
FOR
HAZARD RANKING SYSTEM

Instructions: As briefly as possible summarize the information you used to assign the score for each factor (e.g., "Waste quantity = 4,230 drums plus 800 cubic yards of sludges"). The source of information should be provided for each entry and should be a bibliographic-type reference. Include the location of the document.

Facility Name: Michael Wolfer

Location: Grove Street Extension, Delevan, New York

Date Scored: August 24, 1987

Person Scoring: Mark Cotter

Primary Source(s) of Information (e.g., EPA region, state, FIT, etc.):

NYSDEC Region 9 Files
Cattaraugus County Health Department Files
E & E site inspection
Interviews with municipal officials and site representatives

Factors Not Scored Due to Insufficient Information:

Comments or Qualifications:

Fire and explosion score was not completed as the site has not been declared a fire hazard by a fire marshal.

Representative Motorola waste oil analyzed at the Tidd Junkyard site was used for a toxicity/persistence score.

GROUNDWATER ROUTE

1. OBSERVED RELEASE

Contaminants detected (3 maximum):

None Reported

Rationale for attributing the contaminants to the facility:

* * *

2. ROUTE CHARACTERISTICS

Name/description of aquifer(s) of concern:

Depth to Aquifer of Concern

Unconsolidated moraine and outwash deposits make up the majority of surficial groundwater aquifers in the area. A groundwater well located 1 mile from the site at the same surface elevation taps a gravel aquifer at 30 feet below ground level.

Ref. No. 1

Depth(s) from the ground surface to the highest seasonal level of the saturated zone [water table(s)] of the aquifer of concern:

Unknown
Estimated between 10 and 30 feet.
Ref. No. 1

Depth from the ground surface to the lowest point of waste disposal/storage:

Unknown

Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

36 in/yr
Ref. No. 2

Mean annual lake or seasonal evaporation (list months for seasonal):

27 in/yr
Ref. No. 2

Net precipitation (subtract the above figures):

9 in/yr

Permeability of Unsaturated Zone

Soil type in unsaturated zone:

Chenango gravelly loam and Caneadea silt loam
Ref. No. 3

Permeability associated with soil type:

Soil is primarily silty loam with a permeability of $>10^{-5}$ cm/sec
Ref. No. 3

Physical State

Physical state of substances at time of disposal (or at present time for generated gases):

Oily waste
Ref. Nos. 4, 5, 6

* * *

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Drums and oil that was placed on the dirt roads for dust control.
Ref. Nos. 4, 5, 6, 7

Method with highest score:

Oil on the dirt roads
Ref. No. 2

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Lead (as lead tallate), diglycidyl ether of bisphenol, cresyl glycidyl ether, polyoxypropylene diamine, steric acid, triethanolamine, hexylene glycol, tetrasodium EDTA, 2'dihydroxy 5'5' dichloro-diphenylmethane, toluene, xylene, trichloroethylene, trichloroethane
Ref. No. 5

Compound with highest score:

Lead
Ref. No. 2

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containment score of 0. (Give a reasonable estimate even if quantity is above maximum.):

15-20 drums
Ref. Nos. 4, 5, 6, 7

* * *

5. TARGETS

Groundwater Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

Municipal and private water supply
Recreation
Ref. Nos. 1, 7

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

Private well 0.2 miles south of the site.
The Village of Delevan municipal wells are 1.2 miles from the site.
Ref. No. 7

Distance to Above Well or Building

0.2 miles
Ref. No. 7

Population Served by Groundwater Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

Delevan municipal water supply has 2 wells serving 1,050 residents. Total population within 3 miles is 5,036.
Ref. Nos. 8, 9

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

Land is not irrigated.
Ref. No. 14

Total population served by groundwater within a 3-mile radius:

5,036
Ref. No. 8

D1567

SURFACE WATER ROUTE

1. OBSERVED RELEASE

Contaminants detected in surface water at the facility or downhill from it (5 maximum):

None reported or tested

Rationale for attributing the contaminants to the facility:

* * *

2. ROUTE CHARACTERISTICS

Facility Slope and Intervening Terrain

Average slope of facility in percent:

3%
Ref. No. 10

Name/description of nearest downslope surface water:

Elton Creek
Ref. No. 10

Average slope of terrain between facility and above-cited surface water body in percent:

3%
Ref. No. 10

Is the facility located either totally or partially in surface water?

No
Ref. No. 7

Is the facility completely surrounded by areas of higher elevation?

No
Ref. No. 7

1-Year 24-Hour Rainfall in Inches

2.25 inches
Ref. No. 2

Distance to Nearest Downslope Surface Water

Less than 1,000 feet
Ref. Nos. 7, 10

Physical State of Waste

Oily waste
Ref. Nos. 4, 5, 6

* * *

3. CONTAINMENT

Containment

Method(s) of waste or leachate containment evaluated:

Drums and oil spread on dirt road for dust control
Ref. Nos. 4, 5, 6, 7

Method with highest score:

Oil on dirt road
Ref. No. 2

4. WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

Lead (as lead tallate), diglycidyl ether of bisphenol, triethanolamine, hexylene glycol, tetrasodium EDTA, 2'dihydroxy 5'5' dichloro-diphenylmethane, toluene, xylene, trichloroethylene, trichloroethane
Ref. No. 5

Compound with highest score:

Lead
Ref. No. 2

Hazardous Waste Quantity

15-20 55-gallon drums
Ref. Nos. 4, 5, 6, 7

Basis of estimating and/or computing waste quantity:

Ref. Nos. 6, 7

* * *

5. TARGETS

Surface Water Use

Use(s) of surface water within 3 miles downstream of the hazardous substance:

Elton Creek - recreation

Ref. Nos. 10, 15

D1667

Is there tidal influence?

No - NA
Ref. Nos. 10, 11

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

NA
Ref. No. 11

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

NA
Ref. No. 11

Distance to critical habitat of an endangered species or national wildlife refuge, if 1 mile or less:

No critical habitats, etc., within 3 miles
Ref. No. 11

Population Served by Surface Water

Location(s) of water-supply intake(s) within 3 miles (free-flowing bodies) or 1 mile (static water bodies) downstream of the hazardous substance and population served by each intake:

Surface water is not used for drinking water.
Ref. No. 15

Computation of land area irrigated by above-cited intake(s) and conversion to population (1.5 people per acre):

Lands are not irrigated
Ref. No. 14

Total population served:

NA

Name/description of nearest of above water bodies:

NA

Distance to above-cited intakes, measured in stream miles:

NA

Source: Site inspection and USGS topographical maps

D1667

A I R R O U T E

1. OBSERVED RELEASE

Contaminants detected:

None detected
Ref. No. 7

Date and location of detection of contaminants:

None detected during survey
Ref. No. 7

Methods used to detect the contaminants:

HNu photoionization detector
Ref. No. 7

Rationale for attributing the contaminants to the site:

Ref. Nos. 4, 5, 6, 7

* * *

2. WASTE CHARACTERISTICS

Reactivity and Incompatibility

Most reactive compound:

NA

Most incompatible pair of compounds:

NA

Toxicity

Most toxic compound:

Lead
Ref. No. 13

Hazardous Waste Quantity

Total quantity of hazardous waste:

Unknown. 15-20 drums delivered to site. 7 drums known to remain, others were spilled on site.
Ref. Nos. 4, 5, 6, 7

Basis of estimating and/or computing waste quantity:

It is estimated that a maximum of 20 drums were delivered and eventually spilled or stored on site.

* * *

3. TARGETS

Population Within 4-Mile Radius

Circle radius used, give population, and indicate how determined:

0 - 4 miles (0 - 1 mile) 0 - 1/2 mile 0 - 1/4 mile

1,371
Ref. No. 8

Distance to a Sensitive Environment

Distance to 5-acre (minimum) coastal wetland, if 2 miles or less:

NA

Distance to 5-acre (minimum) fresh-water wetland, if 1 mile or less:

No wetlands designated within 1 mile.
Ref. No. 11

Distance to critical habitat of an endangered species, if 1 mile or less:

No critical habitats identified within 1 mile.
Ref. No. 11

Land Use

Distance to commercial/industrial area, if 1 mile or less:

NA
Ref. No. 10

Distance to national or state park, forest, wildlife reserve, if 2 miles or less:

NA
Ref. No. 10

Distance to residential area, if 2 miles or less:

Onsite, <0.1 miles
Ref. Nos. 7, 10

Distance to agricultural land in production within past 5 years, if 1 mile or less:

0.25 miles
Ref. No. 12

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

0.25 mile
Ref. No. 12

Is a historic or landmark site (National Register of Historic Places and National Natural Landmarks) within the view of the site?

No.
Ref. No. 16

FIRE AND EXPLOSION

1. CONTAINMENT

Hazardous substances present:

Unknown

Type of containment, if applicable

NA

* * *

2. WASTE CHARACTERISTICS

Direct Evidence

Type of instrument and measurements:

NA

Ignitability

Compound used:

NA

Reactivity

Most reactive compound:

NA

Incompatibility

Most incompatible pair of compounds:

NA

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility:

Unknown

Basis of estimating and/or computing waste quantity:

Received 15-20 55 gallon drums. Unknown quantity spilled on site.
Ref. Nos. 4, 5, 6, 7

* * *

3. TARGETS

Distance to Nearest Population

Onsite <0.1 mile
Ref. No. 8

Distance to Nearest Building

<0.1 mile
Ref. No. 8

Distance to a Sensitive Environment

Distance to wetlands:

2.1 miles
Ref. No. 11

Distance to critical habitat:

No critical habitats identified.
Ref. No. 11

Land Use

Distance to commercial/industrial area, if 1 mile or less:

NA
Ref. No. 10

Distance to national or state park, forest, or wildlife reserve, if 2 miles or less:

NA
Ref. No. 10

Distance to residential area, if 2 miles or less:

Onsite <0.1 mile
Ref. Nos. 7, 10

Distance to agricultural land in production within past 5 years, if 1 mile or less:

0.25 mile
Ref. No. 12

Distance to prime agricultural land in production within past 5 years, if 2 miles or less:

0.25 mile
Ref. No. 12

Is a historic or landmark site (National Register of Historic Places and National Natural Landmarks) within the view of the site?

No.
Ref. No. 16

Population Within 2-Mile Radius

2,607
Ref. No. 8

Buildings Within 2-Mile Radius

996
Ref. No. 8

1. OBSERVED INCIDENT

Date, location, and pertinent details of incident:

None reported

* * *

2. ACCESSIBILITY

Describe type of barrier(s):

None
Ref. No. 7

* * *

3. CONTAINMENT

Type of containment, if applicable:

Wastes have been spilled on property. No containment employed other than those still in rusted 55-gallon drums.
Ref. Nos. 4, 5, 6, 7

* * *

4. WASTE CHARACTERISTICS

Toxicity

Compounds evaluated:

Lead (as lead tallate), diglycidyl ether of bisphenol, cresyl glycidyl ether, polyoxypropylene diamine, stearic acid, triethanolamine, hexylene glycol, tetrasodium EDTA, 2'dihydroxy 5'5'dichloro-diphenylmethane, toluene, xylene, trichloroethylene, trichloroethane
Ref. No. 5

Compound with highest score:

Lead
Ref. No. 2

* * *

5. TARGETS

Population Within One-mile Radius

1,371 people
Ref. No. 8

Distance to Critical Habitat (of endangered species)

No critical habitats within 3 miles
Ref. No. 11

REFERENCES

If the entire reference is not available for public review in the EPA regional files on this site, indicate where the reference may be found:

Reference Number	Description of the Reference
1	LaSala, A.M. Jr., 1968, Ground-Water Resources of the Erie-Niagara Basin, New York, United States Department of the Interior Geological Survey and New York State Department of Water Resources Commission, Basin Planning Report ENB-3. Document Location: E & E, Buffalo, New York.
2	Uncontrolled Hazardous Waste Site Ranking System; A Users Manual, in National Oil and Hazardous Substances Contingency Plan, Appendix A (40 CFR 300)(47 FR 31219), July 16, 1982. Document Location: E & E, Buffalo, New York.
3	Pearson, C.S., J.C. Bryant, and W. Secor, 1940, Soil Survey Cattaraugus County, New York, USDA Bureau of Plant Industry, Cornell University Agricultural Experiment Station, Ithaca, New York. Document Location: E & E, Buffalo, New York.
4	Christoffel, Thomas, September 2, 1982, personal communication, NYSDEC, Region 9, memorandum to Peter Buechl, NYSDEC, Region 9. Document Location: E & E, Buffalo, New York.
5	Halgas, Chester, October 3, 1978, personal communication, Cattaraugus County Department of Health, letter to Jack McMahon, NYSDEC, Region 9. Document Location: E & E, Buffalo, New York.
6	Reisner, W., May 6, 1987, personal communication, Cattaraugus County Department of Health. Document Location: E & E, Buffalo, New York.
7	Ecology and Environment, Inc., June 1987, Site Inspection Logbook. Document Location: E & E, Buffalo, New York.
8	General Sciences Corporation, 1986, Geophysical Exposure Modeling System (GEMS) Volume 3, Graphics and Geodata Handling, Prepared for USEPA Office of Pesticides and Toxic Substances Exposure Evaluation Division. Document Location: E & E, Buffalo, New York.
9	New York State Department of Health, 1982, New York State Atlas of Community Water System Sources 1982, Division of Environmental Protection, Bureau of Public Water Supply Protection, Albany, New York. Document Location: E & E, Buffalo, New York.
10	USGS, 7.5-minute topographic map, Delevan Quadrangle. Document Location: E & E, Buffalo, New York.
11	New York State Department of Environmental Conservation, 1987, State of Federal Regulated Wetlands Maps and Critical Habitats Maps, Olean, New York. Document Location: NYSDEC lands and Forests Division, Olean, New York.
12	Hopkins, B., 1987, United States Department of Agriculture (USDA) Soil Conservation Service, personal communication concerning agricultural district lands and their use, Ellicottville, New York. Document Location: E & E, Buffalo, New York.
13	Sax, N.I., 1979, Dangerous Properties of Industrial Materials, 6th Edition, Van Nostrand Reinhold Company, New York.

REFERENCES

If the entire reference is not available for public review in the EPA regional files on this site, indicate where the reference may be found:

Reference Number	Description of the Reference
14	McElheny, Gordon, 1989, personal communication, Delevan Water District, Document Location: E & E, Buffalo, New York.
15	Department of State, State of New York, 1983, Official Compilation of Codes, Rules and Regulations, Title 6, Environmental Conservation, Part 700, Division of Water Resources, Albany, New York. Document location: E & E, Buffalo, New York.
16	Murtagh, W.J., 1976, The National Register of Historic Places, USDOI National Park Service, Washington, D.C. Document location: E & E, Buffalo, New York.

REFERENCE NO. 1

GROUND-WATER RESOURCES OF THE ERIE-NIAGARA BASIN, NEW YORK

Prepared for the
Erie-Niagara Basin Regional Water Resources
Planning Board

by

A. M. La Sala, Jr.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

in cooperation with

THE NEW YORK STATE CONSERVATION DEPARTMENT
DIVISION OF WATER RESOURCES

STATE OF NEW YORK
CONSERVATION DEPARTMENT
WATER RESOURCES COMMISSION

Basin Planning Report ENB-3

1968

GROUND-WATER RESOURCES OF THE ERIE-NIAGARA BASIN, NEW YORK

By
A. M. La Sala, Jr.

ABSTRACT

The Erie-Niagara basin, New York, borders Lake Erie and the Niagara River and includes the principal part of their drainage basin in New York. The area extends from the Cattaraugus Creek basin on the south to the Tonawanda Creek basin on the north. The northern part of the area and a narrow belt along Lake Erie are in the Erie-Ontario Lowlands, a region of low relief. The remainder of the area lies in the Appalachian Uplands, an area of considerable relief.

The principal water-bearing formations in the area are glacial sand and gravel deposits; the Camillus Shale, which contains interbedded gypsum; a limestone aquifer unit consisting of the Onondaga Limestone, Akron Dolomite, and Bertie Limestone; and the Lockport Dolomite. A number of thick and permeable sand and gravel deposits lie in valleys of the upland [illegible] will yield supplies of 500 to 1,400 gpm (gallons per minute) to individual wells that are properly constructed. Several communities [illegible] public water supplies from such deposits. The Camillus Shale, [illegible] unit, and Lockport Dolomite vary widely in water-bearing [illegible]. Generally, only small to moderate supplies (less than 50 gpm) are available from these formations. However, where the water-bearing openings have been widened by solution of gypsum and carbonate minerals, the rocks provided large supplies. In and near Buffalo and Tonawanda, the Camillus Shale yields 400 to 1,200 gpm to individual wells, and the limestone unit yields as much as 300 gpm but more usually 100 gpm. The Lockport Dolomite does not yield more than 90 gpm to individual wells in the area. Data from nearby areas indicate the Lockport only occasionally yields as much as 100 gpm. Only small yields from wells, about enough for individual domestic supplies, can be obtained from shale, lake deposits, and till.

Average annual recharge to the sand and gravel deposits in the upland region ranges from about half a million to 4 million gallons per day per square mile. As the larger deposits are each several square miles in extent, the potential for development is large. To this potential should be added infiltration from streams that could be induced by pumping large quantities of ground water.

The quality of ground water in the Appalachian Uplands is [illegible] a high hardness but generally not by other unfavorable characteristics. The ground water in the Erie-Ontario Lowland generally is harder and otherwise poorer in quality, being high in dissolved solids. The water in the Camillus Shale is objectionably high in sulfate and, in some places, chloride. The chloride may be dissolved out of deeply buried salt beds by water circulating through a regional flow system from a recharge area in the Appalachian Uplands to a discharge area along Tonawanda Creek. Shallow ground water in carbonate rocks and sand and gravel deposits locally has been polluted by septic tank effluent.

CONCLUSIONS

The best sources of ground water in the area are exposed sand and gravel deposits distributed in the Cattaraugus Creek basin and in the Tonawanda Creek basin south of Batavia. Less extensive (but potentially productive) sand and gravel aquifers lie along Eighteenmile Creek, East Branch Cazenovia Creek, and Buffalo Creek. The water available in these deposits is on the order of 50 million gallons per day without considering the potential available from induced stream infiltration or the increased recharge that might be brought about by large withdrawals. The sand and gravel deposits with the largest potential are distributed through the part of the area most distant from and considerably higher in altitude than Lake Erie. They, therefore, are a ready source of water for the part of the area most difficult to serve from present distribution systems drawing water from the lake.

Large supplies of ground water, 500 to 1,000 gpm from individual wells, can be obtained from the Camillus Shale. Still larger supplies probably could be pumped from abandoned gypsum mines near Akron and operating mines near Clarence Center. The quality of water from the Camillus is poor and the water would be useful mainly for industrial uses, such as cooling.

The Onondaga Limestone will provide supplies of 100 gpm in many parts of its outcrop belt and occasional supplies of as much as 300 gpm. The quarry near Williamsville will provide a supply of about 3,000 gpm from inflowing ground water.

Small supplies are available from the remaining bedrock units and glacial deposits throughout the area. However, a small percentage of the wells drilled in shale in the southern half of the area have yields that are inadequate for a domestic supply.

REFERENCE NO. 2

Uncontrolled Hazardous Waste Site Ranking System

A Users Manual

Kris W. Barrett
S. Steven Chang
Stuart A. Haus
Andrew M. Platt

August 1982

MTR-82W111

SPONSOR:
U.S. Environmental Protection Agency
CONTRACT NO.:
68-01-6278

The MITRE Corporation
Metrek Division
1820 Dolley Madison Boulevard
McLean, Virginia 22102

5-30

REFERENCE NO. 3

No. 12 Issued March 1940

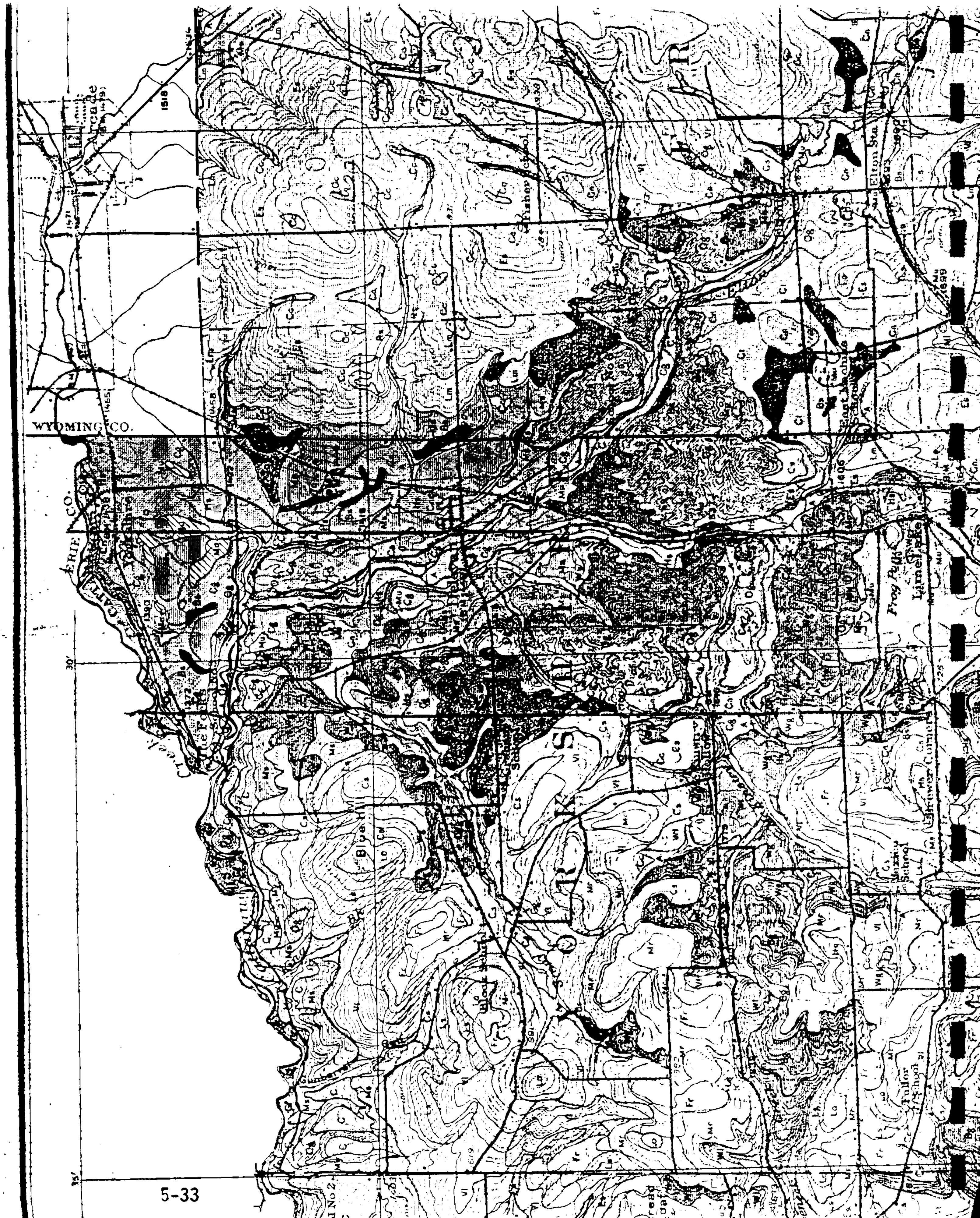
Soil Survey

Cattaraugus County New York

By
C. S. PEARSON, in Charge
J. C. BRYANT and WILBER SECOR
Cornell University Agricultural Experiment Station
and
S. R. BACON, CLARENCE LOUNSBURY
W. J. CAMP, and C. B. BEADLES
United States Department
of Agriculture

UNITED STATES DEPARTMENT OF AGRICULTURE
BUREAU OF PLANT INDUSTRY
In cooperation with the
Cornell University Agricultural Experiment Station

For sale by the SUPERINTENDENT OF DOCUMENTS, WASHINGTON, D. C. Price 40 cents


WYOMING CO.
ERIE CO.

Wooster gravelly silt loam.—The cultivated surface soil of Wooster gravelly silt loam is brown or yellowish-brown loose gravelly silt loam to a depth of 8 inches. The subsurface material, continuing to a depth of 24 inches, is yellowish-brown or brownish-yellow gritty silt loam and is somewhat firm in place. The subsoil, between depths of 24 and 36 or more inches, is slightly compact but friable pale-yellow gravelly or stony loam with a brown cast in many places. The lower part of the subsoil and the substratum are light grayish-yellow moderately compact gravelly or stony loam till. The degree of compactness increases with depth but does not reach a point where it interferes with the movement of water or the penetration of plant roots.

The natural organic-matter content is low, and the reaction is strongly acid. The gravel present consists of rounded and angular fragments of shales and sandstones, with variable quantities of crystalline materials carried in from the north. In some places the surface gravel, particularly the shale and sandstone fragments, is so large that the soil approaches a stony silt loam.

Wooster gravelly silt loam is rather widely distributed throughout the county except in the unglaciated section in the southern part and in the higher parts of the plateau, where it grades into Bath gravelly silt loam. Probably the largest areas are in the vicinity of Randolph and north of Machias. From Randolph northeastward to Little Valley along the line of the terminal moraine the Bath soils become important. The total area of the Wooster soil is 30.1 square miles, approximately 60 percent of which is cleared and under cultivation, 10 percent cleared and idle, and 30 percent in second-growth forest.

In most places the relief is distinctly rolling to hilly, although in some areas it is relatively level. In many places this soil represents moraines and has the relief typical of such land forms. The soil has developed from glacial till made up of mixed foreign and local rocks, with the latter predominant. Evidence of considerable water action is manifested in many places by the amount of rounded gravel and stratification in the parent material.

The native vegetation was a mixed conifer and hardwood forest. The present stands on the uncleared land are mainly a beech, hard maple, and yellow birch association, with some ash, hickory, and basswood.

Wooster gravelly silt loam is one of the most productive upland soils in the county and is well adapted to the crops commonly grown. The loose mellow surface soil and porous only slightly compact subsoil are conducive to good crop yields under proper management. The natural fertility is not high, because the soil is easily leached, but good response is made to fertilization. Yields of the important crops grown under the prevailing system of fertilization are 1½ to 2 tons of hay, 40 bushels of oats, and 8 to 10 tons of silage corn an acre. The hay crops are principally timothy and medium-red clover. Alfalfa does well on the Wooster soils but requires more lime than is commonly applied to the new seedings of clover. The physical properties of this soil are favorable for the production of potatoes, but the acreage devoted to this crop is small. Buckwheat is grown to some extent.

The common system of management calls for a 4- or 5-year rotation of corn, oats, and hay, with the land remaining in meadows for

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2 or 3 years. Where alfalfa replaces clover and timothy, it is left until the plants run out. About 200 pounds of superphosphate is applied to the land for corn and oats, and manure is applied to the meadows and cornland. Applications, ranging from 1,500 to 3,000 pounds an acre, of lime, most frequently in the form of ground limestone, are made to the new seedings of clover or alfalfa. This system of management is the common one used throughout the county regardless of the type of soil farmed. About the only change is the substitution of alsike for medium-red clover on the poorly drained soils.

Wooster gravelly silt loam, rolling phase.—The rolling phase of Wooster gravelly silt loam has the brown or yellowish-brown surface soil and the lighter colored open subsoil characteristic of typical Wooster gravelly silt loam, from which it is distinguished by its more sharply rolling, hummocky, and pitted relief, which, in places, is characterized by alternating kames and kettles. The rougher surface materially reduces the agricultural value of the more rolling soil, as compared with the typical soil, because of the difficulty experienced in tillage. Where this rolling soil is farmed, the cropping system is essentially the same as that practiced on the typical gravelly silt loam, but yields are somewhat lower. Even though this soil is porous, erosion on the steeper parts may be serious if care is not exercised in managing the land.

Most of this soil has been cleared of its original forest. A larger proportion of it is idle or abandoned than of the typical soil. The principal areas are in Randolph Town and from there northeastward to Little Valley along the line of the terminal moraine. This soil is similar to and grades into areas of Bath gravelly silt loam, rolling phase.

Wooster gravelly silt loam, steep phase.—The steep phase of Wooster gravelly silt loam, to a depth of 5 or 6 inches, consists of brown or yellowish-brown loose gravelly silt loam. This is underlain, to a depth of 18 or 20 inches, by brownish-yellow firm gravelly silt loam. The parent material consists of pale-yellow or brownish-yellow slightly compact but friable gravelly or stony loam deep glacial till. This steep soil resembles the typical soil except that all horizons average somewhat thinner, and the land is very steep. Most of it remains in forest, but a small total area is used for pasture.

Wooster gravelly loam.—Wooster gravelly loam has an 8-inch surface layer of brown mellow gravelly loam overlying a subsurface layer of yellowish-brown open gravelly silt loam. The subsoil, beginning at a depth of 24 inches and continuing to a depth of 36 inches, is composed of pale-yellow or gray coarse gravelly or stony loam. The unaltered material, or substratum, consists mostly of mixed gravel and angular stone fragments, with only a small proportion of fine material (silt, clay, and very fine sand). The profile of Wooster gravelly loam is not greatly different from that of Wooster gravelly silt loam, except that the surface layer is lighter textured and rounded gravel and stratification in the substratum are more common. This soil consistently has more sharply rolling relief than the gravelly silt loam, and in places it resembles that of Otisville gravelly loam. Like all members of the Wooster series, this soil is strongly acid and is excellently drained.

The agriculture and the methods of management are similar to those practiced on the gravelly silt loam, but yields on the rougher areas of the gravelly loam are slightly less. Wooster gravelly loam occurs in the principal valleys of the county but is most typically developed in the valley from Franklinville northward to the county line. The total area is 18.7 square miles.

Wooster gravelly loam, rolling phase.—Wooster gravelly loam, rolling phase, has a 4- to 8-inch brown mellow gravelly loam surface soil. This overlies yellowish-brown loose friable gravelly silt loam that continues to a depth ranging from 18 to 30 inches. The parent material consists of loose gravelly glacial till composed largely of sandstone and shale fragments, together with small quantities of many other rocks. This soil differs from typical Wooster gravelly loam chiefly in its rolling or kettle-kame topography and in its somewhat slighter depth. It is used for the same crops as the typical soil, but yields on it are somewhat less. A larger proportion of the land is devoted to hay, pasture, and woodland. Only a small area is mapped.

Wooster gravelly loam, steep phase.—The steep phase of Wooster gravelly loam includes some areas of all types of Wooster soils occupying steep slopes. On such slopes the texture is not uniform and ranges from silt loam to light gravelly loam, but gravelly loam predominates. The agricultural value of these areas is low, as many of the slopes are too steep for cultivation and are subject to severe erosion if plowed.

The soil profile is not noticeably different from that of other types of the Wooster series, except where erosion has been sufficiently active to remove the surface soil.

Some of the cleared areas are used as pasture, but, unless the land is fertilized, the grasses are of poor quality. The total area of this soil is small, and a large proportion of it remains in forest.

Wooster silt loam.—Wooster silt loam has a 6- to 10-inch surface layer of rich-brown, brown, or yellowish-brown mellow silt loam or very fine sandy loam. Little or no gravel is present. Below this is a subsurface layer of yellowish-brown firm silt loam. The subsoil is composed of bedded sands and silt or mixed gravel and sand, which, in places, are sorted into layers of the various materials.

In many places the materials from which the soil has developed were deposited as lateral moraines along the edges of the ice lobes and as deltas in temporary glacial lakes. The relief ranges from level and benchlike to rolling or hummocky.

The less rough areas of this soil are excellent cropland, and yields may be from 5 to 10 percent greater than on either Wooster gravelly silt loam or Wooster gravelly loam. The silt loam occurs mainly in the western and northern parts of the county through Conewango and Cattaraugus Creek Valleys, where it is developed on the lower slopes just above the valley floors. Several areas are in the vicinity of Maples in Mansfield and East Otto Towns. In common with other Wooster soils, this soil has excellent drainage and generally is acid in reaction, although in some areas liberal quantities of limestone gravel are present at a depth ranging from 6 to 8 feet. The total area mapped is 16.4 square miles.

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Agricultural practices are similar to those followed on other Wooster soils, and timothy and clover, oats, and silage corn are the leading crops. Many pastures are better than those on other Wooster soils, because this soil has more body and greater water-holding capacity in the upper layers. With sufficient use of lime, alfalfa would give good results.

Wooster silt loam, steep phase.—Wooster silt loam, steep phase, consists of rich-brown, brown, or yellowish-brown silt loam to a depth of 6 to 8 inches. This is underlain by yellowish-brown or pale brownish-yellow firm but friable somewhat gravelly silt loam that continues to a depth ranging from 20 to 30 inches where it rests on gravelly glacial till or bedded sands and gravel. The gravel is composed largely of sandstone fragments, together with some hard shale and pieces of many different kinds of rocks that were brought in by the glacier that invaded the area in Pleistocene times.

