City of Buffalo
Division of Planning
Department of Community Development

Gus Franczyk Park
Buffalo, New York

Construction Closeout Report

Volume 1 - Report

August 2001

P13106.01

ACRES INTERNATIONAL CORPORATION
140 John James Audubon Parkway
Amherst, New York 14228-1180

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Franczyk Park Drainage Improvement Project
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Table of Contents

Franczyk Park Drainage Improvement Project
Construction Closeout Report

List of Tables

Franczyk Park Drainage Improvement Project
Construction Closeout Report

List of Figures

1 Summary of Problem

1.1 Introduction

Gus Franczyk Park is bounded by Lewis Street, Fleming and Babcock Streets in the City of Buffalo (see Figure 1-1). The property consists of an approximately 16.5-acre site, which was acquired by the City of Buffalo in 1984 and subsequently developed as a park/playground. Past owners of the site have included Agrico Chemical Company, Industrial Refining Corporation, and Car Salvage World. A 1985 report (Reference 5) prepared by a consultant commissioned by the City indicated that although groundwater impacts from past activities were likely, no hazardous waste was detected and no onsite material posed a significant hazard to public health. Furthermore, the property was considered suitable for development as a park/playground.

1.2 Background

In 1998, the City received correspondence from a local community center expressing concern over seeps observed at two locations along the park perimeter, on Lewis Street near Fleming, and on Fleming Street near Babcock. The seeps, which appear as orange-colored liquid, are likely the result of surface water infiltration through the vegetative cover and underlying fill, creating a localized shallow groundwater table mounding which surfaces along the perimeter slopes of the site. The orange discoloration occurs as a result of elevated iron concentrations in the fill, which leach into the groundwater as it flows through the fill soil and subsequently oxidize upon contact with the atmosphere as the groundwater seeps from the bank. Although aesthetically undesirable when oxidized, iron occurs naturally in many soil environments and, generally, does not present a significant health threat by itself.

In June of 1998, limited sampling of surface soils and surface water runoff was conducted by a consultant for the City (Reference 1). Near the corner of Fleming and Lewis Streets, the samples were found to contain elevated levels of arsenic and iron. Elevated levels of iron were also detected near the corner of Fleming and Babcock. Arsenic is not characterized as a volatile material, and therefore does not significantly vaporize to the air under normal environmental conditions. However, arsenic is a toxic metal which may present a health concern via direct contact or incidental ingestion of impacted soils or water. As a precaution, the City of Buffalo fenced both seep areas to prevent contact with the impacted soils and surface water, and recommended a Phase II Environmental Site Assessment (ESA) to evaluate the extent and concentration of the detected contamination at the seep areas. Specifically, the City was interested in determining the extent and concentration of inorganics in the fill proximate to the seeps to attempt to identify "hot spots" or potential localized inorganic source areas, particularly for arsenic.

A Phase II ESA was undertaken in 1998 by a consultant (Reference 2) working on behalf of the City of Buffalo. Results of the investigation indicated elevated levels of arsenic in the subsurface fill materials at locations around the park. However, Toxicity Characteristic Leaching Potential (TCLP) results indicated that the arsenic-containing fill material is a non-hazardous waste and is apparently not impacting the groundwater. Subsequent additional surface soil samples were collected by the City and NYSDEC. These analyses identified three locations where arsenic levels exceed a NYSDEC guidance value of 10 mg/kg. These areas were outside the fenced seep areas.

The drainage improvement project for Franczyk Park included the interception of groundwater seepage and direct discharge to the Buffalo Sewer System. The interception collection drain would extend along the entire length of Lewis Street and along a section of Fleming Street near Babcock. The installation of the collection drain would require the demolition/removal of a stone retaining wall along Lewis Street. The work also included regrading certain slope areas around the drain lines to reduced possible future erosion. Also, soil from the two fenced areas where seepage occurred would be removed and replaced with clean material. In addition, soil from three areas of the park where elevated arsenic levels were previously identified would be removed and replaced with clean material. Two of these areas were outside the drain line work areas, while the third area was within the Lewis Street slope regarding area.