The steep slopes characteristic of this soil have forced most farmers to leave the land in forest, although a few areas are cleared and furnish a poor grade of pasturage for livestock. The total area is small.

Lordstown silt loam.—Lordstown silt loam is developed extensively on the high hilltops and gentle upper slopes of the area lying north of the terminal moraine and is characterized by a light-brown or grayish-brown mellow silt loam surface soil that in most places contains some angular shale and sandstone fragments. The subsurface material is grayish-yellow or brown firm silt loam. The subsoil is light-gray or yellow friable and incompact material and rests on thin-bedded shales and sandstone bedrock at a depth ranging from 24 to 36 inches. The organic-matter content is rather low in places where the soil has been cultivated for some time. Drainage is good, and the reaction is strongly acid.

Agriculture consists of the production of forage crops in support of dairying. The important crops grown are timothy and clover, oats, some corn for silage, and buckwheat. Meadows are planted mostly to timothy and yield from ¾ to 1 ton an acre. The acid reaction necessitates the application of lime for the successful production of legumes. Oats and silage corn yield about 30 bushels and from 6 to 8 tons an acre, respectively. Probably less commercial fertilizer and lime are used by the farmers on the Lordstown soils than on any other important soils, because of the cost of labor involved in transportation. Both lime and phosphate produce good results, however, when used on this soil. Pastures generally are poor and consist mainly of poverty grass.

Lordstown silt loam has a total area of 44.2 square miles. About 50 percent of the land has been cleared, of which approximately 25 percent is abandoned; the rest remains in forest of second- and third-growth hardwoods, mainly beech, hard maple, basswood, and yellow birch.

Bath gravelly silt loam.—Under cultivated conditions the surface soil of Bath gravelly silt loam consists of a 10-inch layer of rich-brown or yellowish-brown friable gravelly silt loam containing many small fragments of shale and sandstone that are more or less rounded as a result of glacial action. Under virgin conditions the surface soil consists of a 2- or 3-inch layer of very light gray silt

vantage of an average frost-free season that is from 1 to 2 weeks longer than on the higher upland soils. Variations in texture and drainage, however, cause as wide a range in agricultural value of the soils of the lowlands as in the agricultural value of the soils of the uplands.

Even though the agriculture consists principally of dairying, the opportunity for diversification of crops is greater than in the uplands. In unfavorable seasons, as when rainfall is below normal, emergency crops can be grown with greater success than on any of the soils of the uplands. Transportation facilities also are superior on the soils of the lowlands. All these factors contribute to a more prosperous type of farming in the numerous valleys and lowlands, as compared with the uplands.

The soils of the lowlands occur on two main types of land forms: (1) Terraces, outwash plains, deltas, and lake plains; and (2) first bottoms and flood plains. Smaller subgroups are indicated on the basis of drainage conditions, as is done with the soils of the uplands.

WELL-DRAINED SOILS OF OLDER OUTWASH MATERIALS AND LAKE DEPOSITS

This subgroup includes members of the Chenango, Unadilla, Otisville, and Mentor series. The first three occupy terrace, or bench, positions and include some of the most highly prized soils of the county. The Chenango soils occur in all the larger valleys north of the section occupied by Dekalb soils. The Mentor soil, which is of minor extent, includes the steep faces of the terraces and certain hummocky areas of stratified drift with kettle-and-kame topography.

These soils are characterized by their grayish-brown friable surface soils and by the bedded sands and gravel of the lower subsoil layers and substrata. The Chenango and Otisville soils are gravelly, but the Unadilla soils are, for the most part, free from gravel. The latter are distinguished also by their bright-yellow or richer brown color, an inheritance from the Dekalb soils, from which they are washed. They are not so productive as the Chenango soils. With the exception of the Otisville soils, the soils of this group have very favorable relief for agriculture. Drainage is excellent, and cultivation can be carried on under a wide range of moisture conditions.

The sale of dairy products accounts for most of the income of farmers located on these soils. Such crops as hay, silage corn, and oats are the most important, but practically all of the alfalfa and considerable of the other specialized crops, including vegetables and small fruits, are produced on the Chenango soils. More than half of the total acreage of Unadilla soils is included in the Allegany Indian Reservation, where very little of the land is under cultivation. The few acres under lease to white farmers in the vicinity of Salamanca give evidence that the soils will produce well under proper management.

Chenango gravelly loam.—Chenango gravelly loam has an 8-inch surface layer of brown or grayish-brown loose mellow gravelly loam. The subsurface material, to a depth of 20 inches, is brownish-yellow or grayish-yellow firm silt loam or gravelly silt loam. Below this in many places is a slightly compact layer composed of dark-brown mixed sand and gravel loosely cemented by an infiltration of silt from the layers above. In places, tongues of this material extend

from 2 to 3 feet into the sand and gravel substratum that underlies the soil, which, at a depth ranging from 3 to 4 feet, generally is bedded or stratified.

This soil as a whole is fairly uniform. Slight variations in texture, thickness of horizons, and quantity of gravel in the surface horizon, however, do occur. The gravel consists mostly of water-worn rounded material, derived mainly from local shales and sandstone, with variable quantities of foreign crystalline materials, and nowhere is it so abundant as to interfere seriously with the preparation of the seedbed. The soil is rather strongly acid in the surface soil and subsoil, but a few limestone pebbles are present in many places at a depth ranging from 6 to 8 feet.

The most extensive areas of Chenango gravelly loam are along Cattaraugus Creek, especially near Gowanda and north of Delevan, and along Slab City Creek in Dayton Town. The total area of this soil is 31 square miles.

The land is level or slightly undulating, and this relief is characteristic of deposits, laid down by water as stream terraces, outwash plains, and deltas, that represent the parent material of the Chenango soils. Drainage is excellent and may be excessive in areas where the gravel content is high.

Acre yields of the main crops grown on Chenango gravelly loam are: Timothy and clover, from 1½ to 2 tons; oats, 40 bushels; silage corn, 8 to 10 tons; and alfalfa, 2 to 3 tons. The soil is physically well adapted to the production of alfalfa, but, because of its acid reaction, some form of lime is necessary for success. The soil warms early in the spring and can be worked almost as soon as the frost leaves the ground—reasons that make this a good soil for the production of potatoes, vegetables, and canning crops. The acreage of such crops, although low at present, is increasing annually. There is a canning factory at South Dayton, and some of the produce is trucked to canneries in Erie County.

The most common rotation is corn, oats, and hay for 2 or 3 years or longer if alfalfa is substituted for the usual timothy and medium red clover. Phosphate fertilizer is applied to land for corn and oats and lime to that for the new alfalfa seedings. Complete fertilizers are used to some extent on the specialized crops.

Practically all the land is under cultivation, with 50 percent of the area devoted to hay, 10 percent to oats, 10 percent to corn, 5 percent to pasture, and the rest to such crops as grapes, other small fruits, and vegetables.

Chenango gravelly silt loam.—Chenango gravelly silt loam, as the name signifies, has a heavier textured surface layer than the gravelly loam. The distinction between these two soils, however, is not very marked, and wherever they are associated the boundary drawn between them is more or less arbitrary. The profiles, aside from the texture of the surface layers, are identical, as are the mode of deposition of the parent material, relief, and reaction. The brown or gray-brown surface layer and the yellowish-brown silty subsurface layer, which overlies bedded sand and gravel, are characteristic of Chenango soils in general.

This soil has its most typical and extensive development in the towns of Machias and Freedom in the northeastern part of the

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carbonate of lime. The cemented materials occur only in those areas along the Allegheny River.

While the terminal moraine was being built up north of the river, enormous quantities of outwash materials were deposited along this valley, but most of them subsequently were carried away. It is the remnants of these old terraces, distinctive because of their greater elevations, that have the limestone gravel and cementation in the lower depths.

Valleys of streams tributary to the Allegheny River were dammed by these outwash deposits and formed temporary lakes. The soils of these tributary valleys, therefore, have developed in part from lake-laid sediments. The lacustrine influence is apparent only in the lower parts of the valleys and is not very pronounced. For this reason the well-drained soils not subject to overflow are included in the Unadilla series. A somewhat finer texture and more angular gravel, where present at all, are the main differences between the soil in these areas and the typical soil.

Unadilla silt loam has a total extent of 24.3 square miles, the largest and most typical areas of which are those along the Allegheny River. Smaller areas occur through the valleys in the section occupied by the Dekalb soils across the southern part of the county. The relief ranges from level to gently sloping, and both surface and subsoil drainage are good. The reaction is strongly acid in both the surface soil and the subsoil.

The original vegetation was a forest, principally of white pine, but. after this was cut, oak and hickory came in, and these now make up most of the forest cover.

The area included in the Allegany Indian Reservation is, for the most part, covered with brush or oak and hickory saplings. The area outside the reservation, from Vandalia southeastward to the point where the river enters New York State from Pennsylvania, is good agricultural land, used mainly for the production of field crops in support of dairying. The systems of management and crops grown are no different from those on the Chenango soils. The rotation, of 4 or 5 years duration, is hay, corn, and oats. The hay is timothy and clover, and the corn is grown for silage. In order to obtain substantial yields, considerable lime and fertilizer are necessary, because this soil, like all the Unadilla soils, has a low natural fertility level and a very strongly acid reaction. With their favorable physical properties, however, they respond readily to good management. Yields under comparable systems of management are from about 5 to 10 percent less than those obtained on the Chenango soils. Approximately 45 percent of Unadilla silt loam is in forest or brush, 5 percent is idle, 15 percent is used for hay, 10 percent for corn, 10 percent for corn, and 15 percent for pasture.

Unadilla fine sandy loam.—Unadilla fine sandy loam is developed only in Allegheny Valley. It does not have so bright colored surface soil nor so heavy textured surface and subsurface layers as the silt loam. The other profile characteristics of the two soils are similar.

The fine sandy loam is not so productive a soil as the silt loam, mainly because its lighter texture lowers its water-holding capacity. Crops are likely to suffer from lack of moisture during the latter part of the season. Management and cropping systems are the same

as for the silt loam; yields, however, range from 5 to 10 percent less. A higher proportion of the fine sandy loam is cultivated than of the silt loam, mainly because it is developed to a greater extent outside the Indian reservation.

Included on the map with Unadilla fine sandy loam are several small areas with an 8-inch surface layer composed of light-brown or yellowish-brown loose gravelly loam underlain to a depth of 20 inches by light-yellow or yellow loose gravelly silt loam. The subsoil and substratum are made up of bedded sand and gravel, derived mainly from local shale and sandstone rocks. This included soil is used in the same way as the other Unadilla soils. A greater proportion is idle, however, and crop yields are approximately 10 percent less than those obtained on typical Unadilla silt loam.

Otisville gravelly loam.—The productivity of Otisville gravelly loam is medium to low, mainly because of its unfavorable relief. The profile of the typically developed surface soil is essentially like that of Chenango gravelly loam and consists of an 8-inch layer of grayish-brown or yellowish-brown loose gravelly loam overlying brownish-yellow firm but friable gravelly silt loam that extends to a depth of 20 inches. The subsoil and substratum are made up of either unassorted or stratified sand and gravel, with various quantities of finer sediments present. The soil is low in organic matter and has an acid reaction in both surface soil and subsoil. The depth to loose gravel and sand varies greatly from place to place.

Typical Otisville gravelly loam is developed from stratified morainic deposits with a hilly kettle-and-kame relief, such as is developed in the vicinity of Delevan in the town of Yorkshire. In Cattaraugus County it also includes the steep slopes between terraces and flood plains, also benches at different levels, which are considerably inferior in value. A part of the area in the town of Dayton consists of stratified beds of sands and silts with little or no gravel.

Otisville gravelly loam is associated with the Wooster, Chenango, and Unadilla soils and covers a total area of 15.1 square miles. The largest and most representative areas are north of Machias. Practically all of the original forest has been removed.

The excessive drainage and rough relief reduce the value of the land for agriculture. On the more favorably situated areas, fair yields of hay, corn, and oats are obtained. With the use of lime to correct the acidity, the soil is probably better suited to alfalfa than to any other crop. Even though the soil is rather porous, it is subject to considerable erosion in places where cultivated crops are grown.

Approximately 30 percent of the land is in forest and wood lots, 15 percent is idle or abandoned, 20 percent is used for pasture, 20 percent for the production of hay, and the rest for corn silage and small grains.

With the same fertilization and management, yields average about 10 percent less than those obtained on Chenango gravelly loam.

Mentor fine sandy loam.—Mentor fine sandy loam is a productive but an inextensive soil. The cultivated surface soil, to a depth of 8 inches, is rich-brown or grayish-brown friable mellow fine sandy loam. This is underlain, to a depth of 22 inches, by yellowish-brown firm very fine sandy loam or light silt loam. The color becomes somewhat lighter in the lower part of the layer. Between [illegible] inches the material [illegible] compact very fine sandy loam

REFERENCE NO. 4

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ecology and environment

15 (12/75)

New York State Department of Environmental Conservation

MEMORANDUM

TO: Peter Buechi
FROM: Thomas Christoffel
SUBJECT: Motorola Sites in the Southern Tier

DATE: September 2, 1982

Wastes were hauled from the Motorola facility in Arcade, New York, to the locations listed below. Included in these wastes were varnishes, fluxes, flux thinners, isopropyl alcohol, hydrochloric acid, phosphoric acid, toluene, xylene, trichloroethane, trichloroethylene, freon, epoxies and cutting oils. These materials are listed in literature as being mildly to moderately toxic.

The following is the list of known disposal sites for the industrial waste from Motorola in Arcade:

Previty Auto Wrecking, Galen Hill Road - Approximately 1000 drums were disposed at this site. These drums were emptied by Mr. Previty onto his property.

Tidd's Junkyard, Route 72, Yorkshire Corners - Approximately 600 drums were deposited at this site. An analysis of samples taken from this site revealed the presence of chlorinated solids, chlorinated solvents, flammable solids, acids, oil and a number of other materials. Fifty (50) percent of the barrels at Tidd's reportedly have been opened.

Town of Machias Gravel Pit, Very Road - Approximately 600 drums were placed at this site. It has been reported that half of these barrels were opened, and the oils were spread on county roads, but this has not been verified. The gravel pit is near Bird Swamp.

Norman Rogers, California Road, Delavan - 100 drums used for fill on this property.

Camp Arrowhead, Route 16 - Reportedly 20 drums delivered here from a Mr. Tillinghast from Tidd's Junkyard, which were ~~labor~~ buried.

Boehmer Site, Route 16 - 13 barrels were buried 225 feet from the County Infirmary well.

An unknown quantity of waste in a ravine on the south side of Route 242, west of Route 16. Waste was spilled here.

It is recommended that these sites be investigated under the State Superfund Act, to determine their potential threat to health and the environment. Most of these sites are in the vicinity of waterways. The sites should be investigated in the order they are listed in this memo.

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REFERENCE NO. 5

Jack McMahon, DEC - BRO

October 3, 1978

Chester Halgas

Motorola Industrial Waste Disposal

The following is a report on our activities concerning the subject waste from the Motorola plant in Arcade which found its way to various locations in northeastern Cattaraugus County.

On September 19, 1978, Mr. Dan Pascarella of our office observed 97 drums on the old Machias Town sanitary landfill site. He investigated the matter and wrote the attached report which was referred to Kevin Hintz of your Department. On or about September 25th, Mr. Reisner of this office brought to my attention that more drums were in the area. I then contacted Mr. George Wyllie, chief industrial engineer at Motorola, to more specifically determine the nature of the wastes.

Through subsequent field investigations by Messrs. Pascarella and Reisner, it was determined by September 29, 1978, that approximately 2500 drums of industrial waste from Motorola had been placed in Cattaraugus County by three unregistered waste haulers at the following locations.

Prior to May of 1976, apparently all of the wastes had been hauled by Community Disposal Services to their landfill in Erie County. At that time, they went out of business and waste was then hauled by William Ballard, Osmon Road, Freedom Town, Cattaraugus County (492-2113) from May 1976 to May of 1977. During that time, he took approximately 1,000 drums which were given to the Previty Auto Wrecking yard on Galen Hill Road, Freedom Town, which is located approximately ½ mile south from the intersection with Route #98. All of these drums had been emptied by Mr. Previty on his property. He has a private well for his house and business on the property. No other water supplies are in the immediate area, and it is doubtful if any appreciable amount of waste found its way into Clear Creek, a protected trout stream, approximately ½ mile to the north of the dumping site. Reportedly, the waste materials were used to oil roads, and the drums were used to support junk cars.

From May 1977 to March 1978, approximately 1,000 drums were taken by a Donald Tillinghast, 18 Yacht Club Drive, Machias (353-8826) to the following locations: From May to winter, approximately 600-800 drums were deposited at Tidds Junkyard on County Road #72, several hundred yards west of the Big N Plaza at Yorkshire Corners. Mr. Tidds reported that he gave away approximately 100 of these drums which are unaccounted for except for 20 which went to Michael Wolfer in Delevan. Approximately 50% of the drums at Tidds Junkyard had been spilled or opened and a considerable amount of spillage exists on the property. Nearby residences and businesses are served by the Yorkshire Town public water supply, and there appears to be no threat from a water supply standpoint. The site of the drums is very flat and it is doubtful if appreciable amounts of the waste got into Cattaraugus Creek which is approximately ½ mile away. Apparently the winter weather precluded dumping of the drums at Tidds Junkyard and reportedly Mr. Tillinghast gave 20 drums to Camp Arrowhead on Route #16, Yorkshire Town, which were later buried. He also gave approximately 100 drums to Norman Rogers who used them for fill on his property, approximately ½ mile east of the Village of Delevan on California Road. 13 drums were given to Terwilliger Excavation in Franklinville which are still intact, and 13 drums were dumped on the Boehmer property on Route #16, Machias, directly across

and approximately 225' distant from the new Town of Machias and County Infirmary well. At the Boehmer site, more than half of the drums had been spilled. It is further reported that some unknown quantity of drums were dumped and covered in a ravine on the south side of Route #242 just west of its junction with Route #16. In addition, 97 drums had been dumped at the aforementioned Machias landfill site, which is no longer in operation there. A number of the drums had been spilled and significant amount of spilled wastes are on the site. Fortunately, except for the 2 [illegible] wells mentioned above, no other water supplies appear to be possibly affected, and the aforementioned spillages are not in locations where appreciable overland flow of the wastes to streams would occur.

From March 1978 to the end of September when Motorola discontinued allowing private haulers to take these wastes, approximately 600 drums were taken by a Dan Griswold, Reynolds Road, Franklinville (676-2403) to the Town of Machias gravel pit on Very Road, located approximately one mile south of the intersection of Very Road and County Road #16, which is slightly more than two miles directly west of the hamlet of Machias. At this location, approximately one-half of the drums had been emptied, and it is reported that the Town of Machias used these waste materials in oiling some of the Town roads. However, we have been unable to verify this report, and the Town Supervisor has stated that she knew nothing of the storage or the use of this material.

On Thursday, September 28th, the writer toured several of the sites with Messrs. Vought and Wyllie of Motorola and Mr. Reisner of this office. The Motorola representatives indicated that most, if not all, of the drums came from their plant. The drums are mainly identified by the product that they contained when they were shipped to Motorola and are largely characterized by the names of the chemical, e.g. Magnolia Chemical, chlorothane, freon, etc. The newer drums have waste labels affixed to them by Motorola.

Motorola uses the following products which may in some part be discarded as industrial waste: Machining oils (Hamidraw D21-HV, GM Industries Limited 991, and HM 1301 DC), epoxies, epoxy solvent (Dibutylphthalate), flux, flux thinner (Alpha Metals 810), degreasers, polyurethane varnishes, Tolune, Xylene, Freon, dilute hydrochloric acid, metal grindings and metal. Motorola is to prepare a report stating the relative amounts of these products which may find their way into the industrial waste.

Investigation with suppliers and manufacturers revealed that many of the products are proprietary and that the exact content was not revealed to Motorola. The contents as reported by the suppliers and manufacturers are:

Hamidraw D21-HV - Harry Miller Corp., Philadelphia, PA (215-324-4000). Sulfanated petroleum oil 19.6% by weight; petroleum oil, 19.4%; chlorinated petroleum wax, 4.5%; lead tallate solution, 19.7% (75% kerosene and 25% lead tallate. % lead in lead tallate is 42%); Butyl Carbitol, 3% (the solution has a pH of 9.5 and the manufacturer advises handling with care. D21-HV is used in its undiluted form and also a 50% dilution with water at Motorola.

HM 1301 DC is also made by Harry Miller Corp. and contains: Mineral oil, 65%; sodium petroleum sulfonate, 14%; lead tallate, 19%; ethyloxylated alcohol, 2%.

The epoxy formulations used were obtained from a previous supplier, Hysol of Olean, New York, who reports that the epoxy resin is approximately a 400 molecular weight diglycidyl ether of bisphenol A plus 5% cresyl glycidyl ether. The hardener is a polyoxypropylene diamine.

The machine oil 991 supplied by GM Industries Limited in Tonawanda (693-6050) consists of the following: Tall oil, 10%; polysperm oil, 3%; sodium petroleum sulfonates, 7%; stearic acid, .3%; triethanolamine, 4.5%; hexylene glycol, 4%; Union Carbide U con LB 65, 2% (a proprietary compound which is a poly alkaline glycol); pine oil, .5%; emulsifier, .5%, chlorinated paraffin wax, 2%; petroleum oil, 15%; tetrasodium EDTA, .75%; biocide solution, 1.4% (solution of 18.5% 2' dihydroxy; 5' 5' dichloro-diphenyl methane, 6.7% of 50% sodium hydroxide and the rest water); Blue dye, .015%; water, 45.5%.

The flux is Alpha Metals, New Jersey (201-434-6778) and consists of a gum resin, an organic activator and a terpine alcohol solvent blend. The flux thinner is Alpha Metals 810 and a blend of alcohol and terpine solvent. No one was available who could give an exact formulation.

The degreasers used are trichloroethene and trichloroethylene.

The waste also contains metal grindings and machining wastes together with paper cups and rags, presumably from the epoxy casting process.

A literature review of the toxicity of the above chemicals indicates that practically all of them are mildly to moderately toxic, except for the biocide and lead. Fortunately, most of the spillage has occurred in environmentally insensitive areas except for the possible involvement of two water supplies. This Department plans to sample these two supplies together with any others that may be reasonably close to the two spillages, and have the samples analyzed for lead. It is the writer's opinion that lead will travel to the ground waters more quickly than any of the other chemicals and that it would therefore be a good indicator chemical.

In the writer's opinion, the spillages present a moderate environmental hazard that at this time, aside from the possible aforementioned affect on water supplies, poses no public health problem because of the remoteness and nature of the sites. The question of what to do with the spillages is therefore more properly the responsibility of the Department of Environmental Conservation, as is the matter of the three unregistered industrial waste haulers.

There are approximately 800 intact drums of Motorola's industrial waste at the aforementioned sites. Because of their nature and the potential deleterious environmental effects, they should be moved to a satisfactory disposal area. In this regard, this office has requested Motorola to move the intact drums. It is anticipated that they will be making a decision in the very near future.

Although ignorance of the exact nature of these chemicals is not a good excuse, it must be pointed out that in the opinion of the writer, neither Motorola nor the three haulers had any good indication as to the wastes' actual content.

CRH:PM
Attachment
CC: Machias Office
William Bruyere, Plant Manager, Motorola

REFERENCE NO. 6

CONTACT REPORT

Telephone ( ) Meeting (X) Other( )

AGENCY:	Cattaraugus County Department of Health
ADDRESS:	102 Laurens St., Olean, New York
TELEPHONE:	(716) 375-4121
PERSON CONTACTED:	Walter Reisner
TO:	P. Farrell
FROM:	P. Gunther
DATE:	May 6, 1987
SUBJECT:	NYSDEC Phase I Investigations in Cattaraugus Co.; Motorola Sites
xc:	M. Hanchak, M. Cotter, File ND-2000

Mr. Reisner provided the following information concerning the Motorola sites:

The Machias town dump is the first site where Motorola barrels were observed. Motorola was placing their barrels at the back of the Motorola plant in Arcade and paid unregistered haulers to remove the drums from their facility. By 1978 drums were not allowed into municipal landfills in Cattaraugus Co.

The drums primarily contained water-soluble cutting oil. It was sold by unregistered waste haulers for eliminating road dust. Tidd Junkyard bought the barrels, and Previty Auto used the barrels for their cars. Thousands of drums were removed from the Motorola plant dock.

Donald Tellenghast gave drums to the Machias town superintendent to use for dust control on town dirt roads. He also used the Machias gravel pit as a staging area for temporarily storing the drums until he could sell or give the drums away. Occasionally, extra barrels ended up at the Machias Landfill. The landfill was not patrolled or controlled, and was in the process of being phased out. Machais landfill received 97 drums of which some had spilled. Photos of the landfill show drums tipped over with spilled solvents. Photos were taken on Sept. 29, 1978. All spilled and remaining barrels were removed. An unknown quantity of drums were also placed in the Route 242 site which was a roadside pit. The State of New York may own the site as it was used by DOT as a disposal site. The drums were supposedly covered with brush.

From 1976 to 1978, Motorola had 2,500 drums of industrial waste removed from their plant. Prior to drum removal by unregistered haulers, the drums went to Chaffee Landfill in Sardinia.

Previty Auto accepted the drums. The drums were dumped on the ground and contents were spilled. The wells at the location were sampled and results showed no contamination. The surface waters were not sampled. No massive dumping occurred at this site. One barrel was dumped at a time.

Michael Wolfer trailer park received about 20 drums and used the drum contents for dust control on his private dirt road. The trailer park is on Grove Rd. This occurred during summer 1978.

About 100 barrels of Motorola waste were given to Norman Rogers and used as fill material. Trailers were put on the site of the fill material. The well supplying water to trailer residents was sampled and had no contamination. There are three residences present on the land.

Terrvilliger Excavation accepted 13 drums of Motorola waste which were used for dust control. The original owner sold the property to his son. Mr. Reisner has no serious concerns about the hazardous implications of the drum spillage on the property. Most of the drum contents were water with cutting oil in it.

The Boehmer site received 13-20 drums of which more than half were spilled on the land. Drum contents were also used for dust control. The drums were removed in 1979. The closest well (County Infirmary) that is 255 ft from the drum storage area, was sampled in 1979 and results indicated no contamination. The drums were placed in an area that was about a 3 meter square.

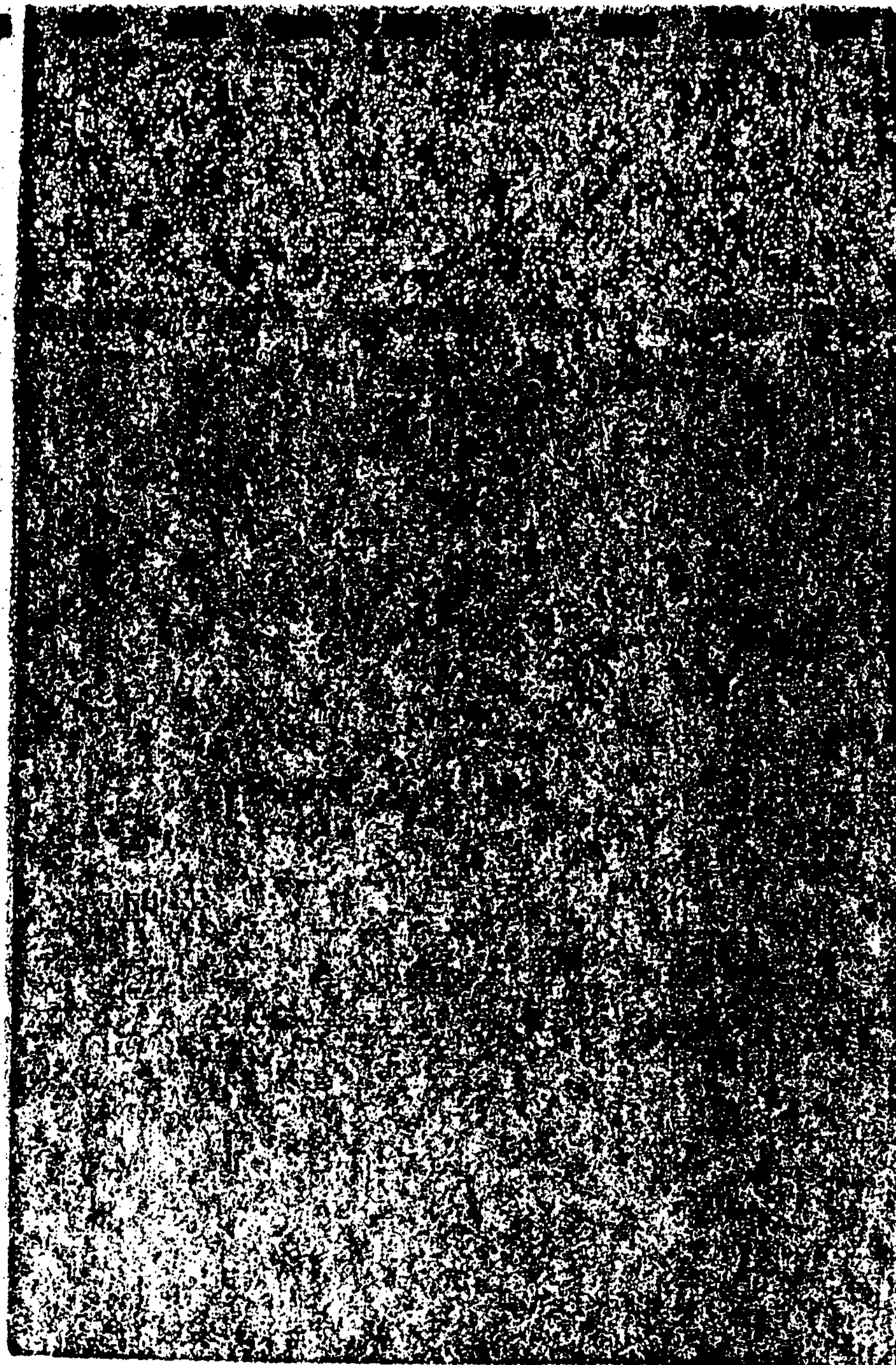
Camp Arrowhead received 20 barrels that were later buried. Mr. Bull, the owner of the site, dumped Motorola drum contents on his dirt roads at the campground, but not near his wells. He placed empty barrels in the campground dump and buried them. Camp Arrowhead is a travel trailer camp.

Substantiated by file review 11-17-88

/olo

Gary E. Beck
Catt. Co. Health Dept.

REFERENCE NO. 7



Michael [illegible]
11639 [illegible], Adams, N.Y.
6/16/87

[illegible] 80's

[illegible]
[illegible]

18:00 Interview with Michael Wolfer

Michael Wolfer received from 15 to 20 drums in 1978 (Motorola drums). Some of them he returned & some are still remaining on the property (about 6-8 are stored on his property.

Michael Wolfer has 9 trailers behind his house. He used the drums contents to oil his dirt road that encircles the trailers. The purpose of oiling the road was to keep the dust down. The driveway where the oil was placed is about 1000 feet long.

Only some of the drums had oil. Other drums had rags & paper in them.

Michael Wolfer refused to pay for these drums as they were not what they was claimed to be.

The paper & rags appeared to be used for soaking up oil.

Michael Wolfer owned the property since 1965.

The trailer area has no wells. Wells were never originally in the area. He always bought water from a neighbor.

He noticed that if the covers were removed from the barrels the oil would rise to the top & spill over when the barrels became full.

The distance from the road where oil was placed to the closest agricultural land is 200 feet.

Total property size is 13.5 acres.

There have been no health complaints from trailer residents.