Previous sampling and testing had concentrated on arsenic as the contaminant of concern. However, prior to beginning construction activities, the construction contractor collected samples for disposal characterization. These results, together with subsequent sampling and analyses, indicated that certain soils within the work areas were characterized as a hazardous waste based on leachable lead concentrations in excess of 5 mg/l. Therefore, certain soils in the work areas were delineated as either hazardous or non-hazardous based on leachable lead. No other leachable contaminants were found in the TCLP analyses.

1.3 References

1. Acres International Corporation, Sampling & Analysis Report, Gus Franczyk Park, Buffalo, New York, July 1998.

2. Benchmark Environmental Engineering & Science, PLLC, Phase II Environmental Site Assessment Report, Franczyk Park, Buffalo, New York, December 1998.

3. City of Buffalo and NYSDEC, Surface Soil Sampling & Analysis at Gus Franczyk Park, December 21, 1998.

4. ECCO, Leachate Sampling Report, July 1990.

5. Ecology & Environment Report on the Investigation of the Babcock Street Site, July 1985.

1.4 Certification Statement

I certify under penalty of law that this document was prepared under my direction or supervision in accordance with a procedure designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my involvement in the project and my inquiry of other persons directly responsible for gathering information for the project records, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. All work described in this document was completed in accordance with the agreed upon Remedial Design Report and plans and specifications for the site, with any variances specifically noted in this document. Certification for the construction oversight work completed by Acres is issued under the seal of Lawrence D. Zamojski, P.E. (New York State License Number 62674).

Lawrence D Zamojski — August 30, 2001

Signature — Date

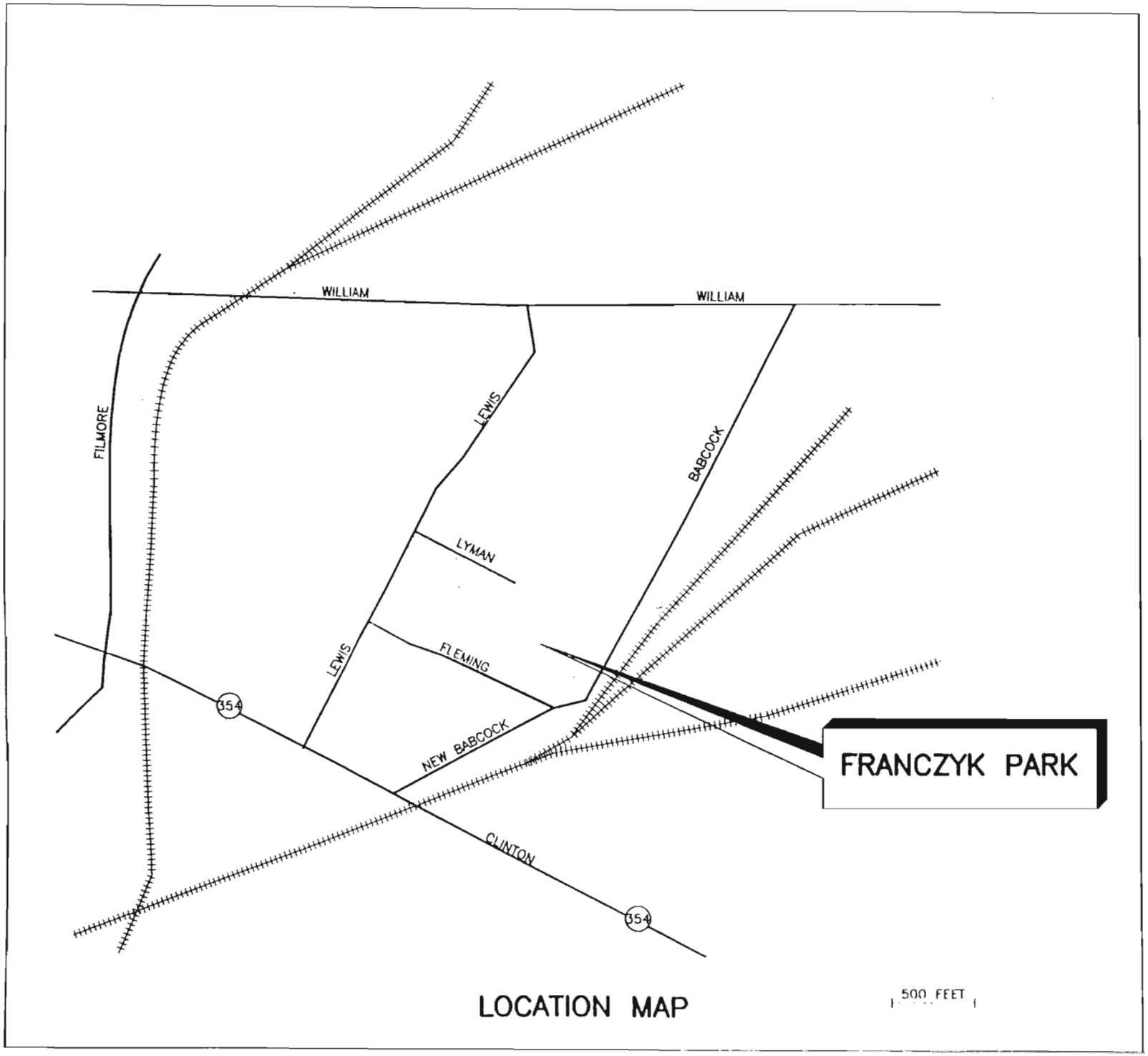

WILLIAM
WILLIAM
FILMORE
LEWIS
BABCOCK
LYMAN
LEWIS
FLEMING
354
NEW BABCOCK
FRANCZYK PARK
CLINTON
354
LOCATION MAP
500 FEET

FIGURE 1-1

2 Work Undertaken and Completed

2.1 Collection Trench Along Fleming Street

The Fleming Street trench was begun March 14. A majority of the perforated pipe section was completed March 19. A limited inflow of water into the trench was noted during initial excavation. However, air temperatures during the trenching fluctuated from below freezing to above freezing. The subsequent melting of snow and frozen soil caused the trench to fill with surface water runoff as well as groundwater. However, it was possible to excavate and install the drainage pipe without dewatering. Non-natural fill soils were observed at locations along the trench ranging from about 9 inches to 1 ft below grade. Some soil sampling was performed. Four samples were collected from the trench at Sta. 1+80 (see Figure 4.1). On April 13, the contractor dewatered the incomplete trench to reduce groundwater level. This water was discharged to the Buffalo Sewer system. The trench was completed on April 18 and sewer tie-in performed on April 19. Topsoil was placed over the trench on April 27 and 30. The trench area was hydroseeded on May 2.

The only variations from the proposed plans involved two areas of perforated pipe (approximately Sta. 0+90 and Sta. 1+20) where the pipe was placed directly on the filter fabric rather than on stone bedding in order to maintain pipe grade. At these locations, some trench collapse had occurred near the bottom and reduced the depth of the actual trench. The trench could not be re-excavated without removing a portion of pipe already properly installed.

2.2 Seep Area Along Fleming Street

The seep area along Fleming Street was removed on March 19 and 20. This material was excavated using a large backhoe with a wide, flat (no tooth) bucket. The entire area within the fence was excavated to a depth of approximately 1 ft. The material was stockpiled as necessary within the work area and loaded into trucks. The material was characterized as non-hazardous solid waste and was hauled to Waste Management's Chaffee, New York landfill. Approximately 152.2 tons of non-hazardous soil were removed offsite on March 19 (this total included approximately 5.5 tons of soil from Area A). On March 20, an additional 158.6 tons of non-hazardous soil were removed (this material included approximately 5.5 tons from Area B and about 110 tons of trench soils). Five samples were collected of remaining soils. The results are discussed in Section 4. Contractor placed filter fabric over the remaining soils on April 13 to reduce direct contact with these materials. The seep area was subsequently covered with approximately 9 to 12 inches of topsoil on April 26, 27, and 30. This area was hydroseeded on May 2.

2.3 Lewis Street Collection Trench Discharging at Fleming/Lewis Intersection

Excavation of this section of Lewis Street trench identified by Acres site personnel as the "east" trench was begun on March 20. Daily temperatures crept above freezing causing frozen soils and

snow to melt and precipitation to fall as rain. Because of these conditions, a large amount of surface runoff together with groundwater entered the excavation. Initial attempts were made to install the drainage trench without dewatering. However, trench instability and the large volume of water ultimately made a "wet" installation impossible. Contractor had applied for but not received a permit to discharge groundwater to the Buffalo Sewer system. On March 23, work at site was suspended until permit issues on the sewer discharge could be resolved by the City and Buffalo Sewer Authority (BSA). Trench water samples were collected on March 27 to characterize the contaminants present in that water. Permit issues were resolved, and on April 9 trenching activities resumed. Dewatering from the excavation was discharged to the sewer system. The trench remained relatively dry once dewatered, however, trench stability continued to be a problem as cave-ins continued to plague the Contractor. Eleven (11) soil/fill samples were collected from the trench walls. These results are discussed in Section 4. The "east" trench drainage line was completed April 10. The sewer tie-in was undertaken April 19. The trench was topsoiled on April 25 and 26. The trench area was hydroseeded May 2.