The site ~~a area~~ where the drums were ~~either temporarily or~~ temporarily stored is about 20 meters away from a small shed that has pigs

An HNu monitor was used on-site and no readings were

REFERENCE NO. 8

DRAFT

GRAPHICAL EXPOSURE MODELING SYSTEM

(GEMS)

USER'S GUIDE

VOLUME 3. GRAPHICS AND GEODATA HANDLING

Prepared for:

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDES AND TOXIC SUBSTANCES
EXPOSURE EVALUATION DIVISION
Task No. 3-2
Contract No. 68023970
Project Officer: Russell Kinerson
Task Manager: Loren Hall

Prepared by:

GENERAL SCIENCES CORPORATION
8401 Corporate Drive
Landover, Maryland 20785

Submitted: December 1, 1986

POPULATION

SITE	Pop. (1 mile = 1.61 km)	# ⌂'s	Pop. (2 mile = 3.33 km)	# ⌂'s	Pop. (3 mile = 5 km)	# ⌂'s
FORMSO	3024	1190	0	0	2836	1737
MUENCH	0	0	1339	629	3973	1316
TERWILLINGER	225	310	1583	716	0	0
NORMAN RODGERS	220	50	3014	1133	2022	845
CAMP ARROWHEAD	223	98	1295	523	1959	979
BOEHMER PROPERTY	1174	707	640	234	977	398
MACHIAS LANDFILL	1174	707	640	234	977	398
ROUTE 242 SITE	126	50	1655	891	0	0
MICHAEL WOLFER	1371	495	1236	501	2429	982
WALMORE ROAD	[illegible]	[illegible]	2372	[illegible]	23581	6512
64 ST SOUTH	2327	766	25954	10259	43007	17074
TOWN OF LOCKPORT	2154	572	7526	2978	[illegible]	5807
LASALLE EXPRESSWAY	11100	[illegible]	6372	[illegible]	10665	4015
ROBLIN STEEL	11550	4405	[illegible]	[illegible]	[illegible]	12307
CARBORUNDUM	[illegible]	8661	[illegible]	9049	[illegible]	[illegible]
CARBORUNDUM GLOBAR	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	7993
STAUFFER CHEMICAL	[illegible]	405	[illegible]	1539	[illegible]	2259
FRONTIER BRONZE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	17067
DUSSAULT FOUNDRY	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	2367
SKW ALLOYS	[illegible]	[illegible]	[illegible]	[illegible]	34264	10503
LSB WAREHOUSE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
REPUBLIC STEEL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BFLO. HOPKINS LANDFILL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
HI VIEW TERRACE	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
BERN METAL	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
FMC CORP	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	17929
E.I DUPONT	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* POPULATION IS NOT CUM[illegible]
ie. BOEHMER PROPERTY
0-1 mile = 1174
1-2 mile = 640
2-3 mile = 977

1174
640
977

HAVE [illegible]
W[illegible] E[illegible]
INCREASES [illegible]

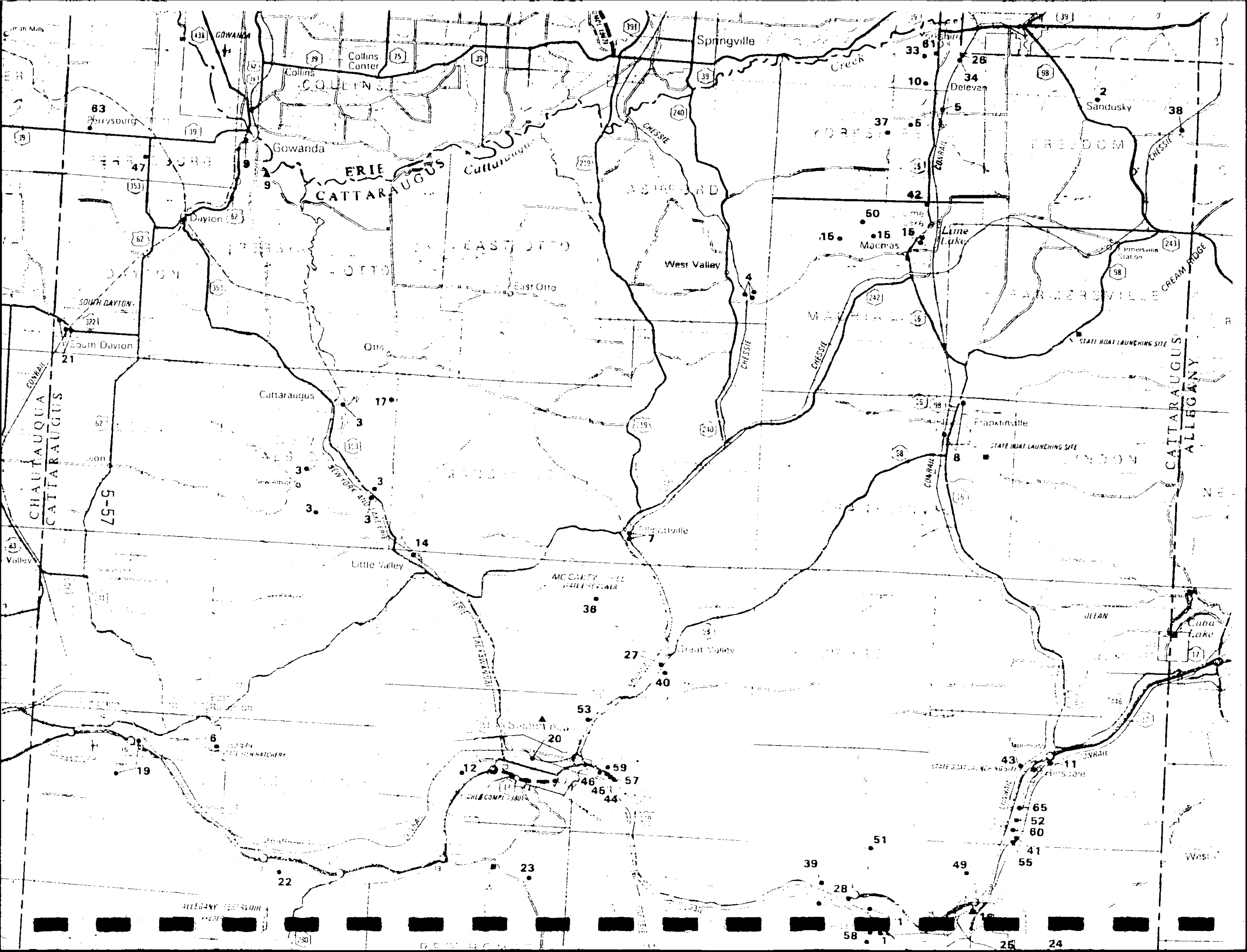
POPULATION

SITE	1 mile Pop.	1 mile *⌂'s	2 mile Pop.	2 mile *⌂'s	3 mile Pop.	3 mile *⌂'s
SCHREIBER	1994	597	2949	913	3558	1333
GUTENKIST.	1151	346	4731	1532	6046	2012
SNYDER TANK	2998	1079	13504	4755	25942	9798
EDEN SANITATION	6	0	5179	1948	3909	1350
JAMES FOX	2292	854	1369	555	4763	2010
TIFT - HOPKINS LANDFILL	16796	6674	46674	18217	53208	22585
DIAMOND SHAMROCK	8308	3454	21526	7747	3668	1191
ROSS STEEL	13975	4320	36207	14154	22361	10375

REFERENCE NO. 9

New York State Atlas of Community Water System Sources 1982

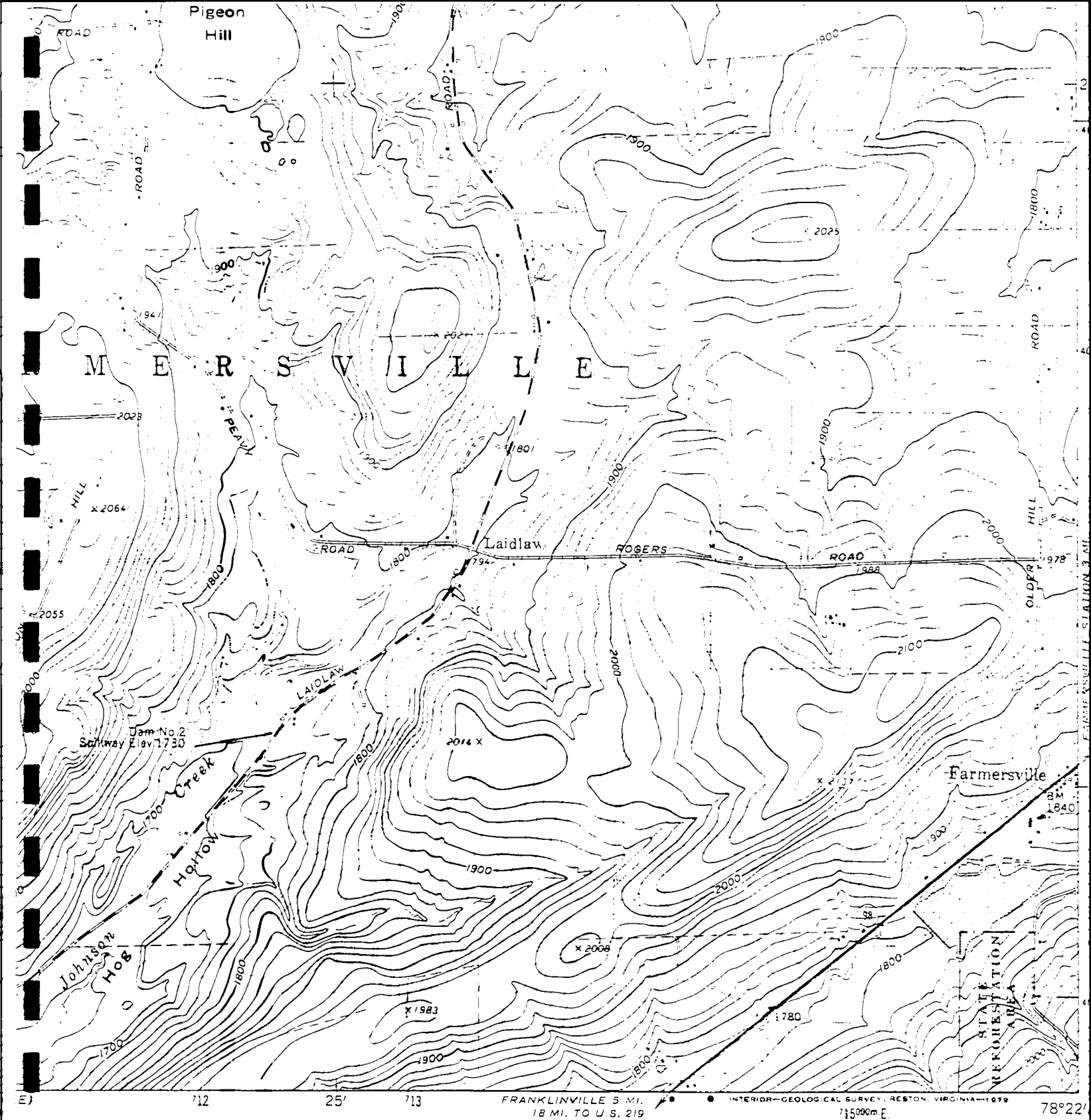
NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF ENVIRONMENTAL PROTECTION
BUREAU OF PUBLIC WATER SUPPLY PROTECTION


Springville
Collins Center
Collins
Gowanda
Perrysburg
ERIE
CATTARAUGUS
Cattaraugus
Dayton
SOUTH DAYTON
South Dayton
East Otto
Otto
Cattaraugus
Little Valley
Ellicottville
Great Valley
West Valley
Machias
Lime Lake
Delevan
Sandusky
FREEDOM
Farmersville Station
CREAM RIDGE
STATE BOAT LAUNCHING SITE
Franklinville
STATE BOAT LAUNCHING SITE
OLEAN
Cuba Lake
CHAUTAUQUA
CATTARAUGUS
CATTARAUGUS
ALLEGANY
CHESSIE
CONRAIL
NEW YORK AND LAKE ERIE
5-57
Creek

CATTARAUGUS COUNTY

ID NO	COMMUNITY WATER SYSTEM	POPULATION	SOURCE
Municipal Community			
1	Allegany Village	2200	Wells
2	Arcade Village (Wyoming Co, Page 10)		Wells
3	Cattaraugus Village	1200	Wells (Springs)
4	Crystal Water Company (West Valley)	600	Wells
5	Delevan Village	1050	Wells (Springs)
6	East Randolph Village	1200	Wells
7	Ellicottville Village	1100	Wells
8	Franklinville Village	1900	Wells
9	Gowanda Village	3500	Point Peter Brook Reservoir, Wells
10	Grove Street Water Supply	70	Wells
11	Hinsdale Water District	350	Wells
12	Jimersontown Resettlement	250	Wells
13	Limestone Village	550	Wells
14	Little Valley Village	1700	Wells
15	Machias Water District	1000	Wells (Springs)
16	Olean City	18207	Olean Creek, Wells
17	Otto Water District	100	Wells
18	Portville Village	1300	Wells
19	Randolph Village	1500	Wells
20	Salamanca City	6890	Newton Run Reservoir, Wells
21	South Dayton Village	700	Wells
22	Steamburg Resettlement Area	200	Wells
Non-Municipal Community			
23	Allegany State Park	45	Wells
24	Barbers Trailer Ranch	50	Wells
25	Burton's Trailer Court	12	Wells
26	Charlie Browns Trailer Court	NA	Wells
27	Chase's Trailer Park	27	Wells
28	Colonial Village	NA	Wells
29	Country Corners Trailer Park	80	Wells
30	Country Squire Mobile Court	78	Wells
31	Deans Trailer Court	45	Wells
32	Deer Pen Mobile Home Park	24	Wells
33	Dumar Trailer Court	NA	Wells
34	Elliott's Apartments	NA	Wells
35	Five Acres Trailer Park	23	Wells
36	Forestry Camp 2	60	Wells
37	Foxfire Haven	35	Wells
38	Freedom Park	14	Wells
39	Giardini Mobile Court	NA	Wells
40	Green Valley Estates	NA	Wells
41	Happy Days Mobile Court	33	Wells
42	Highland Park Village	15	Wells
43	Hillview Village	150	Wells
44	Hoag's Mobile Manor Sec # 1	24	Wells
45	Hoag's Mobile Manor Sec # 2	30	Wells
46	Hoag's Mobile Manor Sec # 3	130	Wells
47	J.N. Adam Developmental Center	550	Wells
48	Jolee Mobile Home Court	40	Wells
49	Kent's Trailer Park	20	Wells
50	Lazy B Ranch	45	Wells
51	Longacres Mobile Court	36	Wells
52	Mac Haven Mobile Park	15	Wells
53	Muzi's Trailer Park	37	Wells
54	Pines Trailer Park	63	Wells
55	Pleasant Valley Mobile Court	36	Wells
56	Prosser Homes	36	Wells
57	Seneca Trailer Park	45	Wells
58	Sherwood Mobile Home Court	54	Wells
59	Siafakas Trailer Park	42	Wells
60	Sweet Mountain Trailer Park	39	Wells
61	Twin Lakes Mobile Homes	330	Wells
62	Valley View Estates	90	Wells
63	Weber's Mobile Home Court	45	Wells
64	White Birch Trailer Court	63	Wells
65	White Lantern Mobile Court	63	Wells
66	Woodlawn Mobile Home Court	25	Wells

REFERENCE NO. 10



REFERENCE NO. 11

NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION

FRESHWATER WETLAND DATA AND CLASSIFICATION FORM AP-335

WETLAND NAME Twin Lakes Swamp WETLAND IDENTIFICATION # AP-6

LOCATION:

Quad: (USGS) (DOT) Arcade County Cattaraugus

Town Yorkshire Miles 0.7 Dir. SW From Yorkshire

DATE(S) OF FIELD RECONNAISSANCE AND PERSONNEL:

Date(s)	Weather	Investigator(s)
9/2/83	Sunny, hot	K. Taft

WETLAND SIZE 17.2 acres

WETLAND CLASS I II III IV (circle)

VEGETATIVE COMMUNITY:

COVERTYPES (Dominant species and calculated percentage, additional species inventory on page 3)

Wet meadow (1) ____ %

Emergent Marsh (2) ____ %

Deciduous Swamp (3) 31.0 %

Coniferous Swamp (4) 69.0 %

Shrub swamp (5) ____ %

Submergent and/or floating (6) ____ %

Wetland open water (7) ____ %

ECOLOGICAL ASSOCIATIONS:

Covertype Groups

1+2 = 0.0 %
3+4+5 = 100.0 %
6+7 = 0.0 %

Kettlehole Bog N/D

Associated with Open Water N/D

Water

Proximity to Mud Flat N/D

Island Present N/D

Adjacent to Class C(T) or Higher Stream N/D

...and check class: a wetland with no

Twin Lakes Swamp

FLORISTIC CRITERIA FOR WETLANDS DETERMINATION

Indicated species were found to be present in this wetland

	Cover-type*	Abundance*
A. TREES		
Ash, Red and/or Green (Fraxinus pennsylvanica and/or var. subintegerrima)	3,4	C/D
Elm, American (Ulmus americana)	3	C
Maple, Red (Acer rubrum)	3,4	C
Maple, Silver (Acer saccharinum)	3,4	C
Oak, Sp. Un. (Quercus bicolor)		
Willow, Black (Salix nigra)		
[illegible]	3,4	C/D
Swamp White Oak (Quercus bicolor)	3,4	C
B. SHRUBS		
Alder, Tag (Alnus rugosa)		
Buttonbush (Cephalanthus occidentalis)		
Chokeberry, Black (Pyrus melanocarpa)		
Dogwood, Red Osier (Cornus stolonifera)		
Dogwood, Silky (Cornus amomum)	3,4	C
Rose, Swamp (Rosa palustris)		
Spirea (Spiraea sp.)		
Viburnum, Arrowood (Viburnum recognitum)	3,4	C
Viburnum, Wildraisin (Viburnum cassinoides)	3	C
Willows (Salix spp.)		
Winterberry Holly, com. (Ilex verticillata)	3,4	C
[illegible]	3,4	C/D
C. HERBS		
Arrowhead (Sagittaria spp.)		
Arrow arum (Peltandra virginica)		
Beggar Tick (Bidens spp.)		
Bulb-bearing Water Hemlock (Cicuta bulbifera)	3	C
Bulrushes (Scirpus spp.)		
Bur-reed (Sparganium spp.)		
Cattail (Typha latifolia and/or T. angustifolia)	3	C
Fern, Marsh (Thelypteris palustris)		
Forget-me-not (Myosotis scorpioides)		
Iris, Yellow (Iris pseudacorus)		
Loosestrife, Purple (Lythrum [illegible])		

	Cover-type*	Abundance*
C. HERBS (Cont.)		
Loosestrife, Yellow (Lysimachia sp.)		
Pickerelweed (Pontederia cordata)		
Purslane, Water (Ludwigia palustris)		
Reed (Phragmites australis)		
Sedges (Carex spp.)		
Smartweed, (Polygonum sp)		
Swamp milkweed (Asclepias incarnata)	3	C
Water plantain (Alisma spp.)		
Water-horehound (Bugleweed)(Lycopsis spp.)		
Willow-herb (Epilobium spp.)		
Woolgrass (Scirpus spp.)		
D. ROOTED, FLOATING LEAVES		
Frogbit (Limnobium spongia)		
White Water Lily (Nymphaea odorata)		
Yellow Pond-lily (Nuphar spp.)		
E. FREE FLOATING		
Duckweed, Lesser (Lemna minor)		
F. TALL EMERGENT AND/OR IMPERSTORY		
Arrowleaved Tearthumb (Polygonum sagittatum)		
Aster, Purple Stem (Aster puniceus)	3	C
Boneset (Eupatorium perfoliatum)		
Bulrush (Scirpus spp.)		
Fern, Cinnamon (Onoclea cinnamomea)	3,4	D
Fern, Sensitive (Onoclea sensibilis)	3	D
Iris, [illegible]		

F. WET MEADOW AND/OR UNDERSTORY (Cont.)

Species	Cover-type*	Abundance**
Joe-pye-weed (*Eupatorium fistulosum* or *E. maculatum*)	3	O
Manna Grass (*Glyceria spp.*)	3,4	C
Marsh Marigold (*Caltha palustris*)		
Meadowrue, Tall (*Thalictrum polygamum*)	3	O
Moneywort (*Lysimachia nummularia*)		
Moss, Sphagnum (*Sphagnum sp.*)		
Rattlesnake Grass (*Glyceria canadensis*)		
Reed-Meadow Grass (*Glyceria grandis*)	3	O
Reed Canarygrass (*Phalaris arundinacea*)		
Rice Cut-grass (*Leersia oryzoides*)	3	C
Rush (*Juncus spp.*)		
Rush, Soft (*Juncus effusus*)		
Sedges (*Carex spp.*)	3,4	D
Skunk Cabbage (*Symplocarpus foetidus*)	3,4	D
Spikerush (*Eleocharis spp.*)	3	O
Touch-me-not (*Impatiens pallida* or *I. capensis*)	3,4	C
Turtlehead (*Chelone glabra*)	3,4	C
Golden Ragwort (Senecio aureus)	3	C
Horsetail (Equisetum spp)	3,4	C

G. BOG MAT (Use only if mat is present)

Species	Cover-type*	Abundance**
Labrador Tea (*Ledum groenlandicum*)		
Leatherleaf (*Chamaedaphne calculata*)		
Sphagnum Moss (*Sphagnum spp.*)		

H. SUBMERGENTS

Species	Cover-type*	Abundance**
Coontail (*Ceratophyllum demersum*)		
Pondweeds (*Potamogeton spp.*)		
Water Milfoil (*Myriophyllum spp.*)		
Waterweed (*Elodea sp.*)		

I. ADAPTABLE SPECIES

Species	Cover-type*
Aspen, Quaking (*Populus tremuloides*)	3
Cottonwood, Eastern (*Populus deltoides*)	
Elder, American (*Sambucus canadensis*)	3
Hemlock, Eastern (*Tsuga canadensis*)	3/4
Nightshade, Purple (*Solanum dulcamara*)	3
Pine, White (*Pinus strobus*)	3,4
Poison Ivy (*Rhus radicans*)	

*COVERTYPE SYMBOL

1. Wet meadow
2. Emergent marsh
3. Deciduous swamp
4. Coniferous swamp
5. Shrub swamp
6. Submergent and/or Floating plants

**ABUNDANCE SYMBOL

D - Dominant
C - Common
O - Occasional
R - Rare

COVERTYPE MAP OF WETLAND (Use numerical designators under vegetative community section).

North

Quadrangle name: Arcade, N.Y.

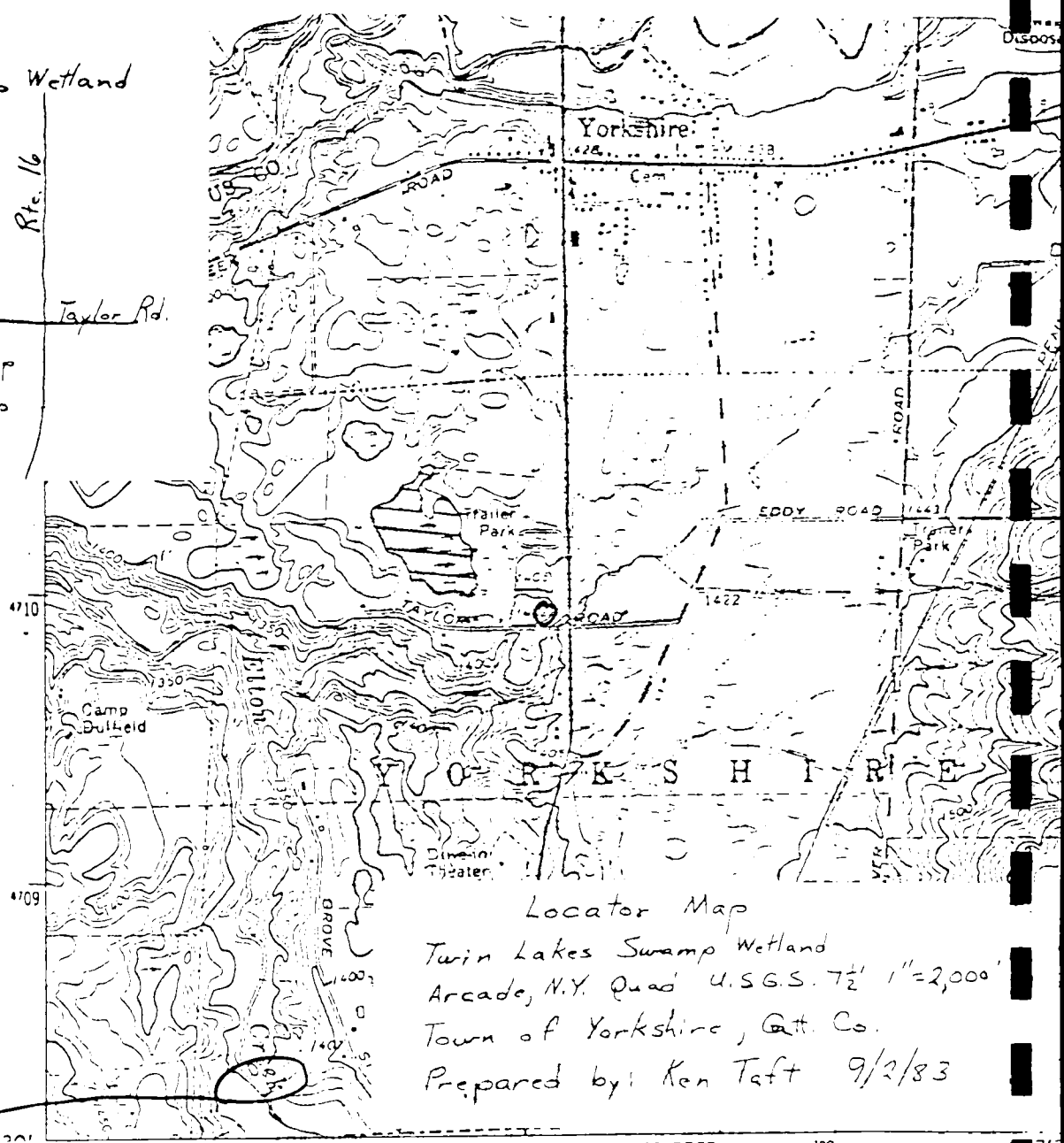
Scale: 1" = 2,000'

Covertype Map
Twin Lakes Swamp Wetland

Rte. 16

Taylor Rd.

3 - Deciduous Swamp
4 - Coniferous Swamp



Locator Map
Twin Lakes Swamp Wetland
Arcade, N.Y. Quad U.S.G.S. 7½' 1"=2,000'
Town of Yorkshire, Catt. Co.
Prepared by: Ken Taft 9/2/83

Mapped by: _____ Date: _____

PECIAL FEATURE:

1. Resident Animal Habitat For:

2. Migration Habitat For:

	Yes	No	Unknown
3. Endangered or threatened plant and/or animal species present			X
4. Vulnerable animal and/or plant species present			X
5. Unusual animal species abundance or diversity for State or ecological region of State		X	
6. Unusual animal species abundance or diversity for county		X	
7. Archeological or paleontological significance		X	
8. Significant (unusual or excellent representation) geological feature		X	
9. Alkalinity of at least 50 ppm			X
10. Adjacent to naturally fertile upland	X		
11. Storm water retention facility		X	
12. Adjacent or contiguous to surface water used as public water supply			✓
13. Provides pollutant treatment		✓	
14. Provides aquifer recharge			✓
15. Within urbanized area		X	
16. Visible from important highway or passenger railroad		X	
17. One of 3 largest wetlands of same covertype within a city/town	✓		
18. One of 3 largest wetlands of any covertype in a city/town			
19. Within a town where wetland acreage is less than 1% of total			
20. Within a publicly owned recreation area		X	
21. On publicly owned land open to public use		X	

TLAND CLASSIFICATION MATRIX (Circle attributes and check class; a wetland with no Class I, II, III characteristics is a Class IV Wetland)

CLASS I ____

1. Classic Kettlehole bog
2. Res.hab., thr./endg. anim. sp.
3. Thr./endg. plant sp.
4. Unus. abund./div. anim. sp. in region or state
5. Significant flood protection for substantially developed area
6. Adj./contig. to reservoir or public water supply or hydraulically connected to public water supply aquifer
7. Four or more Class II characteristics

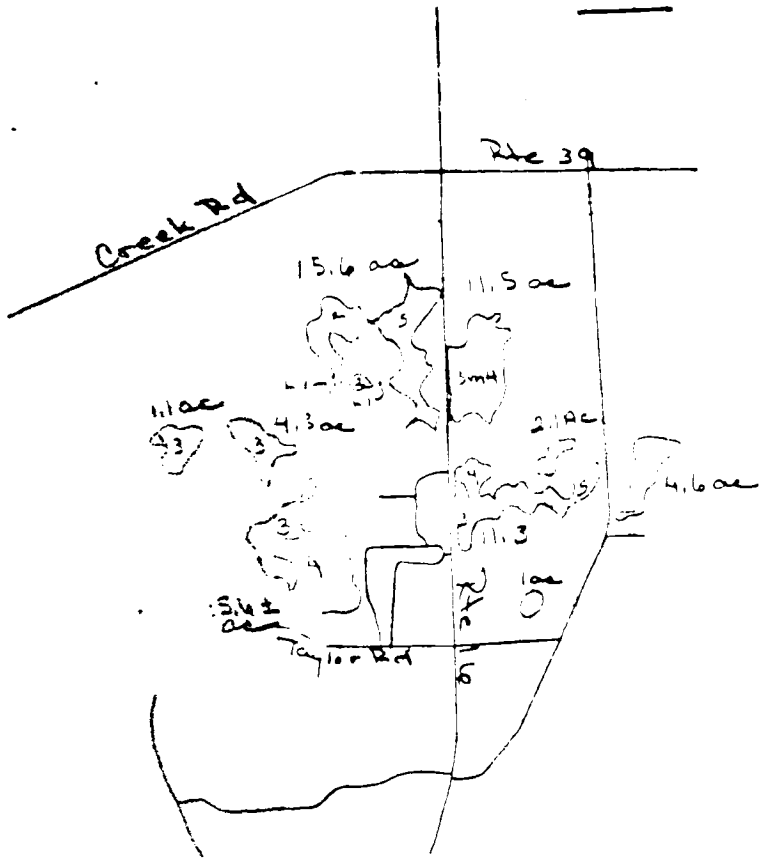
CLASS II ____

8. Emgt. marsh; pur. loosestrife and/or phragmites max. 66% of covertype
9. Two or more wetland structural groups
10. Contig. to tidal wetlands
11. Assoc. with ext. perm. open water
12. Adj./contig. C(t) or higher stream
13. ( ) mig. hab. thr./endg. anim. sp.
14. ( ) Res. hab. vuln. anim. sp.; state
15. ( ) Vuln. plant sp.; state
16. Unus. abund/dv. anim. sp.; county
17. Archeo./paleo. significance
18. Unusual geologic feature
19. Flood protection value; agr., light or planned development area
20. Hydraulically connected to aquifer
21. Tertiary treatment capacity for a sewage disposal syst.
22. Within urbanized area
23. One of 3 lgst. wetlands; city, town, NYC Borough
24. In publicly owned recreation area

CLASS III /

25. Emgt. marsh, pur. loosestrife and/or phragmites min. 66% of covertype
26. Deciduous swamp
27. Shrub swamp
28. Floating and/or submergent veg.
29. Wetland open water
30. Contains island
31. Total alkalinity at least 50 PPM
32. Adj. to fert. upland, high base soils
33. Res./mig. hab. of vuln. anim. sp. Res. for region; mig. for region or state
34. Vuln. plant sp.; region
35. Part of significantly polluted permanent open water system in which pollution reduction occurrs
36. Visible & aesthetic/ open space value
37. One of 3 lgst. wetlands of same covertype within a town
38. Wetland acreage max. 1% of total town acreage
39. Publicly owned land open to pub. use

EXPLANATORY NARRATIVE FOR SPECIAL FEATURES AND CLASSIFICATION, ADDITIONAL SPECIES INVENTORY (List Codominants, understudy, ground cover, & occasional species as necessary for each covertype); include soils information, if available:


Rte 39
Creek Rd
15.6 ac
11.5 ac
11.0 ac
4.3 ac
2.1 Ac
4.6 ac
11.3
5.4 ± ac
Taylor Rd

(3)

6/5/72

near Norman Rogers

Michael Wood

Xerox

Fish

Survey Resurvey

Drainage Erie - Niagara Coll. no. 2

Locality (Elton Creek) 48-E.23
-0.5 mi. above T-3

County Cattaraugus Quadrangle Franklinville Elevation 1410'

Water White - Light turbidity Flow 48.0 cfs Width 20'-40'(25')

Vegetation None

Bottom R., Gr., Sd. Current Rapid

Shore Wooded Distance from shore S-S

Temperature: Air 69 Water 65 Time 11:00 AM Weather Clear

Depth of capture To 6' Depth of water To 6'

Method of capture 500' - D.C. Shocker

Collected by Roecker, Cowden, Satre, Emerson Date August 15, 1956

Orig. preserv. Time 10:00 - 11:00 AM

General notes: History of stocking and angling; fishing conditions and size of fish, etc.