No variations from the proposed plans were necessary, however, portions of the trench were 4 to 6 ft wide in areas where cave-ins occurred. Observations made during the excavation included discovery of a foundation wall perpendicular to the trench at Sta. 1+40 (Point F is Sta. 0+00). Continuous water flow of approximately 5 gpm was observed coming from gravel/rubble layer south of this foundation wall, and a similar inflow (approximately 10 gpm) was found on the north side of this foundation wall. Beyond Sta. 1+40, a foundation wall was found immediately west (adjacent to) and parallel to the trench. This foundation wall extends beyond Point H. The drainage line was installed abutting this vertical wall. The wall extended below the bottom of the trench in this area.

2.4 Lewis Street Collection Trench Discharging at Lewis Street

On April 11, work began on this section of trench identified by Acres site personnel as the "west" trench. The perforated main drainage line installation was completed April 17. The sewer tie-in was completed April 20. The trench area was topsoiled April 26 and 27. The area was hydroseeded May 2. Eight (8) soil samples were collected during the trenching. The test results are discussed in Section 4. Excavation and drain installation proceeded smoothly for the first 40 ft of trench (from Point K south). Beyond this point significant instability occurred, and the trench was widened out to 6 ft or more for the next 100 ft. The record drawings indicate how the trench meanders.

Dewatering was performed as necessary to keep the trench "dry", and water was discharged to the Buffalo Sewer system. A number of foundations were encountered approximately 10 ft south of pipe tee (Point J). Their location and orientation are documented in the Engineer's Daily Project Diaries (Appendix A) for April 13 and 16. Because of these foundations, the "west" trench was adjusted from Point J such that it jogs further to the west. Portions of the foundation wall perpendicular to the trench were removed to allow installation of the drainage line. In addition, a portion of this same wall was removed further to the east to drain an area where two gravel filled pipes (see April 16 Engineer's Diary and Photo 115) were seeping water into the excavation.

There were several variations in the proposed plans for the trench. First the trench alignment varied due to trench wall instability between Point K and J, and the presence of old foundations between Points J and I. Also as a result of the trench instability, the drainage pipe was laid directed on the filter fabric from about 50 ft north of Point J to about 20 ft south of Point J.

Some damage to the drain pipe occurred during installation. On April 16, the Contractor damaged the HDPE tee at Point J and repaired it by sleeving (see Photos 105 through 109) over the broken portion. On April 20, the Contractor damaged the solid HDPE pipe between Point J and L (see Photo 145). The pipe was repaired using a FERNCO coupling to mate the two pieces. In addition, a solid 6-inch HDPE pipe was placed over the FERNCO coupling to add rigidity. The ends of the 6-inch pipe were packed with clay to seal it (see Photos 154 and 155).

2.5 Seep Area Along Lewis Street

The seep area along Lewis Street was excavated on April 17 and April 18. Non-hazardous material from the Lewis Street east trench was stockpiled in this area. The material was excavated at the edges using a backhoe combined with a bulldozer to stockpile the materials. A large backhoe subsequently loaded the trucks directly on Lewis Street. The entire fenced area and the area between the sidewalk and the street were excavated to a depth of 1 ft. Approximately 82.8 tons of non-hazardous soil were removed on April 17 with another 111.4 tons removed on April 18. The soils were loaded into dump trucks and hauled to Waste Management's Chaffee, New York landfill. Two samples (LSSP-6 and LSSP-7) were collected of remaining soils at the base of the excavation. On April 25, filter fabric was placed over this area along with 6 to 12 inches of topsoil. The area was hydroseeded on May 2.