32953

Name of species		Abundance	Seine	Gill Net	Number and description
Salmo	trutta				1 Ad.-8.3 - 2+
Salmo	gairdnerii				1 Ad.-8.4 - 2+
Rhinichthys	atratulus				50 Juv - Ad.
Rhinichthys	cataractae				20 Juv - Ad.
Campostoma	anomalum				15 Juv. Ad.
Notropis	cornutus				20 Juv - Ad.
Poecilichthys	coeruleus				3 Ad.
Lepomis	macrochirus				6 Juv - Ad.

REFERENCE NO. 12

CONTACT REPORT
(MEETING)

AGENCY	:	USDA SOIL CONSERVATION SERVICE
ADDRESS	:	COOPERATIVE EXTENSION CENTER, PARKSIDE DRIVE, ELLICOTTVILLE, NY 14731
PHONE NO.	:	(716) 699-2326
PERSON CONTACTED	:	BRUCE HOPKINS
TO	:	P. FARRELL
FROM	:	P. GUNTHER
DATE	:	JUNE 13, 1987
SUBJECT	:	DISTANCE TO PRIME AGRICULTURAL LANDS FOR DEC PHASE 1 INVESTIGATIONS
CC	:	M. HANCHAK, M. COTTER, FILE ND-2000

Mr. Hopkins assisted me in determining the distance to prime agricultural lands for Phase 1 Investigations in Cattaraugus Co. Note all sites are currently in production. Results Are:

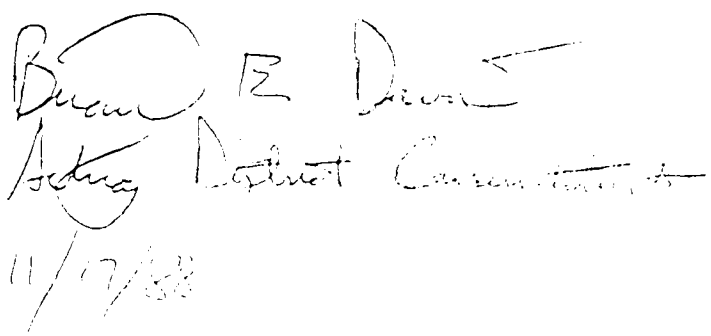
1) Norman Rogers site: 1600 feet to prime agricultural land that is of Varysburg gravelly silt loam
2) Camp Arrowhead: ½ mile to prime agricultural land. The soil type is Valois Channey silt loam. Camp Arrowhead is of prime agricultural land, but it's not actively farmed.
3) Boehmer Property: The Boehmer property soil type is Chenango silt loam which is prime agricultural land. It is about 200 feet from the Motorola drum storage area.
4) Machias Landfill: The landfill is 800 feet from prime agricultural land which is of Chenango gravelly silt loam.
5) Route 242: The site is 600 feet from prime agricultural land which is Chenango gravelly silt loam.
6) Michael Wolfer: The site is of prime agricultural farmland, but it is not actively farmed. Closest prime agricultural farmland in production is ½ mile away which is Chenango gravelly silt loam.
7) Terwilliger Excavation: The site is of prime agricultural farmland, but it is not actively farmed. Closest prime agricultural farmland in production is ½ mile away which is Chenango gravelly silt loam.
8) Moench Tanning: The site is 1500 feet from prime agricultural farmland which is Chenango gravelly silt loam.

8) Moench Tanning: The site is 1500 feet from prime agricultural farmland which is Chenango gravelly silt loam.

Soil permeabilities for major soils found in Cattaraugus County are as follows:

Series	Horizons	Permeability inches/hour
Chenango	0 - 13 inches	.6 to 6.0
	30 - 72 inches	6.0 to 20.0
Valois	0 - 30 inches	.6 to 2.0
	30 - 60 inches	.6 to 6.0
Varysburg	0 - 28 inches	.6 to 6.0
	30 - 60 inches	.06
Caneadea	0 - 9 inches	.6 to 2.0
	9 - 30 inches	.06
	30 - 60 inches	.06 to .20
Genesee	0 - 60 inches	.6 to 2.0

db



REFERENCE NO. 13

Dangerous Properties of Industrial Materials

Sixth Edition

N. IRVING SAX

Assisted by:
Benjamin Feiner/Joseph J. Fitzgerald/Thomas J. Haley/Elizabeth K. Weisburger

VNR VAN NOSTRAND REINHOLD COMPANY
NEW YORK CINCINNATI TORONTO LONDON MELBOURNE

Table I (cont.)

Chemical/Compound	Ground Water and Surface Water Pathway Values	Air Pathway Values
Fluorine	18	9
Formaldehyde	9	9
Formic Acid	9	6
Heptachlor	18	9
Hexachlorobenzene	15	6
Hexachlorobutadiene	18	9
Hexachlorocyclohexane, NOS	18	9
Hexachlorocyclopentadiene	18	9
Hydrochloric Acid	9	6
Hydrogen Sulfide	18	9
Indene	12	6
Iron & Compounds, NOS	18	9
Isophorone	12	6
Isopropyl Ether	9	3
Kelthane	15	6
Kepone	18	9
Lead	18	9
Lindane	18	9
Magnesium & Compounds, NOS	15	6
Manganese & Compounds, NOS	18	9
Mercury	18	9
Mercury Chloride	18	9
Methoxychlor	15	6
4, 4-Methylene-Bis-(2-Chloroaniline)	18	9
Methylene Chloride	12	6
Methyl Ethyl Ketone	6	6
Methyl Isobutyl Ketone	12	6
4-Methyl-2-Nitroaniline	12	9
Methyl Parathion	9	9
2-Methylpyridine	12	6
Mirex	18	9

REFERENCE NO. 14

ecology and environment, inc.
BUFFALO CORPORATE CENTER
368 PLEASANTVIEW DRIVE, LANCASTER, NEW YORK 14086, TEL. 716/684-8060
International Specialists in the Environment

April 18, 1989

Mr. Gordon McElheny
Superintendent of Public Works
Main Street
Municipal Building
P.O. Box 216
Delevan, NY 14042

Dear Mr. McElheny:

Ecology and Environment, Inc. (E & E) is preparing Phase I Investigation reports for the New York State Department of Environmental Conservation (NYSDEC). As part of the report, E & E must obtain information on the land area irrigated by the public water supply. I called your office and was told that the Village of Delevan well was not used for irrigation aside from individual lawns.

Since NYSDEC requires that all references for their reports be fully documented, I would like to request that you review the above information and make any corrections or revisions as necessary. Please sign below to indicate that you agree with the above information. Finally, kindly return the signed original to me.

Your prompt attention to this matter is appreciated. If you have any questions, please call me at (716) 684-8060.

Sincerely,

Peggy Farrell

Margaret J. Farrell
Project Manager

MJF/jw

Gordon McElheny
Signature

4/24/89
Date

REFERENCE NO. 15

STATE OF NEW YORK

OFFICIAL COMPILATION

OF

CODES, RULES AND REGULATIONS

MARIO M. CUOMO
Governor

GAIL S. SHAFFER
Secretary of State

Published by
DEPARTMENT OF STATE
162 Washington Avenue
Albany, New York 12231

1/83

5-80

TABLE I *(cont'd)*

Item No.	Waters Index Number	Name	Description	Map Ref. No.	Class	Standards
115	E 23-48 portion	Elton Creek	From trib. 3 to trib. 8	L-6	C	C(T)
116	E 23-48 portion	Elton Creek	From trib. 8 to trib. 15.	L-6	C	C(T)
117	E 23-48 portion	Elton Creek	From trib. 15 to source.	L-6	C	C(T)
118	E 23-28-1	Stony Creek	From mouth to source.	K-5 L-5	C	C(TS)
119	E 23-48-1-1, 2 3	Tributaries of Stony Creek		K-5	D	D
120	E 23-48-2 portion	Tributary of Elton Creek	Mouth to trib. 1.	K-6	C	C(T)
121	E 23-48-2 portion	Tributary of Elton Creek	From trib. 1 to source.	K-6 L-6	D	D
122	E 23-48-2-1 portion	Tributary of tributary of Elton Creek	Mouth to point 0.7 mile upstream from mouth.	K-6	C	C(T)
123	E 23-48-2-1	Tributary of tributary of Elton Creek	From 0.7 mile upstream from mouth to source.	K-6	D	D
124	E 23-48-2-1-1	Tributary of tributary of tributary of Elton Creek		K-6	D	D

REFERENCE NO. 16

The National Register of Historic Places 1976

William J. Murtagh *Keeper of the National Register*

Ronald M. Greenberg *Editor in Chief*

Sarah A. Marusin *Editor*

Maricca J. Lutz *Photo Editor*

U.S. Department of the Interior National Park Service Washington, D.C.

5-83

bled roof sections, interior end chimneys and center chimneys with small monitor between, center entrance with raked lintel on 5-bay facade, windows outlined with projecting smooth stone frames, center niche on 2nd floor of front and 1st floor of garden facade, iron balconies on 2nd-floor French windows, smooth stone quoins; interior features pedimented doors and windows, and ceiling ornamentation. Deteriorated stone carriage house on lot. Greek Revival. Fine taut design attributed to Minard Lafever. *Municipal.* HABS

New York. **RAINEY MEMORIAL GATES**, New York Zoological Park, 1926. Paul Manship, sculptor. Freestanding bronze gates in the form of a stylized tropical tree with animal life representing that in the zoo in the early 20th C., flanked by low bronze screens on marble bases connected to gatekeepers' lodges. Art Deco. Gates designed by noted American sculptor Paul Manship; casting done in Belgium took 2 years; gates given to the park as a memorial to big game hunter Paul Rainey. *Municipal.*

The Bronx. **NEW YORK BOTANICAL GARDENS**, Southern and Bedford Park Blvds., 1896. 250-acre botanical garden complex containing one of the world's largest herbariums and botanical libraries, a 40-acre hemlock forest, research laboratories, conservatories, and educational complex. Promoted in England by Professor and Mrs. Nathaniel Lord Britton; opened, 1896, under direction of Britton and developed into outstanding botanical facilities. *Private:* NHL

The Bronx. **VAN CORTLANDT, FREDERICK, HOUSE**, Van Cortlandt Park at 242nd St., 1748–1749. Fieldstone, 2 1/2 stories, modified L shape, hipped roof with deck, interior chimneys, gabled dormers, center entrance with small shed porch, brick window trim with mask-like heads in keystones, rear gabled additions with porches added later, exquisite interior. Restored. Early Georgian country home. Built for prominent resident, Frederick Van Cortlandt. *Private:* NHL.

BROOME COUNTY

Binghamton. **BINGHAMTON CITY HALL**, Collier St. between Court and Academy Sts., 1897–1898. Francis R. Almirall, architect. Brick faced with sandstone, 5 stories, rectangular, mansard roof with balustrade at base, elaborate segmental arched dormers, slightly projecting corner pavilions with balconies at windows, center round arched entrance surmounted by 3 tall round arched windows framed by elaborate Ionic pilasters, rusticated ground floor and pavilion fronts, decorative classical detailing. Second Empire. *Municipal.* HABS; G.

Binghamton. **BROOME COUNTY COURTHOUSE**, Court St., 1897–1898. Isaac G. Perry, architect. Sandstone, 2 1/2 stories over high basement, Latin cross shape, gabled roof sections, interior and interior end chimneys; copper central dome on octagonal base surmounted by cupola and statue, clock faces at dome level, front 2-story hexastyle Ionic portico with pediment and county seal in tympanum relief, center entrance, Ionic pilasters surrounding building, frieze with oculi, side end pediments with lunettes. Notable regional landmark in Neo-Classical style. *County.*

Binghamton. **CHRIST CHURCH**, Corner of Washington and Henry Sts., 1853–1855. Richard Upjohn, architect. Stone, 1 story, modified rectangle, high gabled roof, 1 end corner tower with spire and buttresses, lancets along sides divided by buttresses, apse on 1 end, gabled side entrance vestibule; spire added, 1903; modern addition to W end. Early Gothic Revival. Built by noted Gothic Revivalist for oldest congregation in Binghamton. *Private.*

Binghamton. **PHELPS MANSION (MONDAY AFTERNOON CLUB)**, 191 Court St., 1870. Isaac G. Perry, architect. Brick, 2 stories, modified rectangle, truncated hipped roof, interior end chimneys, stone frieze at cornice level, front double-door entrance with 1-story porch, granite quoins; stone architraves over segmental arched windows, hoods over 2 front windows; elaborate interiors feature marble, glass, and rare carved woods including fine black walnut staircase. 1905 auditorium addition, porte cochere moved; 1941 3rd floor and mansard roof removed. Italianate elements. Built for ShermanD. Phelps, former mayor. *Private.*

CATTARAUGUS COUNTY

ZAWATSKI SITE. Archaic, Woodland, Historic (3000 B.C.–19th C. A.D.). Stratified, multicomponent site, contains artifacts and remains of Zawatski family house and other buildings. Investigated by State University of New York, Buffalo, 1971 and 1973. *Private.*

Ellicottville. **ELLICOTTVILLE TOWN HALL**, Village Sq., NW corner of Washington and Jefferson Sts., 1829. Brick, 2 stories, rectangular, gabled roof with stepped gable ends, interior end chimneys, central hexagonal cupola on square base, front center entrance with fanlight and side lights, 2nd story center Palladian windows, oval medallion in gable, front recessed brick arches form 3 bays; altered; restored. Federal elements. Built as Cattaraugus County courthouse; purchased by Ellicottville in 1869 and used for a variety of civic purposes. *Municipal.*

Napoli. **GLADDEN WINDMILL**, Pigeon Valley Rd., 1890. Vertical windmill frame, [illegible] stories, 3 lower stories house machinery, [illegible] containing revolving wind [illegible]. Built by farmer George Gladden. Probably only mill of its type in eastern U.S.; equipped with machinery for elevating and grinding grain, an apple grater and press, wood turner lathe, and repair shop. *Private.*

CAYUGA COUNTY

Auburn. **FLATIRON BUILDING**, 1–3 Genesee St., 1829. Limestone, 3 stories, triangular with rounded apex, low pitched roof, wooden cornice, ground floor storefront, upper story apartments. Illustrates innovative solution to the problem of placing a commercial structure on a triangular plot. Built by Ezekiel Williams, early Auburn developer. *Private, not accessible to the public.*

Auburn. **HARRIET TUBMAN HOME FOR THE AGED**, 180–182 South St., c. 1908. Frame, clapboarding, 2 1/2 stories, irregular, gabled roof, interior end chimneys, full-width front porch, side porch; restored, 1953. Established as home for elderly blacks by Harriet Tubman, an escaped slave who is credited with leading at least 300 blacks to freedom along the Underground Railroad, and who aided the Union during the Civil War, and who also worked toward the improvement of black education and women's rights. Museum. *Private:* NHL

Auburn. **SEWARD, WILLIAM H., HOUSE**, 33 South St., 1816. Brick, painted; 2 1/2 stories, modified rectangle, gabled and hipped roof sections, interior chimneys, center entrance with fanlight and side lights surmounted by Palladian window and center gable with fanlight; side bays and porches; N tower and rear wing added, 1847; S section added, 1860. Federal and Italianate elements. Home of William H. Seward, state senator, NY governor, and U.S. senator and Secretary of State who is most commonly remembered for his part in the purchase of Alaska, then ridiculed as "Seward's Folly." *Private:* NHL

Poplar Ridge. **WOOD, JETHRO, HOUSE**, NY 34B, 19th–19th C. Frame, clapboarding, 2 stories, rectangular, gabled roof, 1 exterior end and 1 interior chimney, center entrance with transom and side lights and small pedimented hood. Home of Jethro Wood, who in 1819 invented the first accepted 3-part iron plow, which featured an improved moldboard for easy cutting through soil. *Private, not accessible to the public:* NHL

CHAUTAUQUA COUNTY

Ashville. **BLY, SMITH, HOUSE**, 1 N. Maple St., 1835. Frame, clapboarding, horizontal front flush siding, 2 stories, modified rectangle, low hipped roof, wide entablature, recessed entrance with decorative panels, transom, and side lights, framed by 2 Ionic columns supporting a frieze with ornamental lotus motifs, rectangular windows with lotus panels above, front bays articulated by fluted Ionic pilasters, 1-story side section with porch of [illegible] interior woodwork. Greek Revival with Egyptian Revival elements. *Private:* HABS.

Chautauqua. **CHAUTAUQUA INSTITUTION HISTORIC DISTRICT**, Bounded by Chautauqua Lake, North and Lowell Aves., and NY [illegible], 19th–20th C. Community [illegible]

EPA

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION	
01 State NY	02 Site Number 905020

II. SITE NAME AND LOCATION

01 Site Name (Legal, common, or descriptive name of site)	02 Street, Route No., or Specific Location Identifier				
Michael Wolfer	11639 Grove Street Extension				
03 City	**04 State**	**05 Zip Code**	**06 County**	**07 County Code**	**08 Cong. Dist.**
Delevan, New York	NY	14042	Cattaraugus		

09 Coordinates Latitude	Longitude	10 Type of Ownership (Check one)
42 30 07.8	078 29 26.0	[X] A. Private [ ] B. Federal _____ [ ] C. State [ ] D. County [ ] E. Municipal [ ] F. Other _____ [ ] G. Unknown

III. INSPECTION INFORMATION

01 Date of Inspection	02 Site Status	03 Years of Operation
6 / 16 / 87 (Month Day Year)	[ ] Active [X] Inactive	1978 (Beginning Year) 1978 (Ending Year) [ ] Unknown

04 Agency Performing Inspection (Check all that apply)
[ ] A. EPA [ ] B. EPA Contractor _____ (Name of Firm) [ ] C. Municipal [ ] D. Municipal Contractor _____ (Name of Firm)
[ ] E. State [X] F. State Contractor E & E* (Name of Firm) [ ] G. Other _____ (Specify)

05 Chief Inspector	06 Title	07 Organization	08 Telephone No.
Pam.Gunther	Environmental Scientist	E & E	(716)684-8060
09 Other Inspectors	**10 Title**	**11 Organization**	**12 Telephone No.**
Mark Cotter	Environmental Scientist	E & E	(716)684-8060
			( )
			( )
			( )

13 Site Representatives Interviewed	14 Title	15 Address	16 Telephone No.
Michael Wolfer	Owner	11639 Grove Street Extension	(716)492-2394
			( )
			( )
			( )
			( )

17 Access Gained By (Check one)	18 Time of Inspection	19 Weather Conditions
[X] Permission [ ] Warrant	18:00	Clear sky, temperature in mid 80s F.

IV. INFORMATION AVAILABLE FROM

01 Contact	02 Of (Agency/Organization)	03 Telephone No.
Walter Demick	NYSDEC	(518) 457-9538

04 Person Responsible for Site Inspection Form	05 Agency	06 Organization	07 Telephone No.	08 Date
M.J. Farrell		E & E	(716)684-8060	6 / 16 / 87 (Month Day Year)

*Ecology and Environment, Inc.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 2 - WASTE INFORMATION

I. IDENTIFICATION	
01 State NY	02 Site Number 905020

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 Physical States (Check all that apply)

[X] A. Solid
[ ] B. Powder, Fines
[ ] C. Sludge
[ ] D. Other _____ (Specify)
[ ] E. Slurry
[X] F. Liquid
[ ] G. Gas

02 Waste Quantity at Site (Measure of waste quantities must be independent)

Tons _____
Cubic Yards _____
No. of Drums 15-20

03 Waste Characteristics (Check all that apply)

[X] A. Toxic
[ ] B. Corrosive
[ ] C. Radioactive
[X] D. Persistent
[X] E. Soluble
[ ] F. Infectious
[ ] G. Flammable
[ ] H. Ignitable
[ ] I. Highly volatile
[ ] J. Explosive
[ ] K. Reactive
[ ] L. Incompatible
[ ] M. Not applicable

III. WASTE TYPE

Category	Substance Name	01 Gross Amount	02 Unit of Measure	03 Comments
SLU	Sludge			
OLW	Oily waste	15-20 55-gallon drums		No waste observed, although oily waste is believed to have been spilled on site.
SOL	Solvents			
PSD	Pesticides			
OCC	Other organic chemicals			
IOC	Inorganic chemicals			
ACD	Acids			
BAS	Bases			
MES	Heavy Metals			

IV. HAZARDOUS SUBSTANCES (See Appendix for most frequently cited CAS Numbers)

01 Category	02 Substance Name	03 CAS Number	04 Storage/Disposal Method	05 Concentration	06 Measure of Concentration
OLW	Lead	7439-92-1	Drums and Spilled wastes	Unknown	
OLW	Diglycidyl	2238-07-05	Drums and Spilled wastes	Unknown	
OLW	Polyoxypropylene	9046-10-0	Drums and Spilled wastes	Unknown	
OLW	Trichloroethane	79-00-5	Drums and Spilled wastes	Unknown	
OLW	Trichloroethylene	79-01-6	Drums and Spilled wastes	Unknown	
OLW	Toluene	108-88-33	Drums and Spilled wastes	Unknown	
OLW	Xylene	1330-20-7	Drums and Spilled wastes	Unknown	
OLW	Triethanolamine	102-71-6	Drums and Spilled wastes	Unknown	

V. FEEDSTOCKS (See Appendix for CAS Numbers)

Category	01 Feedstock Name	02 CAS Number	Category	01 Feedstock Name	02 CAS Number
FDS			FDS		
FDS			FDS		
FDS			FDS		
FDS			FDS		

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Site Inspection, NYSDEC, Region 9 files, interviews with owner, Michael Wolfer

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 State	02 Site Number
NY	905020

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 [X] A. Groundwater Contamination
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [X] Potential [ ] Alleged
04 Narrative Description:

Groundwater potentially contaminated - wastes spilled on ground

01 [ ] B. Surface Water Contamination
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known contamination

01 [ ] C. Contamination of Air
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known contamination

01 [ ] D. Fire/Explosive Conditions
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known fire or explosion threat

01 [X] E. Direct Contact
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [X] Potential [ ] Alleged
04 Narrative Description:

Potential direct contact-wastes spilled on ground

01 [X] F. Contamination of Soil
03 Area Potentially Affected 13.4 (Acres)
02 [X] Observed (Date 1978) [ ] Potential [X] Alleged
04 Narrative Description:

Waste oil used for dust control on dirt roads

01 [ ] G. Drinking Water Contamination
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known contamination

01 [ ] H. Worker Exposure/Injury
03 Workers Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known exposures or injuries

01 [ ] I. Population Exposure/Injury
03 Population Potentially Affected _____
02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known exposures or injuries

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 3 - DESCRIPTION OF HAZARDOUS CONDITIONS AND INCIDENTS

I. IDENTIFICATION

01 State	02 Site Number
NY	905020

II. HAZARDOUS CONDITIONS AND INCIDENTS (Cont.)

01 [ ] J. Damage to Flora — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known damage to flora

01 [ ] K. Damage to Fauna — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known damage to fauna

01 [ ] L. Contamination of Food Chain — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known contamination of food chain

01 [X] M. Unstable Containment of Wastes (Spills/Runoff/Standing liquids, Leaking drums) — 02 [X] Observed (Date 1978) [ ] Potential [ ] Alleged
03 Population Potentially Affected Unknown — 04 Narrative Description:

Contents of 7 drums used for dust control on dirt roads

01 [ ] N. Damage to Offsite Property — 02 [ ] Observed (Date _____) [ ] Potential [ ] Alleged
04 Narrative Description:

No known damage to offsite property

01 [ ] O. Contamination of Sewers, Storm Drains, WWTPs — 02 [ ] Observed (Date _____) [ ] Potential [X] Alleged
04 Narrative Description:

01 [X] P. Illegal/Unauthorized Dumping — 02 [X] Observed (Date 1978) [ ] Potential [ ] Alleged
04 Narrative Description:

Drums and their contents improperly disposed at this site in 1978 — unauthorized dumping.

05 Description of Any Other Known, Potential, or Alleged Hazards

None

III. TOTAL POPULATION POTENTIALLY AFFECTED 5,036 (within 3 miles)

IV. COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NYSDEC Region 9 files, CCHD files

561067

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT

PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION	
01 State NY	02 Site Number 905020

II. PERMIT INFORMATION - None

01 Type of Permit Issued (Check all that apply)	02 Permit Number	03 Date Issued	04 Expiration Date	05 Comments
[ ] A. NPDES				
[ ] B. UIC				
[ ] C. AIR				
[ ] D. RCRA				
[ ] E. RCRA Interim Status				
[ ] F. SPCC Plan				
[ ] G. State (Specify)				
[ ] H. Local (Specify)				
[ ] I. Other (Specify)				
[X] J. None				

III. SITE DESCRIPTION

01 Storage Disposal (Check all that apply)	02 Amount	03 Unit of Measure	04 Treatment (Check all that apply)	05 Other
[ ] A. Surface Impoundment			[ ] A. Incineration	[ ] A. Buildings On Site
[ ] B. Piles			[ ] B. Underground Injection	
[X] C. Drums, Above Ground	15-20	55-gallon drums	[ ] C. Chemical/Physical	12
[ ] D. Tank, Above Ground			[ ] D. Biological	
[ ] E. Tank, Below Ground			[ ] E. Waste Oil Processing	
[ ] F. Landfill			[ ] F. Solvent Recovery	06 Area of Site
[ ] G. Landfarm			[ ] G. Other Recycling Recovery	
[ ] H. Open Dump			[ ] H. Other (Specify)	13.5 Acres
[ ] I. Other (Specify)				

07 Comments

IV. CONTAINMENT

01 Containment of Wastes (Check one)

[ ] A. Adequate, Secure [ ] B. Moderate [X] C. Inadequate, Poor [ ] D. Insecure, Unsound, Dangerous

02 Description of Drums, Diking, Liners, Barriers, etc.

6-8 drums which are in fair condition remain on site.

V. ACCESSIBILITY

01 Waste Easily Accessible: [X] Yes [ ] No

02 Comments:

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports):

NYSDEC Region 9 files, CCHD files

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION	
01 State: NY	02 Site Number: 905020

II. DRINKING WATER SUPPLY

01 Type of Drinking Supply (Check as applicable)	Surface	Well	02 Status	Endangered	Affected	Monitored	03 Distance to Site
Community	A. [X]	B. [X]		A. [ ]	B. [ ]	C. [ ]	A 1.2 (mi)
Non-community	D. [ ]	D. [X]		D. [ ]	E. [ ]	F. [ ]	B 0.2 (mi)

III. GROUNDWATER

01 Groundwater Use in Vicinity (Check one)

[XX] A. Only Source for Drinking [ ] B. Drinking (Other sources available) Commercial, Industrial, Irrigation (No other water sources available) [ ] C. Commercial, Industrial, Irrigation (Limited other sources available) [ ] D. Not Used, Unuseable

02 Population Served by Groundwater: 1,050

03 Distance to Nearest Drinking Water well: 0.2 (mi)

04 Depth to Groundwater	05 Direction of Groundwater Flow	06 Depth to Aquifer of Concern	07 Potential Yield of Aquifer	08 Sole Source Aquifer
30 (ft)	unknown	30 (ft)	unknown (gpd)	[X] Yes [ ] No

09 Description of Wells (Including usage, depth, and location relative to population and buildings)

Private well located 0.20 miles south of site. Water level is 30 feet below ground level

10 Recharge Area		11 Discharge Area - unknown	
[X] Yes [ ] No	Comments: Glacial outwash, gravel and sand in valleys are aquifer recharge areas	[ ] Yes [ ] No	Comments:

IV. SURFACE WATER

01 Surface Water (Check one)

[X] A. Reservoir, Recreation, Drinking Water Source [ ] B. Irrigation Economically Important Resources [ ] C. Commercial, Industrial [ ] D. Not Currently Used

02 Affected/Potentially Affected Bodies of Water

Name:	Affected	Distance to Site
Elton Creek	[ ]	0.06 mile (mi)
	[ ]	(mi)
	[ ]	(mi)

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 Total Population Within

One (1) Mile of Site	Two (2) Miles of Site	Three (3) Miles of Site
A. 1,371 No. of Persons	B. 2,607 No. of Persons	C. 5,036 No. of Persons

02 Distance to Nearest Population: on site (mi)

03 Number of Buildings Within Two (2) Miles of Site: 996

04 Distance to Nearest Off-Site Building: 0.2 (mi)

05 Population Within Vicinity of Site (Provide narrative description of nature of population within vicinity of site, e.g., rural, village, densely populated urban area)

Rural - isolated homes and farms

561067

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION

01 State	02 Site Number
NY	905020

VI. ENVIRONMENTAL INFORMATION

01 Permeability of Unsaturated Zone (Check one)

[ ] A. 10^{-6} - 10^{-8} cm/sec [X] B. 10^{-4} - 10^{-6} cm/sec [ ] C. 10^{-4} - 10^{-3} cm/sec [ ] D. Greater Than 10^{-3} cm/sec

02 Permeability of Bedrock (Check one) Unknown

[ ] A. Impermeable (Less than 10^{-6} cm/sec) [ ] B. Relatively Impermeable (10^{-4} - 10^{-6} cm/sec) [ ] C. Relatively Permeable (10^{-2} - 10^{-4} cm/sec) [ ] D. Very Permeable (Greater than 10^{-2} cm/sec)

03 Depth to Bedrock	04 Depth of Contaminated Soil Zone	05 Soil pH
unknown (ft)	unknown (ft)	unknown

06 Net Precipitation	07 One Year 24-Hour Rainfall	08 Slope Site Slope	Direction of Site Slope	Terrain Average Slope
9 (in)	2.25 (in)	0-3 %	west	0-3 %

09 Flood Potential

Site is not in 100 Year Floodplain

10

[ ] Site is on Barrier Island, Coastal High Hazard Area, Riverine Floodway

11 Distance to Wetlands (5 acre minimum)

ESTUARINE	OTHER
A. _____ (mi)	B. 1.2 (mi)

12 Distance to Critical Habitat (of Endangered Species)

None _____ (mi)

Endangered Species: _____

13 Land Use in Vicinity

Distance to:

COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS, NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS PRIME AG LAND	AGRICULTURAL LANDS AG LAND
A. N/A (mi)	B. N/A (mi)	C. 0.25 (mi)	D. 0.25 (mi)

14 Description of Site in Relation to Surrounding Topography

Site is on 0-3% slope oriented to the west as are adjacent properties.

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Cattaraugus County Department of Health files.
Interview with Michael Wolfer.

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION	
01 State NY	02 Site Number 905020

II. SAMPLES TAKEN 0

Sample Type	01 Number of Samples Taken	02 Samples Sent to	03 Estimated Date Results Available
Groundwater			
Surface Water			
Waste			
Air			
Runoff			
Spill			
Soil			
Vegetation			
Other			

III. FIELD MEASUREMENTS TAKEN

01 Type	02 Comments
HNU	No readings above background

IV. PHOTOGRAPHS AND MAPS

01 Type [X] Ground [ ] Aerial

02 In Custody of Ecology and Environment, Inc.
(Name of organization or individual)

03 Maps
[X] Yes
[ ] No

04 Location of Maps
Map completed on site

V. OTHER FIELD DATA COLLECTED (Provide narrative description of sampling activities)

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Site Inspection

POTENTIAL HAZARDOUS WASTE SITE SITE INSPECTION REPORT PART 7 - OWNER INFORMATION	I. IDENTIFICATION	
	01 State NY	02 Site Number 905020

II. CURRENT OWNER(S) / PARENT COMPANY (If applicable)

II. CURRENT OWNER(S)			PARENT COMPANY (If applicable)		
01 Name Michael Wolfer		02 D+B Number	08 Name		09 D+B Number
03 Street Address (P.O. Box, RFD #, etc.) 11639 Grove Street Extension		04 SIC Code	10 Street Address (P.O. Box, RFD #, etc.)		11 SIC Code
05 City Delevan	06 State NY	07 Zip Code 14042	12 City	13 State	14 Zip Code
01 Name		02 D+B Number	08 Name		09 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code	10 Street Address (P.O. Box, RFD #, etc.)		11 SIC Code
05 City	06 State	07 Zip Code	12 City	13 State	14 Zip Code
01 Name		02 D+B Number	08 Name		09 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code	10 Street Address (P.O. Box, RFD #, etc.)		11 SIC Code
05 City	06 State	07 Zip Code	12 City	13 State	14 Zip Code
01 Name		02 D+B Number	08 Name		09 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code	10 Street Address (P.O. Box, RFD #, etc.)		11 SIC Code
05 City	06 State	07 Zip Code	12 City	13 State	14 Zip Code

III. PREVIOUS OWNER(S) (List most recent first)			IV. REALTY OWNER(S) (If applicable, list most recent first)		
01 Name		02 D+B Number	01 Name		02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code
05 City	06 State	07 Zip Code	05 City	06 State	07 Zip Code
01 Name		02 D+B Number	01 Name		02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code
05 City	06 State	07 Zip Code	05 City	06 State	07 Zip Code
01 Name		02 D+B Number	01 Name		02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code
05 City	06 State	07 Zip Code	05 City	06 State	07 Zip Code

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Machias Town Supervisor

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION	
01 State	02 Site Number
NY	905020

II. CURRENT OPERATOR (Provide if different from owner)				OPERATOR'S PARENT COMPANY (if applicable)		
01 Name No current operator		02 D+B Number		10 Name		11 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code		12 Street Address (P.O. Box, RFD #, etc.)		13 SIC Code
05 City	06 State	07 Zip Code		14 City	15 State	16 Zip Code
08 Years of Operation	09 Name of Owner					

III. PREVIOUS OPERATOR(s) (List most recent first; provide only if different from owner)			PREVIOUS OPERATORS' PARENT COMPANIES (if applicable)		
01 Name		02 D+B Number	10 Name		11 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code	12 Street Address (P.O. Box, RFD #, etc.)		13 SIC Code
05 City	06 State	07 Zip Code	14 City	15 State	16 Zip Code
08 Years of Operation	09 Name of Owner During This Period				
01 Name		02 D+B Number	10 Name		11 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code	12 Street Address (P.O. Box, RFD #, etc.)		13 SIC Code
05 City	06 State	07 Zip Code	14 City	15 State	16 Zip Code
08 Years of Operation	09 Name of Owner During This Period				
01 Name		02 D+B Number	10 Name		11 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)		04 SIC Code	12 Street Address (P.O. Box, RFD #, etc.)		13 SIC Code
05 City	06 State	07 Zip Code	14 City	15 State	16 Zip Code
08 Years of Operation	09 Name of Owner During This Period				

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

D1667

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION

01 State	02 Site Number
NY	905020

II. ON-SITE GENERATOR

01 Name	02 D+B Number
No on-site generator	
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code
05 City	06 State / 07 Zip Code

III. OFF-SITE GENERATOR(S)

01 Name	02 D+B Number	01 Name	02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code
05 City	06 State / 07 Zip Code	05 City	06 State / 07 Zip Code
01 Name	02 D+B Number	01 Name	02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code
05 City	06 State / 07 Zip Code	05 City	06 State / 07 Zip Code

IV. TRANSPORTER(S)

01 Name	02 D+B Number	01 Name	02 D+B Number
Donald Tillinghast			
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code
18 Yacht Club Drive			
05 City / 06 State / 07 Zip Code		05 City / 06 State / 07 Zip Code	
Machias / N.Y. / 14101			
01 Name	02 D+B Number	01 Name	02 D+B Number
03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code	03 Street Address (P.O. Box, RFD #, etc.)	04 SIC Code
05 City	06 State / 07 Zip Code	05 City	06 State / 07 Zip Code

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 State NY	02 Site Number 905020

II. PAST RESPONSE ACTIVITIES

01 [ ] A. Water Supply Closed — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] B. Temporary Water Supply Provided — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] C. Permanent Water Supply Provided — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] D. Spilled Material Removed — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] E. Contaminated Soil Removed — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] F. Waste Repackaged — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] G. Waste Disposed Elsewhere — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] H. On Site Burial — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] I. In Situ Chemical Treatment — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] J. In Situ Biological Treatment — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] K. In Situ Physical Treatment — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] L. Encapsulation — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] M. Emergency Waste Treatment — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] N. Cutoff Walls — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] O. Emergency Diking/Surface Water Diversion — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] P. Cutoff Trenches/Sump — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] Q. Subsurface Cutoff Wall — 02 Date _____ — 03 Agency _____
04 Description:

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION	
01 State NY	02 Site Number 905020

II. PAST RESPONSE ACTIVITIES (Cont.)

01 [ ] R. Barrier Walls Constructed — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] S. Capping/Covering — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] T. Bulk Tankage Repaired — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] U. Grout Curtain Constructed — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] V. Bottom Sealed — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] W. Gas Control — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] X. Fire Control — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] Y. Leachate Treatment — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] Z. Area Evacuated — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] 1. Access to Site Restricted — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] 2. Population Relocated — 02 Date _____ — 03 Agency _____
04 Description:

01 [ ] 3. Other Remedial Activities — 02 Date _____ — 03 Agency _____
04 Description:

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

Site inspection

POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT

PART II - ENFORCEMENT INFORMATION

I. IDENTIFICATION	
01 State NY	02 Site Number 905020

II. ENFORCEMENT INFORMATION

01 Past Regulatory/Enforcement Action [ ] Yes [X] No

02 Description of Federal, State, Local Regulatory/Enforcement Action

Not applicable

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

NYSDEC Region 9 files

56106

6. ASSESSMENT OF DATA ADEQUACY AND RECOMMENDATIONS

The extent of environmental contamination at the Michael Wolfer site is unknown. To evaluate the presence or absence of soil and groundwater contamination at this site, soil and groundwater samples will need to be taken and analyzed for priority pollutants and RCRA hazardous waste characteristics. A more comprehensive sampling program could then be undertaken if hazardous wastes were found. These data can be used to generate a more accurate HRS score. The six or seven 55-gallon drums presently on site are in fair condition but should be removed to an appropriate facility.

7. REFERENCES

Federal Emergency Management Agency, 1982, Flood Insurance Rate Maps, National Flood Insurance Program, Baltimore, Maryland.

Frimpter, M.H., 1974, Groundwater Resources, Allegheny River Basin and Part of the Lake Erie Basin, New York, New York State Department of Environmental Conservation, Albany, New York.

General Sciences Corporation, 1986, Geophysical Exposure Modeling System (GEMS) Volume 3, Graphics and Geodata Handling, Prepared for USEPA Office of Pesticides and Toxic Substances Exposure Evaluation Division.

LaSala, A.M., 1968, Groundwater Resources of the Erie-Niagara Basin, New York, New York State Department of Conservation, Water Resources Commission, Albany, New York.

McElheny, G., 1987, Telephone interview concerning the Village of Delevan Water Supply, Superintendent of Public Works, Delevan, New York.

Murtagh, W.J., 1976, The National Register of Historic Places, USDOI National Park Service, Washington, D. C., with updates from the Federal Register in 1979, 1980, 1981, and 1982.

New York State Department of Environmental Conservation, 1987b, Fish and Wildlife Division, Information Obtained Concerning Critical Habitats, Wetlands, Surface Waters, and Endangered or Threatened Species, Buffalo and Olean, New York.

New York State Department of Health, 1982, New York State Atlas of Community Water System Sources 1982, Division of Environmental Protection, Bureau of Public Water Supply Protection, Albany, New York.

New York State Office of Parks, Recreation, and Historic Preservation, 1986, Base Map of New York State Archaeological Site Locations, New York State Department of Transportation, Albany, New York.

Pearson, C.S., J.C. Bryant, and W. Secor, 1940, Soil Survey, Cattaraugus County, New York, USDA Bureau of Plant Industry, Cornell University Agricultural Experiment Station, Ithaca, New York.

Riesner, W., 1987, Cattaraugus County Department of Health, personal communication concerning storage and site history of Motorola drums in Cattaraugus County, Olean, New York.

Termini Associates, 1983, Resinous Waste Evaluation - Tidd Estate Site, NYSDEC, Buffalo, New York.

Tesmer, I.H., 1975, Geology of Cattaraugus County, New York, Buffalo Society of Natural Sciences Bulletin, Buffalo, New York.

USDA Soil Conservation Service, 1987, Prime Agricultural Lands Currently Under Production, Ellicottville, New York.

Wolfer, M., 1987, personal interview concerning site ownership history, property owner, Delevan, New York.

APPENDIX A

PHOTOGRAPHIC RECORD

ecology and environment, inc.

PHOTOGRAPHIC RECORD

Client: NYSDEC Phase I Investigations | E & E Job No.: ND2041

Camera: Make ANSCO | SN: not known

Photographer: P. Gunther

Date/Time: 6/16/87 18:30

Lens: Type: 50 mm

SN: not known

Frame No.: M-1

Comments*: On-site dirt road sprayed with oil in 1978.

Photographer: P. Gunther

Date/Time: 6/16/87 18:30

Lens: Type: 50 mm

SN: not known

Frame No.: M-2

Comments*: Present site location of remaining Motorola drums presumed to contain only rags and paper debris.

*Comments to include location

D1668

APPENDIX B

UPDATED INACTIVE HAZARDOUS WASTE DISPOSAL SITE REGISTRY FORM

47-15-11 (10/83)

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION

DIVISION OF SOLID AND HAZARDOUS WASTE

INACTIVE HAZARDOUS WASTE DISPOSAL SITE REPORT

Priority Code: 2A Site Code: 905020

Name of Site: Michael Wolfer Region: 9

Street Address: Grove Street Extension

Town/City: Delevan County: Cattaraugus

Name of Current Owner of Site: Michael Wolfer

Address of Current Owner of Site: 11639 Grove Street Extension

Type of Site: [ ] Open Dump [ ] Structure [ ] Lagoon
[ ] Landfill [ ] Treatment Pond [X] Other

Estimated Size: 13.5 acre(s)

Site Description: The Michael Wolfer site is a small trailer complex located in a semi-rural area. The site owner, Michael Wolfer, accepted 15-20 55-gallon drums of Motorola waste in 1978. He used half the wastes as oil for dust control on his private dirt road. The drums from these wastes were removed from the site. The remaining drums are stored on site and are in good condition.

Hazardous Waste Disposed: [X] Confirmed [ ] Suspected

Type and Quantity of Hazardous Wastes Disposed:

Type	Quantity (Pounds, Drums, Tons, Gallons)
Motorola wastes	7 55-gallon drums

Time Period Site was Used for Hazardous Waste Disposal:

_____, 19 78 To present, 19____

Owner(s) During Period of Use: Michael Wolfer

Site Operator During Period of Use: Not applicable

Address of Site Operator: _____

Analytical Data Available: [ ] Air [ ] Surface Water [ ] Groundwater
[ ] Soil [ ] Sediment [ ] None

Contravention of Standards: [ ] Groundwater [ ] Drinking Water
[ ] Surface Water [ ] Air

Soil Type: Chenango gravelly loam and Caneadea silt loam

Depth to Groundwater Table: 30 feet

Legal Action: Type: _____ [ ] State [ ] Federal

Status: [ ] In Progress [ ] Completed

Remedial Action: [ ] Proposed [ ] Under Design
[ ] In Progress [ ] Completed

Nature of Action: _____

_____

Assessment of Environmental Problems:

Assessment of Health Problems:

Person(s) Completing This Form:

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION		NEW YORK STATE DEPARTMENT OF HEALTH	
Name:	_____	Name:	_____
Title:	_____	Title:	_____
Name:	_____	Name:	_____
Title:	_____	Title:	_____
Date:	_____	Date:	_____

APPENDIX C

PHOTOCOPIED REFERENCES

may 82

Tidd Dump Cleanup Under Way

Workers in chemical safety suits have begun cleaning up 825 drums of industrial waste found last year in a junkyard in the Cattaraugus County Town of Yorkshire.

The junkyard, once operated by the late Kenneth Tidd, stretches along both sides of the Creek Road, just south of Cattaraugus Creek in the northeast corner of the county.

John Spagnoli, regional director of the State Department of Environmental Conservation, said yesterday the cleanup was delayed until the ground thawed.

"We do not remove drums on frozen ground," Spagnoli said. He said the base of the drums can stick to the frozen ground and attempts to lift them can break the drums open. In addition, many of the liquids are largely made up of water and obviously freeze in cold weather.

Many of the drums already are broken or leaking, said Robert Wozniak, a principal engineering technician with the department who has been handling the Tidd Estate case.

Wozniak refused to identify the firm where the material came from, other than to describe it as "local" to the dumpsite.

He said the material has been on the site at least since '76 and maybe the early '70s. Wozniak added that some of the same material had been taken to other sites in the Yorkshire area. Some, he said, was used for dust control.

An investigation several years ago by the Cattaraugus County Health Department found

Wozniak said the Tidd Estate is planning to sue the unnamed firm to recover what he described as the "exorbitant" cost of the cleanup. Wozniak said the family has been very cooperative.

William Tidd, a son, said he didn't want to say anything about the matter or identify the company until testing of the material had been completed.

Tidd, Spagnoli and Wozniak all

A town of Yorkshire junkyard stores 825 drums of industrial [illegible] above) which workers in safety suits clean up yesterday (below). Although the drums were discovered [illegible] officials said the cleanup was delayed until the ground thawed [illegible] of the drums [illegible]

agreed the material was "cutting oil" — a liquid used in the cutting of metal such as steel and aluminum that protects the cutting blade and keeps the process relatively cool.

Over the weekend, employees of Tecmini Associates of the Town of Tonawanda took samples from each drum.

Wozniak said he did not know how long it will take to test each sample.

Spagnoli said: "Nothing is authorized to move off-site until it is sampled and sampled." The sampling will separate out materials that can be recycled from materials that must be destroyed.

Wozniak said the materials are not likely to be dangerous, although some flammable solvents, which are recyclable, might be present.

Asked if the liquids posed a threat to the watertable in the rural area, Wozniak said he had dug up some of the soil and reported finding "very little penetration of this oily-colored material."

5/82

HARRIGAN & LILLENSTEIN
ATTORNEYS AND COUNSELORS AT LAW

CHARLES M. HARRIGAN, JR.
MARK A. LILLENSTEIN

1 LIBERTY STREET
ARCADE, NEW YORK 14009
TEL.: 716 - 492-4637

BUFFALO TOLL - FREE LINE
496-7544

December 9, 1981

Mrs. Betty Tidd
1501 Annona Avenue
Tampa, Florida 33612

Re: Offense of operating a solid waste management facility without NYSDEC permit
Our File No.: A-81-1111-H

Dear Betty:

As of last week Friday, arrangements were made for City Oil to send trucks from Rochester to pick up all of the waste cutting oil at no cost to the Estate. Also, Billy told me that he had made arrangements with Rule to have a highlift at the property Saturday morning to bring the barrels out to the road. My prior understanding was that all the barrels were to be stored next to the road so that they would be handy for the trucks.

I received a telephone call on December 8th from Bill Ewell of City Oil in Rochester. He said that he send two trucks to the Tidd property in Yorkshire on Saturday. He found that there was no oil in the drums, but only the water soluable type which costs 30¢ per gallon to remove. After talking with Mr. Ewwell, I immediately called Billy and he said that they opened about 50 barrels (not of which had been brought to the roadside) and found oil in only one barrel and that the rest contained cutting oil.

I am still of the opinion and I strongly recommend that all barrels be brought to the roadside. I do not think it advisable to bring them out when the trucks are ready and waiting to pump them out. Rather, they should all be stored in a location where there is ready access for the trucks.

Secondly, I recommend that once all the barrels are brought to the roadside, that the Estate pay someone to examine the contents of each and every barrel, and to mark each and every barrel to

identify the contents. I see no other practical way of knowing what the barrels contain. It is absolutely essential to have a complete and valid inventory so that we can then hire the necessary people to get the work done.

Since only 50 out of an approximate 1,000.barrels were opened, who can say how much cutting oil there is? It could be that every other barrel contained cutting oil. We will never know this until they are all opened and all contents determined.

In talking with Billy on December 8th, he said that he would get busy at this immediately and have all the barrels brought out to the roadway. I am going to send a copy of this to Billy and also a copy to Mr. Wozniak. I am sure that it was a dissappointment not only to your son, but to the DEC and to City Oil to arrive at the site, and not accomplish anything.

Since it was my prior understanding after talking with Mr. Wozniak that DEC would permit all barrels to be removed to a roadside site, I do not think that there is any objection at the present time to doing this. However, if Mr. Wozniak has such an objection, I would appreciate it if he would advise us immediately.

SIncerely yours,

HARRIGAN & LILLENSTEIN

CHARLES M. HARRIGAN, JR.

CMHJR:fsp
cc: Billy Tidd
Mr. Wozniak

P.S. After dictating this letter, I received a telephone call from Mr. Wozniak. The position of the DEC is that they still want immediate action in this matter, otherwise they will be forced to proceed with sanctions. Mr. Wozniak said that he had specified to Billy an area near the road where the barrels could be placed. THEY WERE NOT TO BE PLACED ANYWHERE NEAR BIG N. PLAZA. Apparently Billy moved two cars to make room for the barrels, however, the space provided would only accommodate perhaps 30 barrels. It is necessary that more vehicles be moved so that a sufficient space can be made to accommodate all the barrels. Mr. Wozniak agreed that it was imperative to get all of the barrels to the site immediately and to have the contents checke

He is afraid that the barrels that contain water may freeze, thus preventing them from being pumped. After you have had an opportunity to review this letter, I will call you in Florida to discuss this with you further.

It must be noted that progress to date has not been satisfactory to DEC. I am sure it would not be satisfactory to Judge Kester.

CMHJR:

Jack McMahon, DEC - BRO

October 3, 1978

Chester Halgas

Motorola Industrial Waste Disposal

The following is a report on our activities concerning the subject waste from the Motorola plant in Arcade which found its way to various locations in northeastern Cattaraugus County.

On September 19, 1978, Mr. Dan Pascarella of our office observed 97 drums on the old Machias Town sanitary landfill site. He investigated the matter and wrote the attached report which was referred to Kevin Hintz of your Department. On or about September 25th, Mr. Reisner of this office brought to my attention that more drums were in the area. I then contacted Mr. George Wyllie, chief industrial engineer at Motorola, to more specifically determine the nature of the wastes.

Through subsequent field investigations by Messrs. Pascarella and Reisner, it was determined by September 29, 1978, that approximately 2500 drums of industrial waste from Motorola had been placed in Cattaraugus County by three unregistered waste haulers at the following locations.

Prior to May of 1976, apparently all of the wastes had been hauled by Community Disposal Services to their landfill in Erie County. At that time, they went out of business and waste was then hauled by William Ballard, Osmon Road, Freedom Town, Cattaraugus County (492-2113) from May 1976 to May of 1977. During that time, he took approximately 1,000 drums which were given to the Previty Auto Wrecking yard on Galen Hill Road, Freedom Town, which is located approximately ½ mile south from the intersection with Route #98. All of these drums had been emptied by Mr. Previty on his property. He has a private well for his house and business on the property. No other water supplies are in the immediate area, and it is doubtful if any appreciable amount of waste found its way into Clear Creek, a protected trout stream, approximately ½ mile to the north of the dumping site. Reportedly, the waste materials were used to oil roads, and the drums were used to support junk cars.

From May 1977 to March 1978, approximately 1,000 drums were taken by a Donald Tillinghast, 18 Yacht Club Drive, Machias (353-8826) to the following locations: From May to winter, approximately 600-800 drums were deposited at Tidds Junkyard on County Road #72, several hundred yards west of the Big N Plaza at Yorkshire Corners. Mr. Tidds reported that he gave away approximately 100 of these drums which are unaccounted for except for 20 which went to Michael Wolfer in Delevan. Approximately 50% of the drums at Tidds Junkyard had been spilled or opened and a considerable amount of spillage exists on the property. Nearby residences and businesses are served by the Yorkshire Town public water supply, and there appears to be no threat from a water supply standpoint. The site of the drums is very flat and it is doubtful if appreciable amounts of the waste got into Cattaraugus Creek which is approximately ½ mile away. Apparently the winter weather precluded dumping of the drums at Tidds Junkyard and reportedly Mr. Tillinghast gave 20 drums to Camp Arrowhead on Route #16, Yorkshire Town, which were later buried. He also gave approximately 100 drums to Norman Rogers who used them for fill on his property, approximately ½ mile east of the Village of Delevan on California Road. 13 drums were given to Terwilliger Excavation in Franklinville which are still intact, and 13 drums were dumped on the Boehmer property on Route #16, Machias, directly across

and approximately 225' distant from the new Town of Machias and County Infirmary well. At the Boehmer site, more than half of the drums had been spilled. It is further reported that some unknown quantity of drums were dumped and covered in a ravine on the south side of Route #242 just west of its junction with Route #16. In addition, 97 drums had been dumped at the aforementioned Machias landfill site, which is no longer in operation there. A number of the drums had been spilled and significant amount of spilled wastes are on the site. Fortunately, except for the 2 [illegible] mentioned above, no other water supplies appear to be possibly affected, and the aforementioned spillages are not in locations where appreciable overland flow of the wastes to streams would occur.

From March 1978 to the end of September when Motorola discontinued allowing private haulers to take these wastes, approximately 600 drums were taken by a Dan Griswold, Reynolds Road, Franklinville (676-2403) to the Town of Machias gravel pit on Very Road, located approximately one mile south of the intersection of Very Road and County Road #16, which is slightly more than two miles directly west of the hamlet of Machias. At this location, approximately one-half of the drums had been emptied, and it is reported that the Town of Machias used these waste materials in oiling some of the Town roads. However, we have been unable to verify this report, and the Town Supervisor has stated that she knew nothing of the storage or the use of this material.

On Thursday, September 28th, the writer toured several of the sites with Messrs. Vought and Wyllie of Motorola and Mr. Reisner of this office. The Motorola representatives indicated that most, if not all, of the drums came from their plant. The drums are mainly identified by the product that they contained when they were shipped to Motorola and are largely characterized by the names of the chemicals, e.g. Magnolia Chemical, chlorothane, freon, etc. The newer drums have waste labels affixed to them by Motorola.

Motorola uses the following products which may in some part be discarded as industrial waste: Machining oils (Hamidraw D21-HV, GM Industries Limited 991, and HM 1301 DC), epoxies, epoxy solvent (Dibutylphthalate), flux, flux thinner (Alpha Metals 810), degreasers, polyurethane varnishes, Tolune, Xylene, Freon, dilute hydrochloric acid, metal grindings and metal. Motorola is to prepare a report stating the relative amounts of these products which may find their way into the industrial waste.

Investigation with suppliers and manufacturers revealed that many of the products are proprietary and that the exact content was not revealed to Motorola. The contents as reported by the suppliers and manufacturers are:

Hamidraw D21-HV - Harry Miller Corp., Philadelphia, PA (215-324-4000). Sulfonated petroleum oil 19.6% by weight; petroleum oil, 19.4%; chlorinated petroleum wax, 4.5%; lead tallate solution, 19.7% (75% kerosene and 25% lead tallate. % lead in lead tallate is 42%); Butyl Carbitol, 3% (the solution has a pH of 9.5 and the manufacturer advises handling with care. D21-HV is used in its undiluted form and also a 50% dilution with water at Motorola.

HM 1301 DC is also made by Harry Miller Corp. and contains: Mineral oil, 65%; sodium petroleum sulfonate, 14%; lead tallate, 19%; ethyloxylated alcohol, 2%.

The epoxy formulations used were obtained from a previous supplier, Hysol of Olean, New York, who reports that the epoxy resin is approximately a 400 molecular weight diglycidyl ether of bisphenol A plus 5% cresyl glycidyl ether. The hardener is a polyoxypropylene diamine.

The machine oil 991 supplied by GM Industries Limited in Tonawanda (693-6050) consists of the following: Tall oil, 10%; polysperm oil, 3%; sodium petroleum sulfonates, 7%; stearic acid, .3%; triethanolamine, 4.5%; hexylene glycol, 4%; Union Carbide U con LB 65, 2% (a proprietary compound which is a poly alkaline glycol); pine oil, .5%; emulsifier, .5%, chlorinated paraffin wax, 2%; petroleum oil, 15%; tetrasodium EDTA, .75%; biocide solution, 1.4% (solution of 18.5% 2' dihydroxy; 5' 5' dichloro-diphenyl methane, 6.7% of 50% sodium hydroxide and the rest water); Blue dye, .015%; water, 45.5%.

The flux is Alpha Metals, New Jersey (201-434-6778) and consists of a gum resin, an organic activator and a terpine alcohol solvent blend. The flux thinner is Alpha Metals 810 and a blend of alcohol and terpine solvent. No one was available who could give an exact formulation.

The degreasers used are trichloroethene and trichloroethylene.

The waste also contains metal grindings and machining wastes together with paper cups and rags, presumably from the epoxy casting process.

A literature review of the toxicity of the above chemicals indicates that practically all of them are mildly to moderately toxic, except for the biocide and lead. Fortunately, most of the spillage has occurred in environmentally insensitive areas except for the possible involvement of two water supplies. This Department plans to sample these two supplies together with any others that may be reasonably close to the two spillages, and have the samples analyzed for lead. It is the writer's opinion that lead will travel to the ground waters more quickly than any of the other chemicals and that it would therefore be a good indicator chemical.

In the writer's opinion, the spillages present a moderate environmental hazard that at this time, aside from the possible aforementioned affect on water supplies, poses no public health problem because of the remoteness and nature of the sites. The question of what to do with the spillages is therefore more properly the responsibility of the Department of Environmental Conservation, as is the matter of the three unregistered industrial waste haulers.

There are approximately 800 intact drums of Motorola's industrial waste at the aforementioned sites. Because of their nature and the potential deleterious environmental effects, they should be moved to a satisfactory disposal area. In this regard, this office has requested Motorola to move the intact drums. It is anticipated that they will be making a decision in the very near future.

Although ignorance of the exact nature of these chemicals is not a good excuse, it must be pointed out that in the opinion of the writer, neither Motorola nor the three haulers had any good indication as to the wastes' actual content.

CRH:PM
Attachment
CC: Machias Office
William Bruyere, Plant Manager, Motorola

MOTOROLA - ARCADY DISPOSAL SITES

- Previty Auto Wrecking, Galen Hill Road, Freedom. Approximately 1000 drums emptied on this site.
- Tidd's Junkyard, Route 72, Yorkshire Corners. Approximately 600 - 800 drums deposited at this site. About 50% spilled or opened.
- Town of Machias Grand Pit, Very Road, Machias. Approximately 600 drums taken to this site.
- Norman Rogers, California Road, Delevan. About 100 drums used for fill on this site.
- Camp Arrowhead, Route 16, Yorkshire. About 20 drums reportedly buried on this site.
- Boehmer property, Route 16, Machias. 13 barrels taken to this site. More than half spilled. These drums have been removed.
- An unknown quantity of drums were reportedly dumped in a ravine south of Route 242, west of junction with Route 16.
- Terwilliger Excavation, Route 16, Franklinville. 13 drums taken to this site.
- Michael Wolfer, Delevan. 20 drums taken to this site.
- Machias landfill site, Machias. About 100 drums taken to this site.

Wastes reportedly present in the drums include:

- Varnishes
- Fluxes and flux thinners
- Isopropyl alcohol
- Hydrochloric acid
- Phosphoric acid
- Toluene
- Xylene
- Trichloroethane
- Trichloroethylene
- Freon
- Epoxies
- Cutting oils

17 Le Motorola

584 Delaware Avenue, Buffalo, New York 14202

September 27, 1978

Mr. Donald Killinghast
Yacht Drive
Machias, NY 14101

Dear Mr. Killinghast:

As a result of an investigation of waste disposal from Motorola in Arcade, New York, it was leanred that you picked up their waste for a period of approximately 2 years. This Department wants to insure that this waste was properly disposed of, therefore, you are hereby requested to submit the following information:

1. What types of waste did you pick up from Motorola?

2. How much waste did you pick up during the period of time contracted?

3. Where was this waste disposed of?

Please provide the above requested information in as much detail as possible. If you have any questions, please contact Mr. Hintz of this Department at 716/842-3837.

Very truly yours,

John C. McMahon, P.E.
Regional Engineer, Solid and
Hazardous Waste Program

JCM:KH:ics

12

New York State Department of Environmental Conservation
584 Delaware Avenue Buffalo, New York 14202

Peter A. A. Berle,
Commissioner

September 29, 1978

Mr. W.D. Bruyere
Plant Manager
Motorola, Inc.
400 Main Street
Arcade, New York 14009

Dear Mr. Bruyere:

This office has very recently been informed that a large number of drums of Motorola wastes have been deposited at a number of sites located in Western New York.

The deposition of waste materials at other than a site approved by this Department for the specific type of waste material involved is in violation of Part 360 of Title 6 of the New York State Codes, Rules and Regulations. In addition, the hauling of these wastes by other than a hauler registered with this Department is in violation of Part 364 of these same Codes, Rules and Regulations.

This practice of depositing waste materials at other than approved sites must cease immediately.

A meeting is to be held in this office on October 5, 1978 at 10 a.m. to discuss an action program for the proper disposal of these waste materials. Your attendance at this meeting is requested.

Please confirm with this office at 716/842-5826 on or before October 4, 1978 your attendance at this meeting.

Very truly yours,

John C. McMahon, P.E.
Regional Engineer, Solid
and Hazardous Waste Program

JCM:egb

cc: Mr. Burke

file

Mr. McMahon
Mr. Mintz
MOTOROLA - Barrel Disposal

September 4, 1980

The present status of the disposal of those barrels located around Cattaraugus County is:

1. Those barrels jeopardizing public or private water supplies were removed by Motorola by Cattaraugus County Health. This includes those barrels in the Boehmer Gravel Pit (across from the Town of Machias water well near the Cattaraugus County Home and Infirmary) and the old Machias Dump on Franklin Street.

2. The remaining barrels are located in junk yards and a gravel pit. These people were notified by letter from Cattaraugus County Health that the barrels were to remain on site. Nothing was to be done with the barrels.

Cattaraugus County has not visited the remaining barrel sites recently to determine if the barrels have remained undisturbed.

KRH:amd

Peter Burke
Kevin Hintz
Disposal of Motorola Waste by Mr. Griswold, Mohawk Disposal

October 10, 1978

On October 6, 1978, the writer was telephoned by Mr. Griswold to determine what wastes he could haul without a permit from this Department and what needed a permit. He wishes to obtain an Industrial Waste Hauler permit to haul the grinding fines from Motorola to a scrap yard in Buffalo.

While conversing with Mr. Griswold, the writer obtained the following information:

1. 535 barrels of waste have been hauled from Motorola. All these barrels have been deposited at the Machias Gravel Pit on Vary Road in the Town of Machias. Approximately 200 are empty and 20 small 35 gallon drums have been used for drainage pipe at Mr. Griswold's residence. These barrels contain steel grindings, speed dry absorbent, paper refuse and liquid waste.

2. When Mr. Griswold took the business in March of 1978, he hauled the barreled waste for 1 month. However, he couldn't get rid of them; thus, he stopped hauling. When he informed Motorola, they were quite angry according to Mr. Griswold. After a month, he found Mr. Don Krebbs, Machias Highway Superintendent, who was willing to accept the waste. Thus, all the barrels were delivered to the Town Gravel Pit on Vary Road. Mr. Krebbs would take a limited amount and Motorola was informed of this by Mr. Griswold. At this same time, Griswold began taking the grinding fines to a scrap yard in Buffalo.

3. Barrels of waste from Motorola were already in the Gravel Pit on Vary Road prior to deposition of barrels at the site by Mr. Griswold. Apparently, Tillinghast was responsible for these barrels.

   Tillinghast showed Griswold his disposal sites which were scattered throughout the area. Mr. Griswold stated he did not approve of the operation by Mr. Tillinghast.

4. Safety Officer at Motorola once questioned Mr. Griswold if he could haul flammable liquids. When Mr. Griswold asked what was in the drums, he wasn't told much - only water, cutting oil, hamidron and water.

Mr. Griswold can be reached at 676-2403 early in the morning.

KH:ics
cc: Chet Halgas, Catt. Co HD

SW File

Mr. Burke
Mr. McMahon
Motorola, Inc. - Mr. Daniel Griswald, and Mr. Donald Tillinghast,
Mr. Hugh Smith and Mr. William Ballard
October 5, 1978

Attached is a legal referral for the improper disposal of industrial wastes containing varnishes, fluxes, flux thinners, isopropyl alcohol, hydrochloric acid, phosphoric acid, toluene, xylene, trichloroethene, trichloroethylene, freon, epoxies and cutting oils in violation of Parts 360 and 364.

The above materials are reported to have been disposed of by Community Disposal in Chaffee (Mr. Hugh Smith) prior to 1976. From 5/76 to 5/77 Mr. William Ballard hauled these wastes. Similarly from 5/77 to 3/78, Mr. Donald Tillinghast and from 3/78 to the present, Mr. Daniel Griswald hauled these wastes. None of these are registered with this Department as industrial waste haulers.

A penalty of $10,000 should be assessed against Motorola Inc. for improper disposal of industrial wastes. A $2000 penalty should be assessed against each of the industrial waste haulers for transporting industrial wastes without being registered with this Department.

These wastes are now located at nine (9) known sites in Cattaraugus County.

In addition, Motorola shall be required to:

Remove all barrels of waste to a disposal site approved by this Department via a registered industrial waste hauler — Immediately

Remove from the disposal areas all liquid and solid wastes and all soils contaminated by these wastes and dispose of these wastes and contaminated soils at a disposal site approved by this Department. — Immediately

JCM:ics
Att.