2.6 Area A and B

Area A was excavated on March 14 and stockpiled in the Fleming Street seep area. Area B was excavated on March 20 and removed offsite. Approximately 11 total tons of non-hazardous soils were removed from these two areas. No discolored soils or fill materials were noted in either area. The remaining soils appeared to be brown silty clay. Each area was enclosed with temporary construction fence to limit access. A 10 mil. layer of plastic was also placed over the bottom of each area to reduce infiltration of any ponded water. This plastic was removed prior to backfilling. The two areas were backfilled with 12 inches of topsoil on April 26. These areas were hydroseeded on May 2.

2.7 Lewis Street Slope Area

The Lewis Street slope area at the north end of the site was to be regraded as part of this project. Because of trench stability problems, a much larger trench was constructed which generated more materials for offsite disposal. Because of the overrun in trench disposal quantities, the City, with the

agreement of the NYSDEC, decided to reduce the amount of soils removed from the slope. Portions of a low foundation wall parallel to Lewis Street were removed as part of the work. However, the slope was only cut a limited amount to flatten it. This reduced the quantity of soil to be disposed offsite while decreasing this near-vertical slope to one that would support vegetation. After regrading, two samples (LSSP-8 and LSSP-9) were collected to identify contaminant levels in the remaining soil/fill. Two (2) to 4 inches of topsoil were placed over this area on April 27 and April 30. The area was hydroseeded on May 2 and portions of the northernmost slope subsequently covered with erosion control fabric.

3 Final Quantities of Materials Removed

Both hazardous (leachable lead contaminated) soil and non-hazardous soil were removed from the site as part of this project (see Tables 3.1 and 3.2 for daily totals). Non-hazardous soils were sent to Waste Management's Chaffee, New York landfill. Hazardous soils were shipped to Chemical Waste Management's (CWM) Model City, New York facility for treatment and disposal. A total of approximately 504 tons of lead contaminated hazardous soil were removed. In addition, approximately 683 tons of non-hazardous soil were hauled away.

3.1 Fleming Street Work Area and Areas A & B

Approximately 311 tons of non-hazardous soil were removed from the Fleming Street area on March 19 and 20. The soils hauled offsite included 1 ft of soil from the fenced seep area, 1 ft of soil from Areas A and B, and existing soils removed and temporarily stockpiled during trench installation.

3.2 Lewis Street Work Area

Approximately 372 tons of non-hazardous soil were removed during the installation of the two Lewis Street trenches, slope area, and Lewis Street seep area. In addition, approximately 504 tons of hazardous lead contaminated soil were also removed from these areas. The materials were stockpiled and tested utilizing TCLP analysis to characterize and subsequently determine the disposal facility for the material.

Table 3.1

Hazardous Waste Disposal Quantities
CWM Chemical Services, LLC
Model City, New York

Manifest	Date	Tonnage
NYB9461445	03/14/01	30.81
NYB9461439	04/06/01	26.03
NYB9461583	04/19/01	32.30
NYB9461592	04/19/01	30.06
NYB9461556	04/20/01	32.97
NYB9461565	04/20/01	33.75
NYB9461574	04/20/01	31.81
NYB9461529	04/23/01	31.76
NYB9461538	04/23/01	29.84
NYB9461547	04/23/01	30.87
NYB9461601	04/23/01	35.95
NYB9461421	04/24/01	30.76
NYB9461619	04/24/01	32.27
NYB9461628	04/24/01	30.18
NYB9461637	04/24/01	33.85
NYB9461646	04/24/01	30.57
	TOTAL	503.78 tons