CATTARAUGUS COUNTY

DEPARTMENT OF HEALTH

Established 1923

LEO D. MOSS, M.D.
Acting Commissioner

WILLIAM E. McILWAINE
Administrator

302 LAURENS STREET
OLEAN, NEW YORK 14760
Phone (716) 372-3181

11/5/80 [illegible]

2/4/81 [illegible]

October 31, 1980

Mr. Robert J. Mitrey, P.E.
Associate Sanitary Engineer
N Y State Department of Environmental Conservation
584 Delaware Avenue
Buffalo, New York 14202

Subject: Motorola Waste - Cattaraugus County

Dear Mr. Mitrey:

I have received your letter of October 15, 1980, requesting intended plans for disposal of barrels of Motorola waste that exist in Cattaraugus County.

Please be advised that we have no intended plans for disposal since we do not feel that these barrels are our responsibility, as per the following: 1) Environmental Conservation programs which would have covered this matter were taken from Cattaraugus County in 1974. 2) The waste originated at the Motorola Co. in Arcade which is beyond this office's jurisdiction and which at the time that these barrels were being moved was under your office's jurisdiction. 3) All of the barrels were moved by a second party who at the time should have been under your industrial waste hauler program. 4) We have evaluated the material in these barrels and feel that most of it is of a non-hazardous nature. 5) Similarly, we have investigated this waste impact on water supplies where it was spilled and have found no cause for concern. 6) We have caused the removal of these barrels from locations which were environmentally sensitive to water supplies. 7) These barrels were given to various individuals and entities throughout northeastern Cattaraugus County at a time when the solid waste disposal program was under your jurisdiction.

In view of the above, this office does not see any responsibility or reason to act. The jurisdiction is clearly yours since no health hazard can be identified at present.

Get status from Gary on barrels at [illegible] 2/9/81

Since these dumpings of industrial waste occurred in this County when the aforementioned programs were under your jurisdiction, please inform this office of your intended plans for disposal of these barrels. A time table for disposal should be provided as well.

If you have any questions, please contact me.

Very truly yours,

Chester R. Halgas, P.E., Director
Environmental Health Services

CRH:PS

CC: Dr. Moss, Commissioner of Health
Mr. Ray Jordan, Machias District Office with attachment
Mr. Louis Violanti, Buffalo Regional Office with attachment

MEMORANDUM

To: CH-157 Project File

Date: May 27, 1982

Subject: Meeting with DEC Regarding Required Off-Site Analysis

A meeting was held in the Region 9 offices of NYS DEC. The following individuals were present:

Robert Wozniak (DEC)
Kevin Heintz (DEC)
Richard Penfold (CLI)
Rock Termini (TA)

The current status of the remedial action program at the Tidd abandoned site was reviewed. The following points regarding operational procedures and additional test requirements were discussed:

1) Mr. John Beecher (DEC) will require that EP TOXICITY tests be performed on raw wastes prior to the addition of any solidification material.

2) Mr. John Beecher (DEC) will require that Coolant EP Extracts be analyzed for lead content only at this time. The leachate extracts will be stored in the event that additional requirements are identified later on.

3) Coolant wastes slated for bulk solidification may be composited and tested on a roll-off load basis. However, since the coolants are present in a variety of phase mixtures, each composite should only contain sub-samples with the same phase mixture.

4) Several drums of dried (cured) hardened resins were identified. These may be disposed of without additional analysis. All other resinous material will require phenol analysis of a hexane extract.

5) Several containers of dry powdered solids were identified. These will require an EP Toxicity test (Metals Only).

6) Several containers of base coolants were identified. Kevin Heintz will determine what analysis beyond lead content is required on the EP extract by DEC (John Beecher).

7) Rock Termini to investigate the need for other analysis besides phenol content on the hexane extract of the uncured waste resins.

8) Rock Termini will provide a further description of the non-coolant aqueous base wastes.

Rock Termini
C. R. Termini

CRT/j

600 Delaware Avenue, Buffalo, New York 14202-1073

March 21, 1983

Mr. Jeffery Mason
Arcade Herald
290 Main Street
Arcade, New York 14009

Dear Mr. Mason:

This is in response to your request for information on the Motorola-Arcade site which is included on the list of 100 sites to be investigated under the State Superfund Program.

As I noted during our telephone conversation, the Motorola site is actually a total of ten separate sites where wastes from the Motorola facility in Arcade were disposed. These sites range from areas where a relatively small number of barrels were disposed to sites receiving large numbers of barrels. The attached summary provides an overview of the sites and should respond to your questions regarding the disposal sites.

Please feel free to contact me at 847-4590 should you have further questions regarding this matter.

Yours truly,

Peter J. Buechi, P.E.
Associate Sanitary Engineer

PJB:cag
Attachment

cc: Robert Wozniak

THE ASSEMBLY
STATE OF NEW YORK
ALBANY

DANIEL B. WALSH
149th District

MAJORITY LEADER

☐ District Office
P.O. Box ~~190~~ 624
Olean, New York 14760
(716) 372-0345

Room 925
☐ Legislative Office Building
Albany, New York 12248
(518) 455-3831

December 14, 1982

Mr. John Spagnoli
Regional Director
New York State Department of Environmental Conservation
584 Delaware Avenue
Buffalo, New York 14203

Dear John:

A Mr. Charles M. Harrigan Jr. Attorney for the Kenneth F. Tidd Estate has contacted my office regarding a concern the Estate has in disposing of some industrial waste stored on your auto wrecking business property.

Mr. Harrigan has discussed this matter at various times with Mr. Tom Woznick of your office and following his advice they have spent several thousands of dollars in identifying the material stored in barrels at that site. Its original source apparently was motorola company of Arcade who has denied any responsibility or identification with the material.

The bottom line is; can this site be included as an eligible site for New York State's superfund cleanup program and what steps have to be taken to submit this site for consideration? I would appreciate your reviewing this matter with your staff and communicating with Mr. Charles M. Harrigan Jr., Attorney, 1 Liberty Street, Arcade, New York 14009 Phone # 716-492-4637.

I received a copy of a notice indicating that meetings will be held at various locations in the state at which information will be given for eligibility I believe. I am sending a copy of that to Mr. Harrigan for his information and hopefully we can find an acceptable solution for this problem.

I appreciate your assistance in this matter.

Sincerely,

DANIEL B. WALSH
Majority Leader

DBW/lm

Region IX Headquarters
600 Delaware Avenue, Buffalo, New York 14202-1073
(716) 847-4560

June 23, 1983

The Honorable Frank F. Smith
Supervisor
Town of Yorkshire
Main Street
Delevan, New York 14042

Dear Mr. Smith:

This is in response to your letter of June 2, 1983 concerning the remediation of the Tidd dumpsite in the Town of Yorkshire. I can assure you that I like yourself am anxious to see action on problem sites as quickly as possible.

As you note in your letter, analysis of the wastes on the Tidd site began last summer as part of a phased cleanup program funded by the Tidd Estate and approved by this office. Activity on this program continued until August of 1982 when representatives of the Tidd Estate halted work due to the escalating costs of the cleanup project. Since that time, the Tidd Estate has refused to continue with voluntary cleanup of the site.

To achieve investigation and remediation of not only the Tidd site but the other sites containing wastes from the Motorola Arcade facility, this office recommended that all of the Motorola sites be placed on the State Superfund list. Both the draft State Superfund list issued in December 1982, and the final list issued in February 1983, included the Motorola sites. Engineering consultants retained by the Department began investigation of the top 100 State Superfund sites in May of this year. The Motorola sites were included in the top 100 sites. However, when these investigations began it became apparent that limited resources would prevent the investigation of all the Motorola sites. As a result, a decision was made to focus on the largest of the Motorola sites, the Previty Auto Wrecking site in the Town of Freedom.

Since only the Previty site is under investigation by the State Superfund consultants, we are attempting to have the Tidd site and the remaining Motorola sites investigated by the U.S. Environmental Protection Agency Field Investigation Team contractor as part of Environmental Protection Agency's (EPA) investigation of 200 sites in New York. While this approach is being pursued, other possible avenues to achieve investigation and cleanup of these sites are being considered..

Your letter suggests a correlary exists to the much publicized Tifft Farm problem wherein media involvement forced a quick remedial action. This may be the case, however, the media has had no impact on the Department of Environmental Conservation's (DEC) actions since our involvement was only to review the documents and plans and to analyze a limited number (8) of barrel samples. The cost associated with the cleanup was borne entirely by private contractors who donated their services with some other assistance by local government. In retrospect, therefore, since DEC has no funding for site cleanup other than Superfund, we have addressed Tifft Farm as we address all other private sites that being to attempt to get landowner or responsible party to react to address the problem. If the Town of Yorkshire wishes to follow the Tifft Farm lead and sponsor the Tidd Estate cleanup, I shall have staff made available to expedite the plan review so that appropriate action can be started immediately. Should you care to pursue this approach or desire to review the Tidd situation in detail, please contact ~~Mr.~~ Peter Buechi of my staff at 847-4590.

Sincerely,

John J. Spagnoli
Regional Director

JJS:jg

cc: The Honorable Daniel B. Walsh
Assemblyman

CLIENT CONTACT REPORT

TO X FROM ___ PHONE X IN PERSON ___

WITH:

Mr. Robert Wozniak
New York State Department of
Environmental Conservation
600 Delaware Avenue
Buffalo, New York 14202
Telephone: 846-4586

June 23, 1982 2:15 PM
Project : Tidd Inactive Site
Client : Chaffee Landfill
Proj. No: CH-157 III
Copy To : File (CH-157)
R. Wozniak (DEC)
R. Penfold (CLI)

I contacted Bob Wozniak to discuss the results of the coolant testing as a follow-up to my discussion yesterday with Kevin Heintz. Kevin requested that I update Bob on the recent data since he is currently engaged in hearings in Sardinia. Significant points discussed with Bob are as follows:

1) There are a little over 300 drums of coolant wastes at the Tidd site which break down into 3 waste types, i.e., 2-phase aqueous sludge, 2-phase oil-aqueous, and 3-phase oil-aqueous-sludge.

2) In accordance with our meeting on May 27, 1982, 11 composite samples representing approximately 30 drums each were analyzed for leachable lead. The data for these tests range from 0.13 mg/l to 2.15 mg/l. DEC stipulated at the meeting that if composite samples were analyzed, the allowable lead limit would be reduced appropriately. Only one of the eleven composites meets the reduced criteria.

3) My interpretation of the data is that they indicate that all coolant drums contain waste with leachable lead in the range of 0 - 3 mg/l or well below the applicable standard of 5.0 mg/l. I recognize, however, that a possibility exists that in a group of 30 drums, one drum could have 60 mg/l of leachable lead while the remaining 29 drums had none. A composite of this group, when analyzed, would show a leachable lead content of 2.0 mg/l. To rule out this possibility, the group with the highest lead result was reanalyzed by the following procedure:

   1) split the 30 samples into 2 subgroups

   2) composite the first subgroups (15 samples) and analyze for leachable lead

   3) split the second subgroups into 2 more subgroups

   4) composite one of these subgroups (7 samples) and analyze for leachable lead.

4) The results of this additional analysis confirms that the presence of lead is not restricted to one or two drums.

Original Composite (30 drums)	2.15 mg/1 lead
1st Subgroup Composite (15 drums)	2.50 mg/1 lead
2nd Subgroup Composite (7 drums)	1.90 mg/1 lead

5) It is our conclusion that analysis of each drum for leachable lead is not warranted. Statistically, it appears most likely that lead is pervasive in the coolant waste at a level that will not impact adversely on groundwater. The composite samples more closely model the actual waste to be disposed of than the individual drums and, finally, the actual waste will also include 6,000 lbs of excavated soils which have been found to contain less than 1.0 mg/1 of leachable lead.

6) Bob Wozniak indicated he would discuss our results and conclusions with Mr. John Beecher (DEC) and contact me as soon as a decision is reached.

7) Bob is aware that the list price for analysis of leachable lead on 300 drums is approximately $30,000.

C. R. Termini

CRT/j

Bob, Tidd Coding 7/15/83

Drum Inventory ... July 7, 1983

Group		Color Code*
SFL	- Solvent - Flammable	Silver F
SCH	- Chlorinated Solvent	Silver C
SCH-FL	- Chlorinated Solvent Flammable	
SPG	- Solid Powder - Granular	Red Bar
SP	- Solid Powder	Red Bar
TRSH	- Trash	White +
GP	- Green Powder	Red Bar - Green Dot
OIL	- Oils	White Dot
D/O-A	- Dirty, Oily Aqueous	Blue Bar - White Dot
ACID	- Acid	
LRHV	- Liquid Resin High Viscosity	Yellow Bar - Red Dot
SRP	- Solid Resin Paste	Yellow P
SRR	- Solid Rubbery Resin	Red Bar - Yellow Dot
SRH	- Solid Resin Hard	Yellow H
TRACE	- Trace	
C:2:AS	- Collant Aqueous Sludge	Green Bar - Blue/ Red Dot
C:2:OA	- Coolant Oil Aqueous	Green Bar - White/ Blue Dot
C:3:OAS	- Coolant Oil Aqueous Sludge	Green Bar - White/ Blue/Red Dot
C:1:O	- Coolant Oily	Green Bar - White Dot
C:1:S	- Coolant Sludge	Green Bar - Red Dot
OA	- Oil Aqueous Mixture	
FRL	- Free Liquid	
FLS	- Flammable Solid	
CH-S-FL	- Chlorinated Solid Flammable	
BASE	- Chostic	
A/SCH	- Aqueous Chlorinated Solvent Mixture	

MT = Empty

* Majority of drums have been color coded

T = trace

OA ⇒ DA

MOTOROLA - ARCADY DISPOSAL SITES

- Previty Auto Wrecking, Galen Hill Road, Freedom. Approximately 1000 drums emptied on this site.
- Tidd's Junkyard, Route 72, Yorkshire Corners. Approximately 600 - 800 drums deposited at this site. About 50% spilled or opened.
- Town of Machias Grand Pit, Very Road, Machias. Approximately 600 drums taken to this site.
- Norman Rogers, California Road, Delevan. About 100 drums used for fill on this site.
- Camp Arrowhead, Route 16, Yorkshire. About 20 drums reportedly buried on this site.
- Boehmer property, Route 16, Machias. 13 barrels taken to this site. More than half spilled. These drums have been removed.
- An unknown quantity of drums were reportedly dumped in a ravine south of Route 242, west of junction with Route 16.
- Terwilliger Excavation, Route 16, Franklinville. 13 drums taken to this site.
- Michael Wolfer, Delevan. 20 drums taken to this site.
- Machias landfill site, Machias. About 100 drums taken to this site.

Wastes reportedly present in the drums include:

- Varnishes
- Fluxes and flux thinners
- Isopropyl alcohol
- Hydrochloric acid
- Phosphoric acid
- Toluene
- Xylene
- Trichloroethane
- Trichloroethylene
- Freon
- Epoxies
- Cutting oils

no date

no date

New York State Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12232

Attention: Mr. Norman H. Nosenchuck, P.E.
Director - Division of Solid Waste

RE: PHASE I - PRELIMINARY INVESTIGATION OF TIDD'S JUNKYARD

Dear Mr. Nosenchuck:

Attached, please find our Phase I - Preliminary Investigation of the above referenced site. These activities have been carried out under the New York State "Superfund" legislation.

Pertinent information regarding this site is summarized below.

The Tidd Junkyard, located in Yorkshire, New York, was used for the storage of 856 drums of waste material, generated at the Motorola Plant in Arcade, New York. The waste materials have been characterized as: flammable and non-flammable solvents, cutting oils, epoxy resins and metal shavings. The majority of the containers were described as being in fair condition with a small number being in a severe state of deterioration.

Currently, the drummed material has been moved to a secure, bermed area. The underlying contaminated soils were excavated and placed in containers within the new holding area. This measure was taken as part of the preliminary site cleanup approved by NYSDEC on January 19, 1982.

As of August 10, 1983, a contractual remediation agreement was reached between the Estate of Kenneth F. Tidds and the NYSDEC. Remedial action is scheduled to being August 22, 1983.

Remedial action suggested as appropriate to this site to be carried out in Phase II - Field Investigations is summarized in Section 7.0 of the attached report.

Should you have any questions or require additional information, please feel free to contact me directly.

Sincerely,

RECRA RESEARCH, INC.

Richard L. Crouch
Project Manager

RLCaf
Enclosure

Site
Motorola
Wyon Co

600 Delaware Avenue, Buffalo, N.Y. 14202-1073

April 7, 1987

Mr. Phil Lasala
Corporate Manager of Environmental Affairs
Motorola, Inc.
1303 E. Algonquin Road
Schaumburg, IL 60196

Dear Mr. Lasala:

This letter will confirm our April 7, 1987 telephone conversation regarding information on sites suspected of receiving wastes from your Arcade plant prior to 1979.

Information on eight (8) sites was requested in your March 11, 1987 letter. Our files for most of these sites have been misplaced and cannot be located. The best we can promise to do on these files is to contact you when the files are located. Some of the early information which may implicate Motorola wastes with these sites will be forwarded shortly.

As indicated in our telephone conversation, as soon as we have received a check in the amount of $21.50 made out to the NYS Department of Environmental Conservation, copies of the material, which you requested, will be mailed to you.

Very truly yours,

Lawrence G. Clare, P.E.
Senior Sanitary Engineer

cc: Mr. John Tygert
Mr. Dennis Farrar
Mr. James Wilding

LGC:jps

Phone 716 - 496-5514

C.I.D. Landfill, Inc.

13029 HAND ROAD CHAFFEE, NEW YORK 14030

September 15, 1983

Department of Environmental Conservation
600 Delaware Avenue
Buffalo, NY 14202

Dear Mr. Wozniak:

Enclosed is a number count of drums removed from the Tidd Estate by color coding and general class.

Red	188	resins
White	155	trash & empty
Yellow	24	
Green	333	coolants
Blue	68	oil
Envirotek	32	solvents
Oil	9	reclaimable at landfill
Hazardous	8	one acid and seven clorinated solids
	817	

There was 98 cubic yards of soil plus 193.76 tons removed from the site. The hazardous waste is the only remaining waste at the site.

10/19/83 Drums removed to SCA RC

If you have any questions, please call.

Very truly yours,

R. C. Penfold
President

Phone 496-5514

C. I. D. Refuse Service

Richard C. Penfold

P.O. BOX 150 HAMBURG, N.Y. 14075

August 29, 1983

Town of Yorkshire
82 Main Street
Delevan, NY 14042

Dear Mr. Frank Smith:

As per our phone conversation, C.I.D. Refuse Service will be removing the wastes from the Tidd Estate behind the Big N. Plaza starting Wednesday, August 31, 1983, weather permitting. The Department of Environmental Conservation asked that you be notified before we start.

Most of the drums are industrial waste. About 10% are hazardous and/or flammable. If you require more information, please call. The on site supervisor will be Richard Perry and he will have a complete report on site. We do not expect any problems but want to notify you of our activity at the site.

Very truly yours,

Richard C. Penfold

RCP:lah
cc: DEC, Mr. Wozniak

INDUSTRIAL CHEMICALS WORKSHEET

1. PRODUCT: Indust. Waste Resin

2. SAMPLE NUMBER: DEC-52

3. SEALS: ☒ NONE ☐ INTACT ☐ BROKEN

4. DATE REC'D: 5-29-81

5. RECEIVED FROM: R. Wierzbicki

6. DISTRICT OR LABORAT: FDA

7. DESCRIPTION OF SAMPLE

Solid Sample from Tidd's Junk Yard

8. NET CONTENTS: ☒ NOT APPLICABLE ☐ NOT DETERMINED DECLARED/UNIT _____ ☐ SEE PAGE _____

9. LABELING: _____ ORIGINAL(S) SUBMITTED _____ COPIES SUBMITTED ☐ NO

10. SUMMARY OF ANALYSIS

a. METHOD Pesticide Analytical Manual, Vol. I (Insert revision date)

☐ 211.13 ( ) _____ 211.14 ( ) _____ ☐ 232.3 _____ ☐ 232.4 _____ ☐ 212.2 _____

☐ 212.13 ( ) _____ ☐ _____

☐ 211.14 d, 5% _____ 15% _____ 50% _____ _____

☐ 252.13, 1 _____ 2 _____ 3 _____ _____

☒ EPA Method of PCB's for Soil Sample.

b. SAMPLE PREPARATION & COMPOSITE (Reference/Describe) ☐ REC'D PREPARED

Sample (10g) was extracted into pet. ether, filte
Filtrate was cleaned by Florisil col.

c. RESULTS

RESIDUES	Dect Mode	QUANTITATION (PPM) EC	MC	ELC	FPD	N/P	KCLTD				CONFIRMATION (Brief description and reference)
		X	X								
PCBs		<0.1	<0.1								

d. ADDITIONAL INFORMATION

IR spectrum shows the extract to be a kind of fuel oil.

11. RESERVE SAMPLE

12. a. ANALYST SIGNATURE (Broke Seal ☐) Frances H. Yang

b.

c.

d.

e.

f.

13. WORK SHEET CHECK a. BY

b. DATE

14. DATE REPT 7-2-81

INDUSTRIAL CHEMICALS WORKSHEET	1. PRODUCT Oil Waste	2. SAMPLE NUMBER DEC 50
3. SEALS ☐ INTACT ☒ NONE ☐ BROKEN	4. DATE REC'D 5-29-81	5. RECEIVED FROM R Weyniat
		6. DISTRICT OR LABORATORY FDA

7. DESCRIPTION OF SAMPLE

Yellow Oil Waste from Tidds Junk Yard

8. NET CONTENTS	☒ NOT APPLICABLE ☐ NOT DETERMINED	DECLARED/UNIT ____ ☐ SEE PAGE ____	9. LABELING	____ ORIGINAL(S) SUBMITTED ____ COPIES SUBMITTED ☐ NONE

10. SUMMARY OF ANALYSIS

a. METHOD Pesticide Analytical Manual, Vol. I (Insert revision date)

☐ 211.13 ( ) ____ 211.14 (X) ____ ☐ 232.3 ____ ☐ 232.4 ____ ☐ 212.2 ____

☐ 212.13 ( ) ____ ☐ ____

☐ 211.14 d, 5% ____ 15% ____ 50% ____

☐ 252.13, 1 ____ 2 ____ 3 ____

☐ ____

b. SAMPLE PREPARATION & COMPOSITE (Reference/Describe) ☐ REC'D PREPARED

Same as DEC-49.

c. RESULTS	QUANTITATION (PPM)									CONFIRMATION
RESIDUES / Dect Mode	EC	MC	ELC	FPD	N/P	KCLTD				(Brief description and reference)
	X	X								
PCBs	<0.1									

d. ADDITIONAL INFORMATION

Sample contains a large amount of Sulfur. IR shows it is cutting Oil.

11. RESERVE SAMPLE

12. a. ANALYST SIGNATURE (Broke Seal ☐) Frances H. Young	d.	13. WORK-SHEET CHECK	a. BY
b.	e.		b. DATE
c.	f.	14. DATE REPT 7-2-81	

FORM FDA 431b (12/79) PREVIOUS EDITION IS OBSOLETE ATTACH. ____ PAGE 1 OF 1 PA

INDUSTRIAL CHEMICALS WORKSHEET — Oil Waste

3. SEALS ☐ INTACT ☐ NONE ☐ BROKEN | 4. DATE REC'D 5-29-81 | 5. RECEIVED FROM R. Wiegand | 6. DISTRICT OR LABORATORY FDA

7. DESCRIPTION OF SAMPLE

Dark brown oil waste from Todd's Trunk Yard.

8. NET CONTENTS ☒ NOT APPLICABLE ☐ NOT DETERMINED DECLARED/UNIT ____ ☐ SEE PAGE ____

9. LABELING ____ ORIGINAL(S) SUBMITTED ____ COPIES SUBMITTED ☒ NONE

10. SUMMARY OF ANALYSIS

a. METHOD Pesticide Analytical Manual, Vol. I (insert revision date)

☐ 211.13 ( ) ____ ☐ 211.14 (X) ____ ☐ 232.3 ____ ☐ 232.4 ____ ☐ 212.2 ____

☐ 212.13 ( ) ____ ☐ ____

☐ 211.14 d, 5% ____ 15% ____ 50% ____

☐ 252.13, 1 ____ 2 ____ 3 ____

☐ ____

☐ REC'D PREPARED

b. SAMPLE PREPARATION & COMPOSITE (Reference/Describe)

Sample was extracted into CH_2Cl_2 & obtained IR spectrum. The oil extract was purified through a florisil column with Na$_2$SO$_4$ on top. The eluent was concentrated & checked for PCB's by GC

c. RESULTS

RESIDUES	Det Mode	QUANTITATION (PPM) EC	MC	ELC	FPD	N/P	KCLTD	CONFIRMATION (Brief description and reference)
		X	X					
PCBs		<0.1						

d. ADDITIONAL INFORMATION

IR shows it is a type 7 Fuel oil.

11. RESERVE SAMPLE

12. a. ANALYST SIGNATURE (Broke Seal ☐) Frances H. Yang

b. ____ c. ____ d. ____ e. ____ f. ____

13. WORK SHEET CHECK a. BY ____ b. DATE ____

14. DATE REPT 7-2-81

ATTACH. ____ PAGE ____ OF ____

FORM FDA 3318 (12/79) (recycled paper) PREVIOUS EDITION IS OBSOLETE ecology and environment

EHC - 2
Rev. 5/5/77

NEW YORK STATE DEPARTMENT OF HEALTH
DIVISION OF LABORATORIES AND RESEARCH
ALBANY, N.Y. 12201

REQUEST FOR ANALYSIS

FOR LAB USE ONLY

LAB ACCES NO. ____ (YEAR) ____ (LAB) ____ (ACC. NO.): SAMPLE REC'D. ____ (MONTH) ____ (DAY) ____ (HOUR):
TESTING PATTERN ____ NUMBER OF RECORDS ____:

PROGRAM CODE 650: NAME Solid WASTE

SAMPLING SITE
NO. OF SAMPLES IN SHIPMENT ____

A. NUMBERED STATION-STA. (SOURCE) NO. ____:
B. UNNUMBERED SITE-DRAINAGE BASIN NO. 01: N.Y. GAZETTEER NO. 0482:
LOCATION (CITY OR TOWN) Yorkshire COUNTY Catt.
LATITUDE 4 °____'____"N LONGITUDE 7 °____'____"W:
COMMON NAME, SUBWATERSHED, MILE POINT Tidd's Junk Yard, Cattaraugus Creek: (75 CHAR. MAX.)

EXACT DESCRIPTION OF SITE (50 CHARACTERS MAX.) Southeast corner of Tidd's Junkyard Red Barrel #2:

TIME OF SAMPLING (GRAB) COMPOSITE FINISH 05 (MONTH) 27 (DAY) 10 (HOUR):
COMPOSITE START ____ (DAY) ____ (HOUR): ELAPSED TIME: ____ (DAYS) ____ (HOURS)
COMPOSITE ACCORDING TO TIME: ____ ML. EVERY ____ MIN.
COMPOSITE ACCORDING TO FLOW: VOLUME REPRESENTED BY SAMPLE ____

TYPE OF SAMPLE (SELECT FROM LIST) 34: DESCRIPTION: IND. WASTE, unchlor Cutting Oil

COMPLAINTS, OBSERVATIONS, REASONS FOR SUBMISSION

☐ ILLNESS	☐ IMPAIRED USAGE	☐ ROUTINE SURVEIL	☐ INTERRUPTION IN CHLORINATION
☐ TASTE/ODOR	☐ STANDARDS VIOL.	☑ SPECIAL STUDY	☐ REPAIRS IN DISTRIBUTION SYSTEM
☐ TURBIDITY	☐ FISHKILL	☐ NEW EQUIP. OR PROC.	☐ IMPROPER SHIELDING OF WELL
☐ COLOR	☐ ALGAE, WEEDS	☐ EQUIP. FAILURE	☐ APPARENT SOURCE OF POLLUTION
☐ CORROSION:	☐ NATURAL DISASTER:	☐ OTHER:	☐ OTHER:

REPORT RESULTS TO (NO. OF COPIES): CO 0 RO 1 LPHE 0 LHO 0 FED 0 1: ENTER 0, 1, OR 2
ATTENTION OF: WOZNIAK (10 CHARACTERS MAX.):
Bob Wozniak (SUBMITTED BY) Prin. Engs. Tech. (TITLE)

SOURCE OF POLLUTION
DISTANCE ____ TYPE ____
TYPE OF WELL CONST.: ____
CHARACTER OF SOIL: ____
OTHER OBSERV.: ____

Draft

TELEPHONE CONVERSATION MEMORANDUM

CLIENT	: Gordon McElheny Superintendent of Public Works Village of Olean	PROJECT NO.	: ND 2041
PROJECT	: DEC Phase 1 Investigations	DATE	: 8/24/87
CALL TO/FROM	: P. Gunther	TIME	: 13:00
PHONE NO.	: 716-492-1424	REPRESENTING	:

SUMMARY OF CONVERSATION:

RE: Municipal water sources for the Village of Delevan.

The Village of Delevan has one public well on Church Street in the village. According to Mr. McElhery the wells were drilled into a sand aquifer at a depth of 127 feet below ground level. No bore log data was available but it is believed that during well installation the driller encountered an upper clay horizon 97 feet in thickness before tapping the sand aquifer. The well is artesian with an output of 65 gallons per minute. The well is tested yearly. No contaminants have been found in the well. The Village of Delevan also taps a spring southwest of the village for a municipal water source.

COPIES TO:

BY:

M. Cotter
P. Farrell

Gordon McElheny
Signature

8/24/87
Date

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227

TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

ENVIRONMENTAL LABORATORY

ANALYTICAL RESULTS

Attn: Rebecca Johnstone

Customer Cattaraugus County Health Dept., P.O. Box 573, 302 Laurens St., Olean NY 14760

ARO Laboratory Number 21,763W-12164-79 Customer P.O. #

Date: Collected ~~various~~ 10/16/85 Received 10/17/85 Reported 11/8/85

Sampling Point Description Delevan #8

Alkalinity		(Al)	Aluminum	
Anionic Detergents (MBAS)		(As)	Arsenic	<0.025 ppm
Biochemical Oxygen Demand (BOD_5)		(Ba)	Barium	<0.200 ppm
		(Cd)	Cadmium	<0.002 ppm
Chemical Oxygen Demand (COD)		(Cr)	Chromium	<0.010 ppm
Chlorides		(Cu)	Copper	
Conductivity		(Fe)	Iron	
Cyanides		(Pb)	Lead	<0.010 ppm
Fluorides	<0.2 ppm	(Mg)	Magnesium	
Hardness		(Mn)	Manganese	
Nitrogen, Ammonia		(Hg)	Mercury	<0.0002 ppm
Nitrogen, Total Kjeldahl		(K)	Potassium	
Nitrogen, Nitrates	5.64 ppm	(Se)	Selenium	<0.002 ppm
Nitrites		(Ag)	Silver	<0.010 ppm
Oil & Grease		(Na)	Sodium	
Phenols		(Zn)	Zinc	
pH				
Phosphates (asp)				
Sulfates				
Total Dissolved Solids				
Total Suspended Solids				
Turbidity				

TOTAL = 180

Aldrin	
Endane	
Methoxychlor	
Toxaphene	
2,4-D	
2,4,5-TP (Silvex)	

Trihalomethanes (THM's)

Chloroform	
Bromodichloromethane	
Dibromochloromethane	
Bromoform	
Total THM'S	

Bernard J. Gruca

Bernard J. Gruca, Ph.D.
Director, Environmental Laboratory

Form G-05 '81

JUL 83

RESINOUS WASTE EVALUATION

Prepared For:

Estate of Kenneth F. Tidd

Yorkshire, New York

Project Code: CH-157 - Phase III

TECHNICAL REPORT

1.0 PURPOSE

Determine the compatibility of containerized waste resins, located at the inactive waste storage site on the Estate of Kenneth F. Tidd, with a sanitary landfill facility.

2.0 SAMPLES

Representative samples of all drummed wastes were collected from the Tidd Storage Site during May 1982 by personnel from TERMINI ASSOCIATES. Preliminary analysis conducted on site identified several drums which contained waste resinous material. After reviewing the preliminary results, the NYS DEC mandated that the resinous material be evaluated for the presence of phenol in a solvent extract of the waste. They approved a request that the analysis be conducted on composite samples containing aliquots from several drums. They stipulated, however, that the allowable level would be reduced by an equal factor.

2.1 IDENTITY

Thirteen composite samples were obtained by combining aliquots of the original samples from several drums. Table I identifies the drums represented by each composite sample.

3.0 RESULTS

The data presented in Table II show the concentration of Total Phenols in the solvent extracts generated from the composite resinous material samples.

4.0 METHODOLOGY

A composite sample was prepared by combining equal portions from approximately ten site samples. This mixture was extracted with an equal volume of solvent. The extract was analyzed for Total Phenol content in accordance with procedures specified in "Methods for Chemical Analysis of Water and Wastes," EMSL - EPA, March 1979.

SUMMARY

An inactive waste storage area located on the property of the Estate of Kenneth F. Tidd, Yorkshire, New York, contains several hundred drums of unidentified waste. Many of the containers are in an advanced state of deterioration after years of exposure to both the wastes within and the extremes of weather. The New York State Department of Environmental Conservation (DEC) has dictated that the site be rehabilitated.

A Remedial Action Plan submitted by TERMINI ASSOCIATES (TA) to rehabilitate the site was approved by DEC on January 19, 1982. The overall goal of the plan is the removal of all drummed wastes and any contaminated soils in a manner which maximizes the environmental benefits and, at the same time, minimizes environmental and public safety problems. The first phase of on-site activity was initiated May 1,1982. A Waste Analysis Team from TA began cataloging and characterizing the wastes on site with respect to both applicable regulations and disposal options.

On May 3, 1982, Mr. Robert Wozniak (DEC) visited the site to review Phase One operations. The potential for surface water runoff carrying pooled waste oils from the site was discussed. Mr. Wozniak determined that countermeasures to prevent spilled wastes from leaving the site should be implemented before any additional sampling or drum handling occur in the center ring of containers.

In compliance with this mandate, a cut-back was excavated at the north end of the storage site and a two foot sand barrier installed. The excavated soils were placed in bulk containers for temporary storage on site while a determination of proper disposal practices could be made.

TECHNICAL REPORT

1.0 PURPOSE

Determine the compatibility of excavated soil contaminated by waste oil spillage with the industrial landfill operation at Chaffee Landfill, Inc.

2.0 SAMPLES

Grab samples of pooled oil and contaminated soil were collected from the Tidd Storage Site by personnel from TERMINI ASSOCIATES on May 6, 1982. Two samples of soil, each composed of 8-10 subsamples were collected. The first sample was obtained from contaminated ground inside the erected site boundary. The second sample was obtained from the contaminated area just north of the erected site boundary. The two soil samples were composited equally into one sample. The surface oil sample was obtained inside the site boundary.

2.1 IDENTITY

The following Log Numbers were assigned:

Site Sample Number	Identity	Log Number
870	Surface Oil	165
871 & 872	Soil	166

3.0 RESULTS

3.1 IGNITABILITY: Title 40, CFR, Part 261.21

The material in Sample Log Number 166 is a solid containing no free liquid, compressed gases, or oxidizers.

3.2 CORROSIVITY: Title 40, CFR, Part 261.22

The material in Sample Log Number 166 is a solid containing no free liquid.

3.3 REACTIVITY: Title 40, CFR, Part 261.23

The material in Sample Log Number 166 is stable and does not react violently nor form explosive mixtures with water. The material as received does not contain significant levels of sulfide or cyanide.

3.4 EP TOXICITY: Title 40, CFR, Part 261.24

The results presented in Table I list the concentration of selected metal contaminants in a leachate generated from the composite soil sample. Based on a knowledge and understanding of the waste no organic pesticide contaminants were investigated.

3.5 ADDITIONAL TESTING

The results presented in Table II are from additional testing requested by Mr. Robert Wozniak (DEC).

The conclusions presented below are based on the results of testing and a knowledge and understanding of the waste.

4.0 METHODOLOGY

The above samples were tested according to procedures specified in Title 40, Code of Federal Regulations, Part 261.

5.0 CONCLUSION

The above sample of contaminated soil (Log Number 166) collected on May 6, 1982, when analyzed according to the procedure established in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (EPA SW-846, 8/8/80) does NOT EXHIBIT the hazardous waste characteristics of IGNITABILITY, CORROSIVITY, REACTIVITY or EP TOXICITY.

TABLE I

EP TOXICITY TEST RESULTS

Parameter Log Number	Soil 166	EPA Limit
Arsenic, mg/l	0.002	5.0
Barium, mg/l	0.223	100.0
Cadmium, mg/l	0.001	1.0
Hexavalent Chromium, mg/l	< 0.001	5.0
Lead, mg/l	0.600	5.0
Mercury, mg/l	< 0.0002	0.2
Selenium, mg/l	< 0.001	1.0
Silver, mg/l	< 0.001	5.0

TABLE II

ADDITIONAL TEST RESULTS

Parameter / Log Number	Surface Oil 165	Soil 166
Polychlorinated Biphenyls, mg/kg	< 0.1	< 0.1
Oil and Grease, %	--	12.7
pH Units, 5% Slurry	--	7.3
Total Halogenated Organics, ug/kg	< 10	< 10

5.0 DISCUSSION

Each of the eleven composite samples represents approximately 30 drums of waste coolant. DEC has stipulated that reduced criteria will be used to evaluate the compatibility of this waste stream with a sanitary landfill. As indicated in Table II, only one composite meets the numerical limit imposed.

The reason for imposing more stringent limits is to ensure that individual drums which might exceed US EPA limits are not obscured in the composing process.

Several points which contradict this approach should be mentioned:

1) EPA regulations stipulate that hazardous waste criteria are applied to the actual waste intended for disposal. The composites investigated in the current study contain equal portions from 30 drums since that is the number of containers which will be combined on site into a single batch for disposal. It is the opinion of this author that the composite samples more closely model the actual waste batches intended for disposal than the individual drums. All of the composite samples meet the US EPA criteria for leachable lead.

2) The method proposed for disposal includes the addition of 6,000 pounds of excavated soils to each batch of 30 drums. This material was previously found to contain 0.6 mg/l of leachable lead. The leachable lead in the final mixture of soil and coolants will approach the weighted average of the two waste streams. In most cases, the admixture of soil will lower the final results. Again, EPA regulations stipulate that hazardous waste criteria are applied to the actual waste intended for disposal.

3) Ten of the eleven composite samples fail to meet the reduced criteria for leachate lead. The line of reasoning which requires reduced criteria implies that perhaps 10 of the 300 plus drums on site contain high levels of leachable lead while the remainder contain none. The choice of individual samples included in each composite was based on numerical sequence, however, the assignment of drum numbers was random. It is statistically improbable that 10 drums with high lead levels in a group of over 300 drums would be randomly distributed such that one and only one would appear in each successive sub-group of 30 drums.

To evaluate the premise that the presence of lead is restricted to one or two drums in a group, additional analysis was performed. Composite sample number 317 evidenced the highest test result. Two additional composites from the same 30 site samples represented by sample number 317 were evaluated. Composite sample number 338 contains equal portions from the first 15 drums in this group. Composite sample number 339 similarly contains aliquots from the next 7 drums in the group. The data for these samples, presented in Table III, indicate that leachable lead is pervasive in the coolant wastes but is present at a level which meets the EP TOXICITY criteria.

6.0 CONCLUSION

The above samples of waste coolants collected in May 1982, when analyzed according to the procedure established in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods" (EPA SW-846, 8/8/80) DO NOT EXHIBIT the hazardous waste characteristic of EP TOXICITY.

TABLE II

EP TOXICITY TEST RESULTS

Log Number	Lead, mg/l (Leachate)	DEC Limit, mg/l
314	0.27	0.167
315	0.40	0.167
316	0.89	0.167
317	2.15	0.167
318	1.31	0.167
319	1.03	0.167
320	0.49	0.167
321	0.61	0.33
322	0.22	0.15
323	0.13	0.15
324	1.27	0.31

TABLE III

EP TOXICITY TEST RESULTS

Log Number	Lead, mg/l (Leachate)	DEC Limit, mg/l
338	2.50	0.33
339	1.90	0.71

TABLE I

COMPOSITE SAMPLE IDENTITY
RECLAIMABLE OILS

Waste Oils Log Number 342	Waste Oil-Water Mixtures Log Number 343
Drum 001	Drum 047
130	070
239	080
276	219
471	274
507	388
608	401
	402
	405
	420
	425
	450
	518
	525
	577
	595
	628

TABLE II

CHLORINATED ORGANICS ANALYSIS

Parameter Log Number	Waste Oils 342	Oil-Water Mixture 343
PCB's, mg/kg	< 0.5	< 0.5
Total Halogenated Organics, mg/kg	< 0.001	< 0.001

TABLE II

DISTILLATION RECOVERY

Parameter / Log Number	Ignitable Solvents 344	Chlorinated Solvents 345
Percent Yield	72.	51.
Distillate Appearance	Clear	Cloudy
Final Temperature, oC	98	98
Pressure	Atmospheric	Atmospheric

NOTE:

Distillations not run at reduced pressure. Cloudy carryover in Chlorinated solvent distillation appears to be water-methanol azeotrope. Principal product in chlorinated solvents appears to be 1,1,1-trichlor; in ignitable solvents it appears to be acetone. Both distillations terminated at 98 C at which point smoking appeared in the "pot."

TABLE III

CHLORINATED PRODUCT COMPOSITION

Parameter / Log Number	Distillate 345
1,1,1-Trichloroethane, %	48.
1,1,2-Trichloroethane, %	16.
Trichloroethylene, %	28.
Tetrachloroethylene, %	4.
Others, % *	4.

* Compounds with retention times ranging from tetrachloroethylene to tetrachloroethane

TABLE II

EP TOXICITY TEST RESULTS
(Metals Only)

Parameter Log Number	Green Powders 340	Granular Solids 341	EPA Limit
Arsenic, mg/l	< 0.001	0.002	5.0
Barium, mg/l	0.010	0.529	100.0
Cadmium, mg/l	0.064	0.003	1.0
Hexavalent Chromium, mg/l	0.004	0.002	5.0
Lead, mg/l	< 0.001	0.008	5.0
Mercury, mg/l	0.0003	< 0.0002	0.2
Selenium, mg/l	< 0.001	0.013	1.0
Silver, mg/l	< 0.001	< 0.001	5.0

GROUND-WATER RESOURCES OF THE ERIE-NIAGARA BASIN, NEW YORK

Prepared for the
Erie-Niagara Basin Regional Water Resources
Planning Board

by

A. M. La Sala, Jr.

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

in cooperation with

THE NEW YORK STATE CONSERVATION DEPARTMENT
DIVISION OF WATER RESOURCES

STATE OF NEW YORK
CONSERVATION DEPARTMENT
WATER RESOURCES COMMISSION

Basin Planning Report ENB-3

1968 C-50

The plan of study called for the Geological Survey to provide the Planning Board with an evaluation of the ground-water resources of the Erie-Niagara basin and a description of the geology to the extent required for broad planning of water-resources development. Evaluation of the ground-water resources included appraising the quantity and quality of water available for development, its areal distribution, and seasonal variations. Existing and potential pollution and their effect on the availability of ground water were also included in the work.

The Geological Survey's investigations followed several lines of attack, and the most important of these are described below.

A major endeavor was to define the areal extent, lithology, thickness, and water-bearing properties of the geologic units. The unconsolidated deposits were mapped during field-reconnaissance studies (pl. 3). A previously published map of unconsolidated deposits (Kindle and Taylor, 1913) was available for a northern segment of the area and this mapping was slightly revised for the present report. Geologic maps and descriptions of the bedrock units were previously published (Broughton and others, 1962) and further bedrock mapping was not required for this report. About 400 wells and several springs distributed through the various geologic units were inventoried in order to define the water-bearing properties of the units. The data for all wells and springs mentioned in this report or indicated on maps are given in tables 6 and 7, respectively. Data on wells collected during previous studies of the Buffalo area (Reck and Simmons, 1952) and of the Western New York Nuclear Service Center site at Ashford were also used. Hydraulic properties of the more productive water-bearing units were studied by means of specific-capacity and pumping-test data.

The quantity of ground water discharging to the streams was estimated from streamflow data and the fluctuations of ground-water levels. The quantity of ground water available for development in the principal unconsolidated aquifers was estimated from data on ground-water discharge, geology, and topography.

Data on the chemical quality of ground water were obtained by sampling wells and streams at base flow. The analytical results for about 270 samples from about 250 wells are given in this report in tables 8 and 9. Chemical analyses of streamflow are given by Archer and others (1968). The New York State Division of Water Resources facilitated the evaluation of ground-water pollution by providing data on sanitary analyses of samples from more than 700 wells that were made by the several County Health Departments of the area.

WELL-NUMBERING AND LOCATION SYSTEM

The wells, springs, and miscellaneous sites of geologic or hydrologic information described in this report are numbered according to a grid system based on latitude and longitude. The Erie-Niagara basin lies between latitude 42°16' and 43°11'N and between longitude 78°06' and 79°03'W. The grid is composed of quadrangles of 1 minute of latitude and

and longitude. Each well number consists of three parts: first, the digits of latitude, such as 231 for 42°31' (omitting the digit "4"); second, the digits of longitude, such as 842 for 78°42' (omitting the digit "7"); and, third, the number assigned to the well with the 1-minute quadrangle. The complete well number of the first well listed within the 1-minute quadrangle described above is 231-842-1, as illustrated in plate 1. The location of each well is indicated by a circle in the plate. Where two or more wells are close together, a single circle is used to mark their locations and the last digits of the well numbers, set off by commas, are given as illustrated in plate 1 for wells 230-840-1 and -2.

A spring is numbered by the same system used for wells, except that the letters Sp are added, such as with spring 229-842-1Sp (pl.1). A site at which only geologic or miscellaneous observations were made is identified by a letter following the grid numbers, such as 221-840-A. Springs and miscellaneous sites are also distinguished by different location symbols as shown in plate 1.

On the well-location map in this report (pl.1), the three-digit numbers of latitude and longitude designations are shown along the margin of the map, and only the number of the site within each 1-minute quadrangle is shown with the appropriate well, spring, or miscellaneous-site symbol.

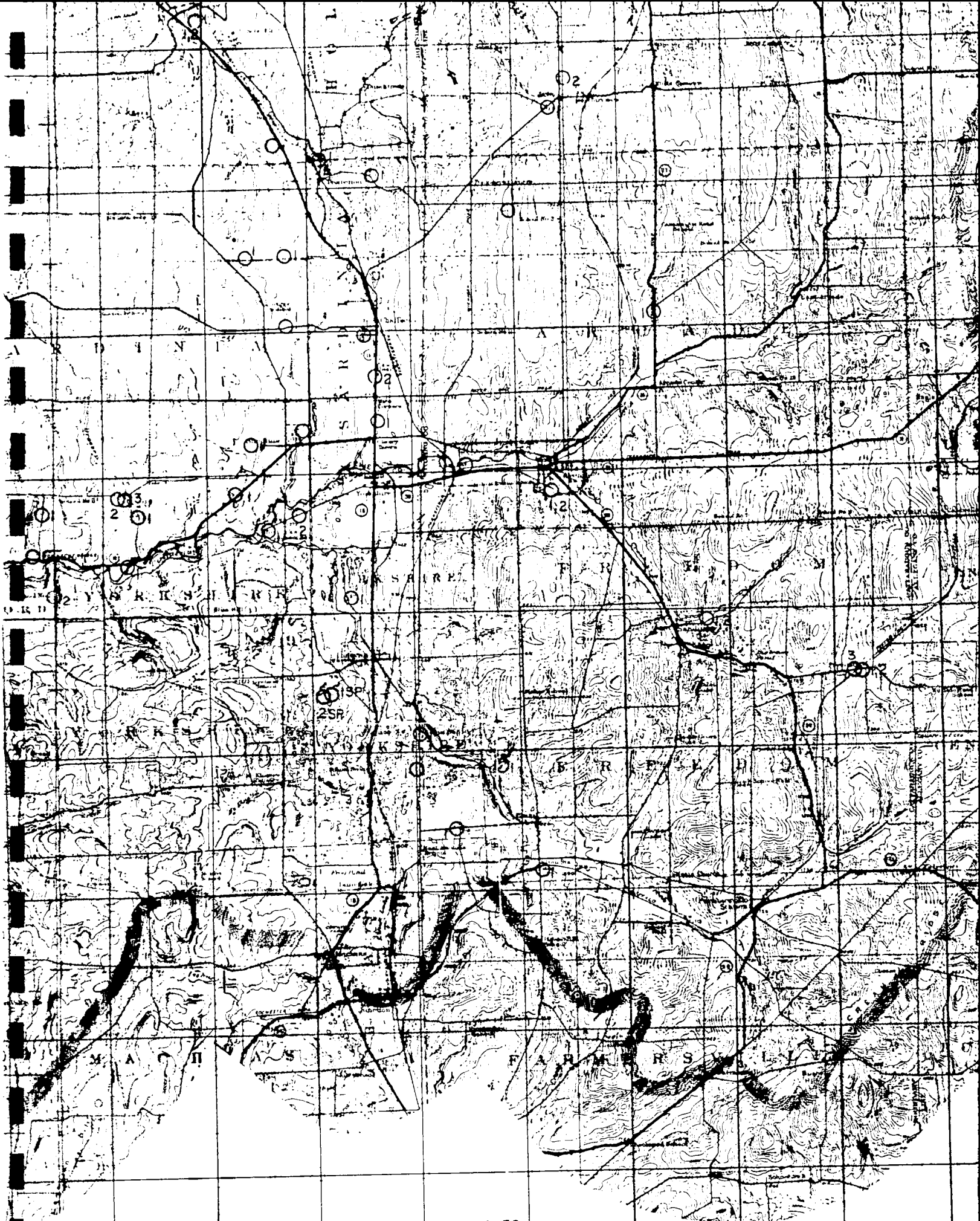
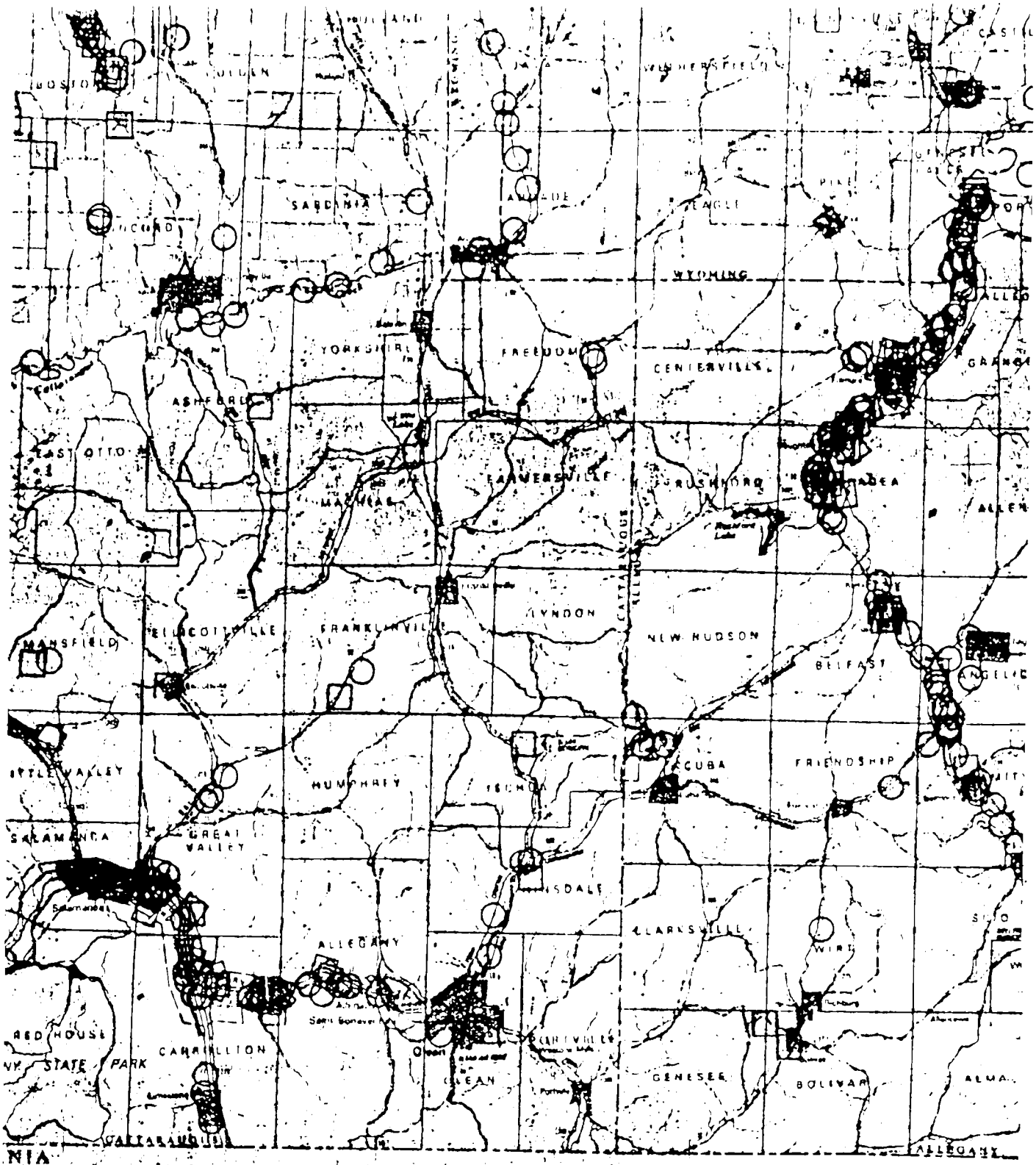

2SR
3SR

Table 6.--Records of selected wells in the Erie-Niagara basin (Continued)

Well number	County	Owner	Year completed	Type of well	Depth of well (feet)	Diameter (inches)	Depth to bedrock (feet)	Water-bearing material	Altitude above sea level (feet)	Water level below land surface (feet)	Water level Date	Method of lift	Estimated pumpage or flow (gallons per day)	Use	Remarks
217-851-1	Cattaraugus	T. Borrowdale	a1900	Dug	15.1	30	--	Sand	1,410	8.9	5-15-63	--	--	A	
218-843-1	do.	E. Alexander	1943	Drl	r39.5	8	--	Sand and gravel	1,520	Flow	5-13-63	--	7,000	F	Anal; temp 50; flows perennially, estimated as 5 gpm, 0.5 ft above LS; water-bearing zone 0.5 ft thick (r).
219-843-1	do.	F. Tolaak	a1948	Drl	81.5	6	--	do.	1,500	p4.1	5-14-63	Sw	1,900	F	Anal.
219-851-1	do.	Village of Cattaraugus	a1934	Drl	r218	8	--	Gravel	1,260	Flow	5-15-63	AL	--	PS	Anal; H_2S; temp 50.0; yield 200 gpm (r); flow 40 gpm, 3 ft below LS; rarely used.
220-845-1	do.	C. Minekima	b1943	Drl	r90	6	--	Sand and gravel	1,355	+20	5-14-63	--	3,500	F	Anal; temp 50.2; flows 2.5 gpm from faucet 3 ft above LS; used for cooling milk only.
220-846-1	do.	C. Lang	a1920	Drl	r96	4	--	do.	1,340	Flow	5-14-63	--	3,500	F	Anal; temp 49.8; flow 2.5 gpm from discharge pipe in milk room continuously.
220-847-1	do.	do.	a1950	Drl	135	6	--	Sand	1,340	+9	5-14-63	--	5,500	D	Anal; temp 49.8; flows 3.8 gpm, 3 ft above LS; well is cased to 152 ft and partly filled in by sand entering at bottom (r); blue clay overlies water-bearing sand (r).
220-850-1	do.	L. Gregory	a1955	Drl	67.2	6	a25	Shale	1,240	11.8	5-15-63	--	--	A, D	Anal; inadequate yield for domestic supply.
221-841-1	do.	R. Walshan	1962	Drl	163	6	--	Sand	1,920	69.5	4-29-63	--	--	C	Yield 10 gpm bailer test (r); drilled to supply campsite under construction at time of visit.
-2	do.	--	--	Dug	2.8	30	--	Sand and gravel	1,840	.5	5- 2-63	--	50,000	A, F	Anal; temp 44.4; flow 37 gpm from lateral discharge pipe 2.8 ft below LS.
221-849-1	do.	J. Frank	1961	Drl	r135	7	105	Shale	1,340	p67.7	5- 5-63	Sub	100	D	Anal; iron; yield 6 gpm bailer test (r).
222-848-1	do.	R. Stevens	1959	Drl	r315	6	--	Gravel	1,330	p+1.5	5-22-63	Sub	1,500	F	Anal; temp 50; clay, silt, and very fine sand overlie water-bearing gravel (r).
-2	do.	R. Minekima	1960	Drl	r374	6	374	do.	1,340	p+.9	5-22-63	Sub	1,500	F	Anal; iron; gas; temp 49.0; flow 0.25 gpm, 0.8 ft above LS.
223-836-1	do.	West Valley Crystal Water Co.	--	Drl	r230	6	130	Shale	1,600	16.4	7-22-63	--	--	A	Anal; sand 0-130 ft (r); never used because yield is insufficient for requirements.
-2	do.	do.	--	Dug	6.0	--	--	Sand and gravel	1,605	4.9	7-22-63	--	14,000	PS	Anal; temp 48.2; flow 10 gpm (est) from lateral discharge pipe 4.9 ft below LS; concrete casing is 3.3 X 5 ft in dimension; 1 of 3 similar so-called "springs" which are source of company's supply.
223-847-1	do.	R. Wisocki	1962	Drl	r255	7	--	Gravel	1,345	r+1	12-62	Sw	2,000	F	Anal; iron; gas; yield 32 gpm, dd 21, Dec. 1962 (r); gray clay overlies water-bearing pebble gravel (r); shallow water-bearing gravel at 16 ft depth yielded 12 gpm, but was cased off.
223-848-1	do.	D. Dankert	1948	Drl	r438	8	450	do.	1,340	Flow	5-21-63	Jet	1,500	F	Anal; gas; temp 50.2; flows 1.5 gpm (est), 1 ft below LS; cased to 438 ft, drilled to 450 ft but casing would not drive.
-2	do.	M. Tegler	1952	Drl	r300	7	>425	do.	1,340	rFlow	9-52	Sw	2,500	F	Anal; gas; water level was higher than 20 ft above LS 9-52 (r); flows when not pumped; drilled 425 ft in glacial deposits; casing set at 300 ft; silt and clay overlie water-bearing gravel.
224-836-1	do.	West Valley School District	--	Drl	r360	--	--	--	1,540	--	--	Tur	--	In	Anal; H_2S.
224-838-1	do.	M. Feldman	1961	Drl	88	6	68	Shale	1,760	p56.3	11- 7-61	Jet	--	F	Yield 15 gpm bailer test (r).
224-848-1	do.	R. Hebner	a1960	Drl	r438	8	--	Sand and gravel	1,360	--	--	--	--	D	

Table 6.--Records of selected wells in the Erie-Niagara basin (Continued)

Well number	County	Owner	Year com-pleted	Type of well	Depth of well (feet)	Diameter (inches)	Depth to bedrock (feet)	Water-bearing material	Altitude above sea level (feet)	Water level below land surface (feet)	Date	Method of lift	Estimated yield or flow (gallons per day)	Use	Remarks
224-850-1	Cattaraugus	E. Ball	1950	Drl	r78	6	15	Shale	1,700	r40	1961	Jet	100	D	Water-bearing zone is near bottom of well (r).
225-836-1	do.	C. Conrad	--	Drl	78	6	m71	do.	1,460	7.7	7-22-63	--	--	A, F	H_2S; formerly used for watering cattle; water was pumped by hand.
225-838-1	do.	R. Codd	--	Drl	r250	5	--	do.	1,450	r15	1961	Sub	1,500	F	Yield 10 gpm (r); dd 145 ft (r).
225-839-1	do.	S. Kwiclen	--	Drl	22.6	24	--	Till	1,660	21.0	12- 8-60	Sw M	100	D	Abandoned drilled well in shale, 140 ft deep on same property.
225-840-1	do.	M. Skinner	--	Dug	11.9	48	11.9	do.	1,845	3.9	4-21-62	Sw	--	D	
225-841-1	do.	L. Serbati	1964	Drl	148	7	118	Shale	1,415	Flow	9-17-64	--	900	C	Anal; temp 51.7; flow 0.6 gpm, 2 ft above LS; yield 10 gpm baller test.
226-825-1	do.	Kirkby	1927	Drl	156	8	24	do.	1,690	Flow	6- 5-64	AL	7,000	U, C	Anal; temp 48.0; flow 5 gpm (est) 0.6 ft below LS.
226-827-1	do.	--	--	Dug	36.7	40	--	Sand and gravel	1,720	35.2	6- 5-64	Sw M	--	A	
226-836-1	do.	B. Hadley	--	Dug	11.9	36	9	Till; shale	1,450	4.1	4-30-62	Sw M	20	D	
226-837-1	do.	S. Henry	--	Drl	92.4	6	--	Shale	1,570	58.4	4-28-62	Jet	1,200	F	
-2	do.	P. Simko	--	Dug	14.7	36	--	Sand and gravel	1,420	p7.7	4-30-62	Sw	--	D	
226-838-1	do.	State of New York	--	Drl	37.5	3	--	Till	1,280	24.0	12- 1-60	Sw M	--	A	
-2	do.	do.	--	Drl	219	6	--	--	1,350	182.7	11- 2-61	--	--	A	
-3	do.	do.	1961	Drv	22	4	--	Till	1,380	10.0	10- 9-61	--	--	A	OW.
-4	do.	do.	1962	Drv	21	1 1/4	--	Sand and gravel	1,380	7.3	4-27-62	--	--	T	Anal; 19 ft of till overlies sand and gravel; screened from 18 to 21 ft.
-5	do.	do.	1961	Drv	11	1 1/4	--	Till	1,380	10.1	10-20-61	--	--	T	Anal.
226-839-1	do.	do.	--	Dug	6.1	24	--	Sand and gravel	1,450	4.3	12- 8-60	Sw	--	A	Anal; temp 40.5, 4-19-62.
-2	do.	do.	--	Dug	16.5	36	--	Till	1,490	10.7	12- 8-60	Sw M	--	A	
-3	do.	do.	--	Dug	11.4	30	--	do.	1,400	9.5	12- 8-60	Sw	--	A	Anal; OW.
-4	do.	do.	1960	Drl	156	7	103	Shale	1,395	91.5	10-16-61	--	--	A	Anal; yield 12 gpm baller test (r); OW.
-5	do.	do.	--	Dug	19.4	38	--	Till	1,770	13.0	4-27-62	--	--	A	
226-840-1	do.	Gyro	--	Dug	17.8	36	17.8	do.	1,780	10.2	4-20-62	Sw M	--	A	
-2	do.	G. Rachic	--	Dug	5.3	24	5.3	do.	1,800	2.8	4-21-62	Sw	200	D	
226-851-1	Erie	F. Colligan	1962	Drl	r137	6	a85	Shale	1,240	25.9	5-24-63	Jet	250	D	Anal; yield 5 gpm baller test (r); silt and fine sand overlie shale.
227-826-1	Cattaraugus	Baldwin	1962	Drl	r80	6	a40	do.	1,610	r10	10-62	--	250	D	
227-828-1	do.	H. Herman	--	Drl	33.5	5	--	Sand and gravel	1,620	32.0	6- 5-64	--	--	A	Well may be partly backfilled.
227-837-1	do.	Frank Green	--	Drl	r90	6	--	Shale	1,515	Flow	4-30-62	Sw	--	D	Water flows over top of casing, 1 ft above LS.
-2	do.	H. Kaster	1957	Drl	r166	6	164	do.	1,500	9.1	11- 8-61	Jet	--	D	
-3	do.	E. Zimmerman	1961	Drl	r100	6	a90	do.	1,510	5.8	5- 1-62	Sub	--	F	Yield 14 gpm baller test (r).
-4	do.	State of New York	--	Drl	169	6	--	--	1,540	147.2	11- 3-64	--	--	A	
227-838-1	do.	C. Zaffers	a1940	Drl	161.3	6	--	Shale	1,450	24.3	5- 1-62	--	1,000	F	



☐ Includes data from NYS Museum Archaeological Site file

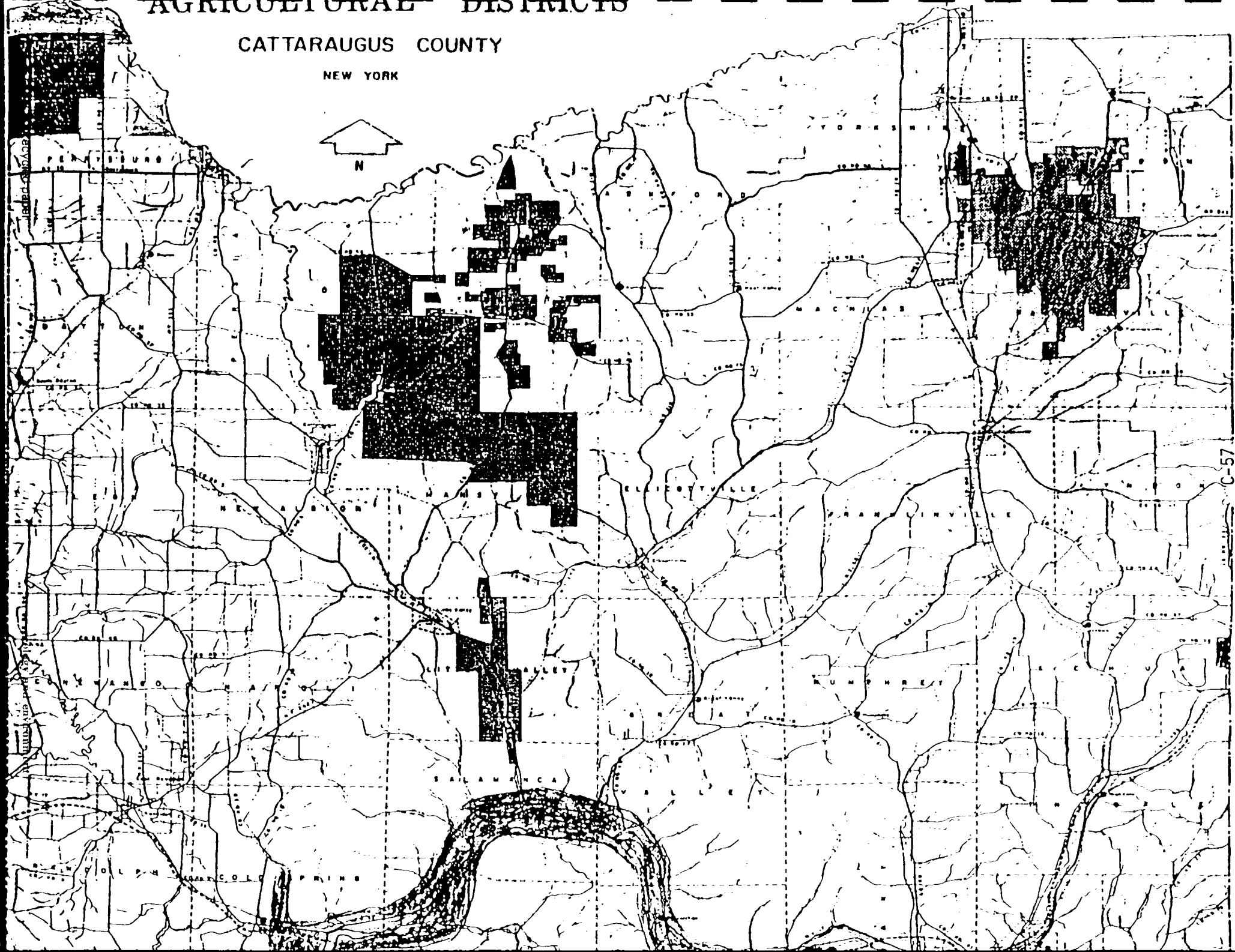
○ NYS Historic Preservation Office archaeological site file

New York State Archeological Site Locations
Overlay for NYS Map [illegible]
West Sheet
Base Map by NYS Dept. of Trans.
July 1981
Updated to 3/86 by Hartgen Archeological Associates

AGRICULTURAL DISTRICTS

CATTARAUGUS COUNTY

NEW YORK



TELEPHONE CONVERSATION MEMORANDUM

CLIENT	: NYSDEC	PROJECT NO.	:
PROJECT	: Phase I Reports	DATE	: 7/21/87
CALL TO/FROM	: Dennis Fiehn/Mark Cotter	TIME	: 11:00am
PHONE NO.	: (716) 492-1234	REPRESENTING	:

SUMMARY OF CONVERSATION:

I spoke to Mr. Dennis Fiehn who is the Plant Manager for the Motorola Facility located in Arcade, New York regarding the various disposal sites in Cattaraugus County where Motorola wastes were dumped during 1977-1978. Mr. Fiehn stated that he had "no direct knowledge about these sites," and he could not verify the information compiled on these sites by the Cattaraugus County Department of Health (Chester Halgas letter dated Oct. 3, 1978).