Table 3.2

Non-Hazardous Waste Disposal Quantities
Waste Management Chaffee Landfill

Date	Time	Tonnage
03/19/01	11:07	19.02
03/19/01	11:29	17.23
03/19/01	12:56	17.11
03/19/01	13:04	20.11
03/19/01	13:46	17.73
03/19/01	14:57	21.41
03/19/01	15:04	20.78
03/19/01	15:37	18.81
	03/19/01 DAY TOTAL	152.20 tons
03/20/01	09:28	23.60
03/20/01	09:40	20.97
03/20/01	09:55	22.46
03/20/01	10:30	20.95
03/20/01	11:01	22.21
03/20/01	11:51	19.12
03/20/01	12:27	29.29
	03/20/01 DAY TOTAL	158.60 tons
04/17/01	13:52	22.12
04/17/01	14:10	19.92
04/17/01	15:43	20.52
04/17/01	15:56	20.23
	04/17/01 DAY TOTAL	82.79 tons
04/18/01	09:18	22.36
04/18/01	09:36	22.89
04/18/01	11:47	23.93
04/18/01	12:00	22.66
04/18/01	14:55	19.51
	04/18/01 DAY TOTAL	111.35 tons
04/25/01	10:27	22.91
	04/25/01 DAY TOTAL	22.91 tons
04/27/01	10:47	17.99
04/27/01	10:53	20.29
04/27/01	14:01	22.39
04/27/01	14:07	22.18
04/27/01	14:27	22.05
04/27/01	15:57	21.00
04/27/01	16:20	29.37
	04/27/01 DAY TOTAL	155.27 tons
	Non-Hazardous Total =	**683.12 tons**

4 Analytical Test Results

The following section briefly summarizes the analytical testing performed as part of this project. Figures 4.1 and 4.2 provide sample locations on Fleming Street and Lewis Street respectively.

4.1 Fleming Street Work Area Soils

4.1.1 Fleming Street Trench Samples

Four samples were collected during the excavation of the Fleming Street trench. These four samples were taken from one location and reflect the soil profile there. Table 4.1 provides the results and indicates high arsenic levels in all four samples ranging from 106 mg/kg to 22,400 mg/kg. The highest value appears associated with a thin yellow layer of material. High total lead levels were found in two of the samples, with the highest being associated with a red/purple silty brick flour (21,100 mg/kg). These soils were thought to be indicative of high contaminant levels and were used as indicator soils for further sampling on this project.

4.1.2 Remaining Fleming Street Soils

Three soil samples were taken of the trench and seep area prior to completing backfilling. Table 4.2 presents these results and confirms high lead and arsenic levels in red/purple fill initially identified during the trench sampling. Two samples were split and sent to separate labs, the comparative results sample to sample (FSSP-2 with FSSP-2*, and FSSP-3 with FSSP-3*) were not very good. However, all four samples had high total lead and arsenic concentrations. The reddish/purple soils were not found in large defined source areas but appear thinly spread across the site in isolated pockets and layers. The thin yellow arsenic laden layer was discontinuous and could not be traced for any distance in the trench. Other black ash and cinder soils also appear to contain elevated lead and arsenic levels. Below approximately 4 ft, one finds a silty clay that still contains somewhat elevated concentrations of lead and arsenic.

4.2 Lewis Street Work Area Soils

4.2.1 Lewis Street Trench Samples

Nineteen (19) samples were collected during the excavation of the east and west Lewis Street drainage trenches. Table 4.1 summarizes information about these samples. The three highest total lead concentrations in these samples appeared to be associated with gray to black ash and cinder fill (9,680 mg/kg to 26,600 mg/kg), while the highest arsenic levels appeared associated with a yellow fine brick/silt fill (569 mg/kg) and reddish purple fine sandy silt (449 mg/kg). The results in the table appear to indicate that contaminant levels vary significantly with location and depth. The apparent natural silty clay soils at depth (3 ft and below) appear

to have generally lower (residual) arsenic and lead levels. In the Lewis Street work area, the black ash and cinders appear indicative of high total lead containing materials, while the reddish purple fine sandy silt (similar to that observed along Fleming Street) contain both lead and arsenic. Some yellow fine sandy silt (again similar to the thin layer observed on the Fleming Street trench) also contains high arsenic levels.

4.2.2 Remaining Lewis Street Soils

Eleven (11) surface soil samples were collected prior to backfilling the site with topsoil. In addition, one sample (LSRE-1) was taken (of reddish purple material found between the cobblestones beneath the existing asphalt pavement) during the road cut for the sewer tie-in. Table 4.4 presents the analytical results and indicates relatively high total lead levels in most of these areas. Elevated arsenic levels were also observed in most of the samples. These remaining materials appear to be ash/cinders and demolition debris fill. These areas were subsequently covered with 3 to 12 inches of offsite topsoil.

4.3 Area A and B Soils

Four analytical samples were collected for each area for a total of eight samples. The testing was undertaken by the Contractor to define contaminant concentrations at the edges of these two small limited work areas. Table 4.6 contains the test results. Two samples near Area B exceeded the 10 mg/kg level for arsenic originally set for the site, however, discussions between the NYSDEC and City concluded that no further work needed to be done in Area B at this time.

4.4 Groundwater Quality

4.4.1 Fleming Street Work Area Water

Two groundwater and one surface water sample were collected during construction. Table 4.7 presents the test results. The Fleming Street trench initially (March 16) appeared to contain high concentrations of arsenic and lead. Subsequent testing on March 27 indicated much lower levels of contamination. It was presumed that the initial high values may have been associated with suspended solids (as groundwater was not filtered) stirred up during initial trenching activities.

Table 4.8 provides test results for a sample collected directly at the discharge into the sewer on Fleming Street. The sample taken on April 27 appears to indicate that the groundwater discharged to the sewer was meeting all the permit criteria set by the Buffalo Sewer Authority (BSA).

4.4.2 Lewis Street Work Area Water

Two groundwater samples were collected during construction. Table 4.7 contains these results and appears to indicate that there were no elevated arsenic, lead, or other parameters present in these samples.

Subsequent sampling at the end of construction (Table 4.8) appears to indicate that the BSA permit criteria were being met for both discharge locations along Lewis Street.

4.5 Offsite Topsoil

One topsoil sample was collected from the final graded surface of each of the two work areas to confirm the levels of arsenic, lead, and other selected metals present in the new topsoil brought to the site. The source of this topsoil was reportedly a site in Orchard Park. The test results in Table 4.9 provide baseline information for any future evaluation of the work areas remedied as part of this project.

Table 4.1

Fleming Street
Trench Samples

Sample	Location	Description	Depth	Analyses	
				Lead (mg/kg)	Arsenic (mg/kg)
FSTS-1	Sta. 1+80	Black silty ash cinder fill	1.5 ft	245	3,160
FSTS-2	Sta. 1+80	Thin seam of yellow silt fill	1.9 ft	2,530	22,400
FSTS-3	Sta. 1+80	Red/purple silty brick flour	2 ft	21,100	9,310
FSTS-4	Sta. 1+80	Gray to brown clayey silt	2.3 ft	69.3	106

Table 4.2

Post-Removal – Remaining Soils
Fleming Street

Sample	Location	Description	Lead (mg/kg)	Arsenic (mg/kg)
FSSP-1	Sta. 0+80	Black ash silt	1,300	361
FSSP-2	Sta. 1+50	Red/purple brick, sandy silt	15,800	9,790
FSSP-3	Sta. 2+20	Red/purple sandy silt	4,660	1,940
FSSP-2*	Sta. 1+50	Red/purple sandy silt	6,470	2,760
FSSP-3*	Sta. 2+20	Red/purple sandy silt	19,300	2,630

* Samples analyzed by second laboratory.

Table 4.3

Lewis Street
Trench Soil Results

Sample	Depth	Location	Description	Lead (mg/kg)	Arsenic (mg/kg)
LSTS-1	1 ft	Sta. 0+30E	Black ash & cinders	19,700	138
LSTS-2	3 ft	Sta. 0+30E	Brown to gray silty clay	38.4	ND<8.50
LST-S1	1 ft	Sta. 1+15E	Brick & wood fill	1,270	25.4
LST-S2	2.5 ft	Sta. 1+15E	Gray to black ash & silt/cinders	9,680	74.1
LST-S3	3.5 ft	Sta. 1+15E	Brown to gray silty clay	641	27.5
LST-S4	0.5 ft	Sta. 0+20E	Black cinders, wood, ash, clay	1,290	260
LST-S5	1.5 ft	Sta. 0+20E	Red brown silty clay	21.5	9.96
LST-S6	1.5 ft	Sta. 1+90E	Gray to black cinders & ash	26,600	9.78
LST-S7	2.5 ft	Sta. 1+90E	Yellow brown sandy silty clay	626	135
LST-S8	3.5 ft	Sta. 1+90E	Black fine silt & ash	918	15.9
LST-S9	4 ft	Sta. 1+90E	Red brown silty clay	27.3	6.84
LST-S10	1.25 ft	Pt. K (1+80)	Red/purple fine sandy silt	1,320	449
LST-S11	2.5 ft	Sta. 1+80W	Black cinders, ash & silt slag	280	18.8
LST-S12	3 ft	Sta. 1+80W	Yellow brown silty clay	20.0	10.5
LST-S13	2 ft	Sta. 1+50W	Yellow fine brick/silt fill	525	569
LST-S14	1 ft	Sta. 0+60W	Black cinders/silt	ND<20.5	92.6
LST-S15*	1.1 ft	Sta. 0+60W	Red orange fabric/carpet padding	659	254
LST-S16	1.6 ft	Sta. 0+60W	Yellow brick with black sand/cinders	1,680	88.8
LST-S17	2 ft	Sta. 0+60W	Yellow brown silty clay	1,010	39.4