Mr. Fiehn requested that future inquries regarding this matter be directed to Ms. Varda Goldman (corporate legal counsel) at (312) 397-8000.

COPIES TO:

BY: bg

GEOLOGY

OF

CATTARAUGUS COUNTY

New York

By

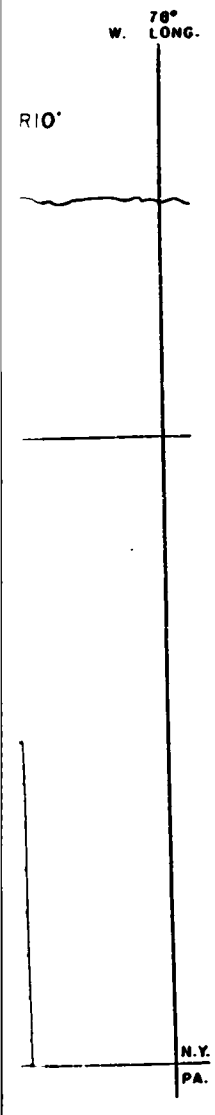
IRVING H. TESMER

Professor of Geology
Geosciences Department
State University College at Buffalo

BUFFALO SOCIETY OF NATURAL SCIENCES
BULLETIN

Vol. 27 Buffalo, N. Y. 1975

HISTORICAL GEOLOGY



The oldest bedrock exposed in Cattaraugus County is of Late Devonian age. During this time most of New York State and adjacent regions were covered by a shallow sea, probably less than 300 feet deep. The shallow depth is indicated by several features, such as ripple marks and the fossil assemblages. The presence of subangular to angular grains of sediment suggests fairly rapid deposition. The bulk of these Upper Devonian sediments was derived from land to the east and southeast, classically called Appalachia. About 4000 feet of Upper Devonian rocks are represented in Cattaraugus County well records.

As the lower Canadaway formed, alternate deposits of black and gray muds accumulated to a thickness of several hundred feet (Dunkirk, South Wales, Gowanda). The organic-rich black mud environment (to the west) and the gray mud environment (to the east) oscillated back and forth with time, causing an intertonguing of these two facies. Upper Canadaway units formed from interbedded gray muds and silts. Although fossils are relatively scarce throughout much of the Canadaway, some of the younger beds are quite fossiliferous. The fauna includes such forms as brachiopods, pelecypods, bryozoans and crinoids, all of which were probably well suited to the shallow water depth and accompanying fine-grained bottom sediments.

During formation of the Chadakoin, there was a gradual increase in the proportion of sands to muds, marking the westward migration of the Devonian shoreline. The brachiopods *Camarotoechia* and *Cyrtospirifer* were able to adapt to changing bottom conditions. Pelecypods are also fairly common in some places. Sponges are found locally and seem best suited to sandy bottoms.

During formation of the Cattaraugus, deposition of coarse sands and small pebbles became more frequent. Pebbles were transported by swift moving streams and may have been further distributed by near-shore currents. Marine fossils are present in some sediments, especially pelecypods. Land plants were carried into the sea by rivers. Red beds represent non-marine conditions and are nearly barren of fossils.

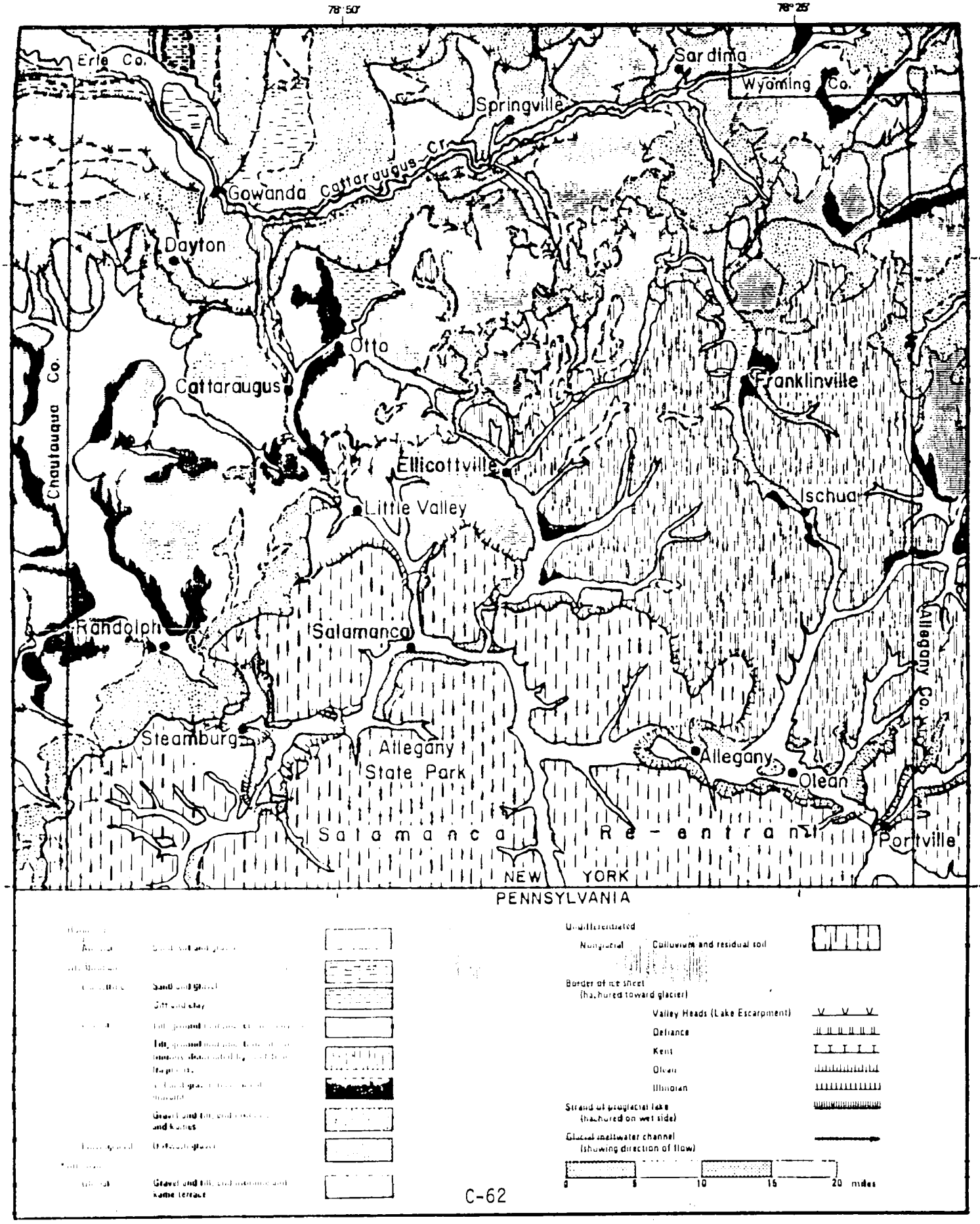
As the Oswayo formed, light gray sands and muds were deposited upon the underlying Cattaraugus red beds. These Oswayo sediments represent a temporary return to marine conditions in Cattaraugus County. After deposition of the Oswayo, the region may have been subjected to minor uplift and erosion before deposition of the marine Mississippian Knapp conglomerate beds. This, in turn, was followed by a quite extensive period of uplift and erosion as is evidenced by a pronounced disconformity that separates the Knapp from the younger Olean Conglomerate. The Olean represents stream gravels that were derived from the north and northeast, probably from the Precambrian of the Canadian Shield (Meckel 1967, p. 253).

Cattaraugus County bedrock furnishes little additional evidence about the later geologic history of the region, but one can assume that during most of the

time following the deposition of the Olean, Cattaraugus County stood above sea level and was subjected to erosion. A notable exception occurred during Pleistocene and Recent times when large portions of Cattaraugus County received glacial, lake, stream and swamp deposits. See section on Pleistocene Geology for further information.

Dissec

Interbedded tills and
south of Gowanda.


78°50'
78°25'
42°25'
42°00'
Erie Co.
Wyoming Co.
Sardinia
Springville
Cattaraugus Cr.
Gowanda
Dayton
Otto
Cattaraugus
Chautauqua Co.
Franklinville
Ellicottville
Ischua
Little Valley
Randolph
Salamanca
Allegany Co.
Steamburg
Allegany State Park
Allegany
Olean
Salamanca Re-entrant
Portville
NEW YORK
PENNSYLVANIA
Undifferentiated
Nonglacial
Colluvium and residual soil
Border of ice sheet (hachured toward glacier)
Valley Heads (Lake Escarpment)
Defiance
Kent
Olean
Illinoian
Strand of proglacial lake (hachured on wet side)
Glacial meltwater channel (showing direction of flow)
Gravel and till, ice-contact and kame terrace
0
5
10
15
20 miles

...ainage system are enough to indicate that the ...cantly from that of the present. The Ances... ...ained northward across the western edge of ...way of the present Conewango Valley into the ...est to the Mississippi as it does now. Un... ...y fill this ancestral valley, thicken north... ...of Red House, to more than 500 feet near ...et near Dayton in the northwestern corner of ...ide which enclosed part of the Ancestral ... Cattaraugus County from Ischua to Little ... is now tributary to Cattaraugus Creek but ...by parallel obsequent streams which flowed ...ock strata toward the Erie lowlands where ...ge out the present basin of Lake Erie.

...-Wisconsin Glaciation

...vania State Line the Allegheny Reservoir ... narrow progressively southward for about ...nzua Dam where essentially unreduced rem... ...than half a mile apart across the valley. The ... northward. The valley widens generally ... acute angles of confluence as though they ...g master stream. This reach of the Alle... ...nce of origin in pre-glacial time. It was a ...the Ancestral Allegheny, joining the trunk ...continue north past Randolph to the Erie ...

... indirect evidence of the earliest glacial ...ad of drainage southward across the col ...impounding of waters in the Ancestral ...ering ice sheet. The Allegheny Valley in ... inch overflowed southward by way of the ...d to have been the lowest available over... ...reached south almost to the limit of subse... The drainage divides enclosing basins of ...ween the New York State Line and Kinzua ...ve sea level, without significant cols or ...dingly that the Kinzua col prior to drainage ...levation. Glacial impounding and drainage ...long enough to notch the col to a depth ...

...col occurred in a single episode of pro... ...more than one episode was involved, it ...exposed in Cattaraugus County. These in... ...Onoville and Corydon, 7½ miles south of

Steamburg. Terrace remnants in the Allegheny Valley southeast of Steamburg (Plate 2) afford evidence that an Illinoian glacial lobe spread across the Allegheny Valley, presumably impounding a lake in the valley east of Salamanca. Ice-marginal deposits block Hotchkiss Hollow (3 miles south of Steamburg) causing Hotchkiss Creek to incise a bedrock channel into its valley wall just where it opens into Allegheny Valley. Glacial till was exposed in excavations east of Quaker Bridge (3 miles south-southeast of Steamburg), during construction of Route 280 southward to the State Line. Three cols, more or less aligned, notch upland spurs at elevations between 1500 and 1575 feet, east of the Allegheny, suggesting possible drainage diversion around the impounding ice margin. On the basis of depth of leaching of soluble carbonates from the soil profile, the advanced stage of soil development, the mantling of deeply weathered silty clay and the subsequent dissection of valley fill by the Allegheny River, these terrace deposits and the glacial episode they record are considered to be of Illinoian age (MacClintock and Apfel, 1944; Bryant, 1955). Correlation with early Wisconsin glaciation remains a possibility, however, for age determination on the basis of morphology is subjective and inconclusive. Accordingly, it is appropriate next to review information from nearby radiocarbon-dated, multiple-till stratigraphic sites which bear on the glacial chronology of Cattaraugus County.

Stratigraphic Relationships

Three stratigraphic sites involve radiocarbon-dated, multiple-till exposures critical to interpretation of the glacial history of Cattaraugus County. One of these, the Otto site, is in Cattaraugus County; a second is a mile north of Gowanda in Erie County; the third is near Titusville, Pennsylvania.

Directly downstream from the highway bridge in the southern outskirts of Otto, the South Branch of Cattaraugus Creek cuts strongly against its left bank, exposing peat, gravel, till and lake sediments (MacClintock and Apfel, 1944; Muller, 1961). MacClintock and Apfel described a basal till beneath an oxidized zone which they interpreted as a Sangamon weathering horizon. By 1959, however, accelerated erosion had virtually destroyed evidence of the basal till. Only scattered striated boulders at stream level in the north end of the exposure, a lag concentrate of crystalline boulders at the base of overlying alluvial gravels 100 yards south of the bridge, and a possible smear of clay-till matrix among the boulders in this lag deposit remained to support the earlier report to basal till older than the organic beds which are conspicuous in the lower 10 to 15 feet of the bluff face.

Palynologic and paleobotanic studies of the organic material at Otto (Muller, 1961) appear to indicate an episode of climatic amelioration with conditions comparable to those near North Bay, Ontario, today, followed by climatic deterioration as evidenced by changing *Picea/Pinus* ratios of spruce (*Picea*) to pine (*Pinus*) pollen. Organic material occurs in several discrete horizons,

interbedded with unoxidized sand and gravel. The principal peat horizon was dated at 63,900 ± 1700 years[1] by the Groningen Radiocarbon Laboratory, and even 15 feet above stream level the organic silt is more than 54,000 years old. The organic beds are, in turn, overlain by tills and lacustrine beds representing main Wisconsinan glaciation.

Near Gowanda State Hospital, 2 miles north of Gowanda, Clear Creek undercuts a high bank at a bend 150 feet west of U.S. Route 62, exposing a succession of late Wisconsinan till sheets separated by lacustrine sediments and underlain by a drift section comparable to that at Otto (Muller, 1964). Above pink basal till at the river bend is a silty and carbonaceous clay, compacted and with bedding so crushed and disturbed as to indicate deformation by an overriding ice sheet recorded by the overlying till layer. The silty clay contains wood fragments dated at more than 48,000 years[2] and sparse grains of weathered pollen which appear to represent a forest assemblage dominated by *Picea* and *Pinus*. Coupled with the Otto section, the Clear Creek exposures indicate that prior glaciation of Cattaraugus County was followed by climatic amelioration more than 50,000 years ago before renewed (main Wisconsinan) glaciation. The basal till in both sections may represent Illinoian glaciation followed by the Sangamon interglacial interval with climates as warm as or warmer than the present, but radiocarbon and pollen data suggest rather a climatic amelioration less warm than the present, such as would characterize partial deglaciation within the Wisconsinan Stage. This minor deglacial interval is tentatively correlated with the St. Pierre Interval in the St. Lawrence Valley (Gadd, 1960; 1971).

The age of the till which overlies organic zones at the Otto and Clear Creek sites is suggested by relationships in a sand and gravel pit 1/2 mile southeast of Titusville, Pennsylvania (White *et al.*, 1969; White, 1969) where till and associated gravel overlie peat which has been radiocarbon-dated at 40,500 ± 1000 years.[3] On this basis, it seems probable that the till directly overlying the organic silty clay at the Clear Creek site records a glaciation between 40,000 and 50,000 years ago.

Olean Glaciation

MacClintock and Apfel (1944) showed that the Wisconsin glacial limit is marked by drift of rather different character on the northwestern and northeastern borders of the Salamanca Re-entrant. The limit of glaciation east of The Narrows (3 miles southwest of Little Valley) is characterized by relatively subdued and modified moraine topography composed of stony, yellow-brown till in which cobbles of composition exotic to the plateau comprise less than 5% of the coarse fraction. The uplands directly north of the Allegheny Valley were apparently not overtopped, even though ice tongues reached the Allegheny Valley in several places.

1 Otto organic site ages based on Groningen Radiocarbon Laboratory determinations GrN-3212 and GrN-2643.

2 Clear Creek date based on Groningen Radiocarbon Laboratory determination GrN-5486.

3 Titusville date based on Groningen Radiocarbon Laboratory determination GrN-4996.

t is correlated with the Kent Moraine of north- ... Muller, 1963; White *et al.*, 1969).

...e traced from southwestern Cattaraugus County ...ny Valley near Steamburg, past The Narrows, ...as the drainage divide between Cattaraugus ...East of Steamburg, as also in Little Valley and ...ead southward from the Kent glacier margin be- ...raine loops, into the Allegheny Valley. North of ...ith narrow, deeply incised meltwater channels ...impounded and diverted along the Kent ice ...ese are the channels followed by U.S. Route 219 ...ttville, and the channel eastward from Plato to ... the meltwaters of several valley ice tongues. ...r Meadows, Ischua (Poth, 1953) and Rawson ... of drainage reversal by glacial impondment ...e divides. Each of these streams reaches drains ...lls converge downstream through confining ...e. For each the reversal was made permanent ...thus glacial sediment to the level necessary to ...across the former divide.

...stern Ohio, the Kent Moraine is considered to ...a glaciation which began at least 24,600 years ago ...ed its maximum extent in southern Ohio at ...as late as 19,000 years ago (Goldthwait *et al.*, ...es north of Arkport in Steuben County, New ...00 years (Clarence Gehris, S.U.N.Y. College at ...tion). In spite of the uncertainties involved in ...t appears probable that the Kent Moraine in ...nant of a glaciation which began more than ...had withdrawn greatly from its maximum ex- ...

...margin from the Kent Moraine, short-lived ...d in the valleys of Cattaraugus Creek and its ...e Valley, in Ashford Hollow and along Con- ...to gray clay till. Similar clay till comprises the ...and the South Branch of Cattaraugus Creek ...moraine south of Dayton which is similar in ...Moraine as mapped in Chautauqua County ...across Cattaraugus Valley into each of these ...d to conspicuous uptake of lacustrine clay and ...of the character of the resulting lodgment till.

...900 years, which appears ...lines 26 and 31, should ...00 years.

Valley Heads Moraine Complex

A broad belt of more or less parallel moraine ridges trends across the northwest corner of Cattaraugus County, curving southeastward across Conewango Trough and Skinner Hollow before passing northeast into southern Erie County. Westward in New York and Pennsylvania these moraines lie along the plateau margin and hence were named the Lake Escarpment Moraines (Leverett, 1902); more recently they have been renamed the Ashtabula Moraine (White *et al.*, 1969). Major outwash plains were built south from the termini of valley lobes of the ice sheet in these positions. East of the point where the moraines are transected by Cattaraugus Creek, they generally form the divide between major northward and southward draining watersheds. Accordingly, this moraine complex is referred to as the Valley Heads Moraine in central New York (Chadwick and Dunbar, 1924; MacClintock and Apfel, 1944).

Notable among the pitted outwash plains built south from the valley lobes of this ice sheet are those in the troughs north of Springville and Sardinia in Erie County. Marl began to accumulate in the numerous kettles very shortly after recession of the ice sheet from the Valley Heads terminal moraine. In the banks of Nichols Brook on the outwash plain east of Sardinia, a mastodon tooth washed out of the marl in 1939 (Heubusch, 1959) and a few years later another tooth was picked up close by the original site. Wood fragments from marl at stream level were dated by radiocarbon assay as 12,020 years (Merritt and Muller, 1959). Subsequent radiocarbon assay of marl slightly below stream level (Calkin, 1970), yielded dates to as much as 14,900 years before the present. The greater age determination must be viewed with reservation because the algal uptake of "old carbon" dissolved in ground water would result in apparent dates greater than the true age of the material assayed. At the same time it is clear that the age of material in kettle holes of the Valley Heads outwash plain affords a minimum age for recession of ice from the Valley Heads position which therefore occurred somewhat more than 12,000 years ago.

Proglacial Lakes

At its maximum position in Valley Heads time, the ice sheet impounded lakes in the Cattaraugus Valley west of Springville and in Skinner Hollow north of Cattaraugus with its outlet westward into Conewango Valley south of Dayton. Even minor retreat of the ice margin permitted the two lakes to join. Withdrawal of the ice margin was oscillational and such minor retreat and readvance occurred several times as is indicated by multiple till sheets with interbedded lake sediments. Exposures showing this relationship may be seen in high bank exposures undercut by Thatcher Creek south of Gowanda, as well as in the exposure alluded to earlier where Routes 39 and 62 cross Clear Creek near Gowanda State Hospital.

With final withdrawal of the ice margin from Cattaraugus County, the level of impounded waters at the edge of the ice sheet dropped to that of the ancestral

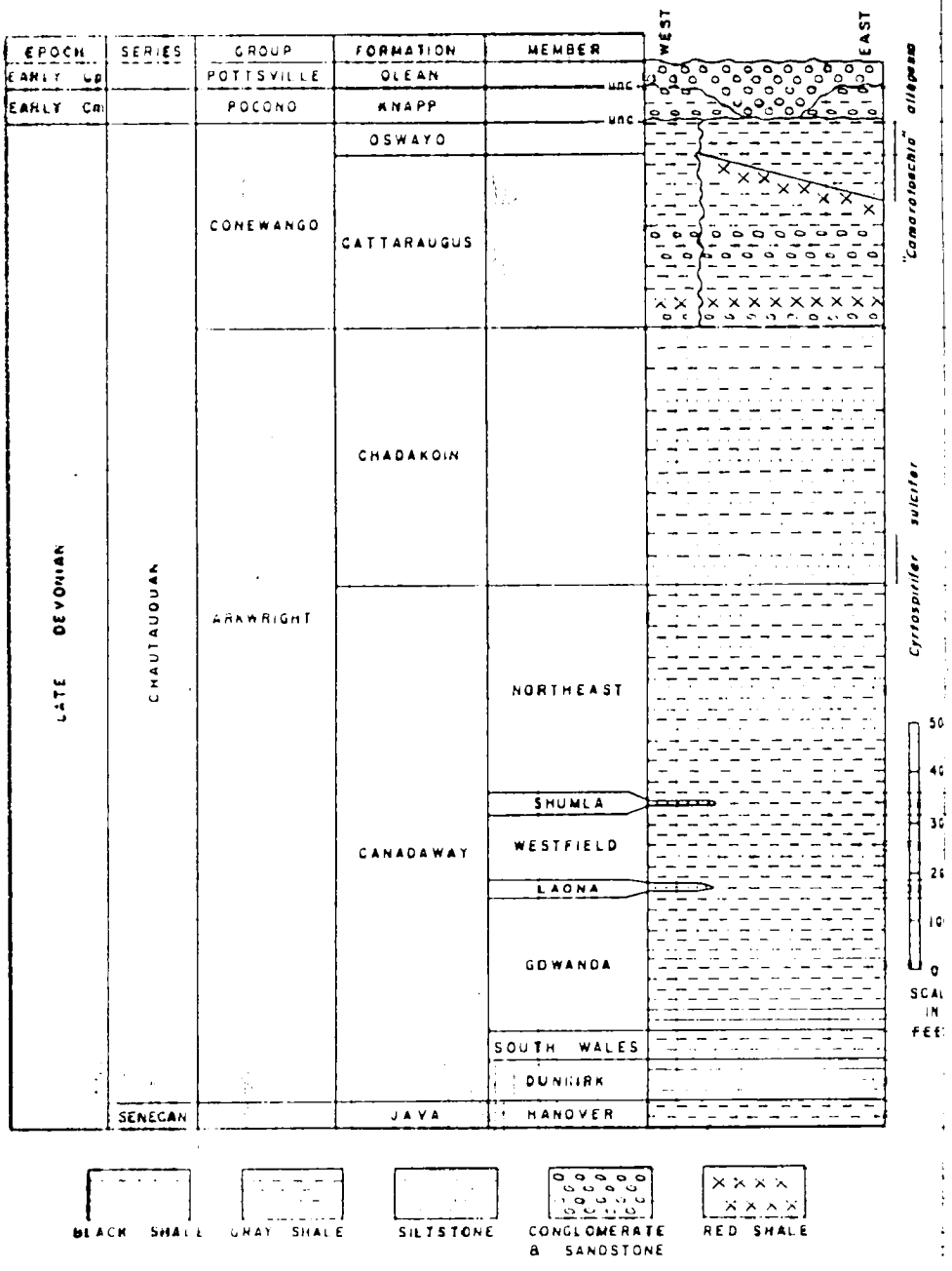


Fig. 2 -- Generalized Stratigraphic Column of Cattaraugus County, New York

…opment of *Stratigraphic* **Nomenclature** by …tion on *Rock Stratigraphic and Time-*…s the usage of these units by the present …d Pennsylvanian bedrock units are described …*y and Paleontology* (pp. 30-87) while the …are considered in the section on *Pleisto-*

…he last three columns that appear in figure …*nenclature*, one may note that the names …nits used by Rickard (1964) of the New York …*al.* (1969) of the United States Geological …nt author show several **differences** or ad-…nce of the modifications made by the present Formation" named and described by Pepper … Rickard (1964) and Oliver *et al.* (1969) is …n an ill-defined top in Cattaraugus County. …away, particularly the Laona and Shumla, are …unkirk, South Wales, Gowanda, Laona, …re all considered to be *members* of the …away and overlying Chadakoin Formation …y and faunal content and are assigned to the …ner (1954). See the present author's usage …low.

…d Time Stratigraphic Units

…raphic unit is the *system*, those rocks formed …parts of the Devonian, Mississippian, and …ed in Cattaraugus County. Systems may be …to stages. One or more *series* represent …epoch and a *stage* is represented by rocks

…ntal rock-stratigraphic unit. It consists of …ation. The age of a formation may vary from …scribed in this report have generally been …way. Most of these formations have rather …tly distinct fauna.

…tion constitutes a *group*. *Members* are sub-… …ribed in this report are of local ex-… …e county).

Outcrop Pattern

The strata dip gently to the south or south-southwest, usually less than 40 feet per mile. The relatively high relief of Cattaraugus County creates a very irregular outcrop pattern with bedrock units often following the trends of major valleys or making concentric patterns around many of the more prominent hills. In general, the older strata occur in northern Cattaraugus County while the younger rocks are found to the south near the Pennsylvania State Line, capping the tops of the highest hills.

Catskill Clastic Wedge

Most of the Devonian rocks of Cattaraugus County are associated with marine environments of the Catskill clastic wedge (delta). Redbeds in the Cattaraugus Formation represent a time when the westward-migrating shoreline reached Cattaraugus County temporarily. Clastic wedge deposits are thickest in the Catskill region of eastern New York and in eastern Pennsylvania and are coarse-textured with fossils of plants and fresh-water animals. The deposits become finer in texture and thin westward away from the Devonian shoreline toward the open sea of the "Appalachian Geosyncline." These finer sediments contain abundant remains of marine invertebrates.

A generalized sequence of zones of deposition (facies) from land to sea is as follows:

1. gray sandstones (non-marine)
2. red and green shales, cross-bedded sandstones and conglomerates (shore and near-shore deposits)
3. interbedded gray shales, siltstones and sandstones (marine)
4. gray shales with occasional interbedded limestones (marine)
5. black shales (marine)

Sutton, Bowen and McAlester (1970, pp. 2981-2984) listed various sedimentary environments that are related to the Catskill clastic wedge.

The wedge grew by spasmodic and rapid advances with intervening recessions of its shoreline, creating much intertonguing of sedimentary facies. With time, the shallow water environments and their accompanying faunal assemblages shifted westward, rising in the stratigraphic column with some accompanying mutations and evolution of new species. Greiner (1957, pp. 47-48) indicated that stratigraphic distribution of various species and mutants of *Cyrtospirifer* illustrates the above.

STRUCTURAL GEOLOGY

Structure contour maps drawn by the present author on the base of various bedrock units exposed in Cattaraugus County indicate homoclinal structure with a dip usually less than 40 feet per mile to the south or south-southwest. No major folds or faults are indicated by near surface bedrock. Joints are conspicuous in most of the units and often they occur as two sets nearly at right angles. Upon weathering, the joints are enlarged and bedrock may be separated into large blocks. This is particularly evident at various "rock cities" located in Cattaraugus County and adjacent regions.

SEDIMENTARY STRUCTURES

A great variety of sedimentary structures may be observed in the stratigraphic units exposed in Cattaraugus County. Only a brief mention of some of the more common features is included here.

The Dunkirk, South Wales and Gowanda contain concretions and septaria of various shapes and sizes. Some appear to be primary features while others may have formed after lithification of the surrounding sediments. They vary in composition. Most are calcareous but others are arenaceous.

Siltstone and sandstone beds sometimes contain wave or current ripple marks and their undersurfaces may show groove casts. The sandstones and conglomerates of the Cattaraugus, Knapp and Olean often exhibit fine examples of cross-bedding in which some beds are steeply inclined to the general bedding. The Olean Conglomerate contains cut and fill structures resulting from local erosion prior to deposition of the conglomerate.