* Sample contained no visible asbestos (Sample LSA-1)

Table 4.4

Post-Removal - Remaining Soils
Lewis Street

Sample	Description and Location	Lead (mg/kg)	Arsenic (mg/kg)
LSSP-1	Remaining surface soil beneath stockpile south end, Sta. 0+00	254	20.2
LSSP-2	Remaining surface soil beneath stockpile, Sta. 0+50	58.4	4.94
LSSP-3	Remaining surface soil beneath stockpile, Sta. 1+00	4,490	52.4
LSSP-4	Remaining soil beneath stockpile, Sta. 1+50	2,160	16.3
LSSP-5	Remaining surface soil beneath stockpile, Sta. 2+00	1,420	41.0
LSSP-6	Soil in seep area 40 ft east of Pt. F, 2 ft east of sidewalk	3,550	206
LSSP-7	Soil in seep area 120 ft east of Pt. F, 2 ft east of sidewalk	386	35.7
LSSP-8	Remaining soil in slope area, 100 ft south of Dulski Center driveway	1,480	18.8
LSSP-9	Remaining soil in slope area, 50 ft south of Dulski Center driveway	5,250	36.5
LSSP-10	Remaining soil beneath stockpile, Sta. 2+50	27.9	8.01
LSSP-11	Remaining soil beneath stockpile, Sta. 3+00	32.3	5.32
LSRE-1	Reddish/purple sandy silt from street excavation road cut on Lewis Street	2,040	166

Table 4.5

TCLP Analyses
For Stockpiled Materials
Along Lewis Street

Sample	Location	TCLP	
		Lead (mg/l)	Arsenic (mg/l)
LSE-0100	Composite 11 locations south 100 ft of stockpile	25.8	ND<0.045
LSE-0200	Composite 12 locations 100 to 200 ft at south end of stockpile	10.6	ND<0.045
LSW-0300	Composite 10 locations north 100 ft of stockpile	0.474	ND<0.045

Table 4.6

Areas A and B
Soil Samples

Sample	Location	Arsenic (mg/kg)
Area A-N	Area A north face	3.52
Area A-S	Area A south face	3.02
Area A-E	Area A east face	3.17
Area A-W	Area A west face	9.67
Area B-W	Area B west face	5.96
Area B-E	Area B east face	10.6
Area B-N	Area B north face	6.04
Area B-FN	Area B – far north (10 ft)	20.4

Table 4.7

Construction Groundwater and Surface Water Samples
Franczyk Park

	Sample Location Date	FST-GW-1 Fleming St. Trench Water 03/16/01	FST-SW-1 Fleming St. Surface Water 03/16/01	LS-GW-1 Lewis St. Trench Water 03/22/01	FSWS-1/2 Fleming St. Trench Water 03/27/01	LSWS-1/2 Lewis St. Trench Water 03/27/01	BSA* Criteria
Analyses (mg/l)							
Arsenic		5.57	ND<0.009	ND<0.009	1.21	0.013	1.8
Barium		1.09	0.052	12.6	0.018	0.026	100
Cadmium		0.020	ND<0.005	0.005	ND<0.005	ND<0.005	1.0
Chromium		0.151	NT	ND<0.005	ND<0.005	ND<0.005	5.0
Copper		3.24	NT	0.012	0.024	0.026	16.0
Lead		8.06	ND<0.015	0.016	ND<0.015	0.078	5.0
Mercury		ND<0.001	NT	0.008	ND<0.001	ND<0.001	0.0008
Nickel		0.236	NT	ND<0.005	0.033	0.017	14.0
pH		NT	NT	NT	6.83	6.77	5 to 12

ND = non-detect
NT = not tested
BSA = Buffalo Sewer Authority

Table 4.8

Post-Construction
Groundwater Samples
Franczyk Park Discharge Points

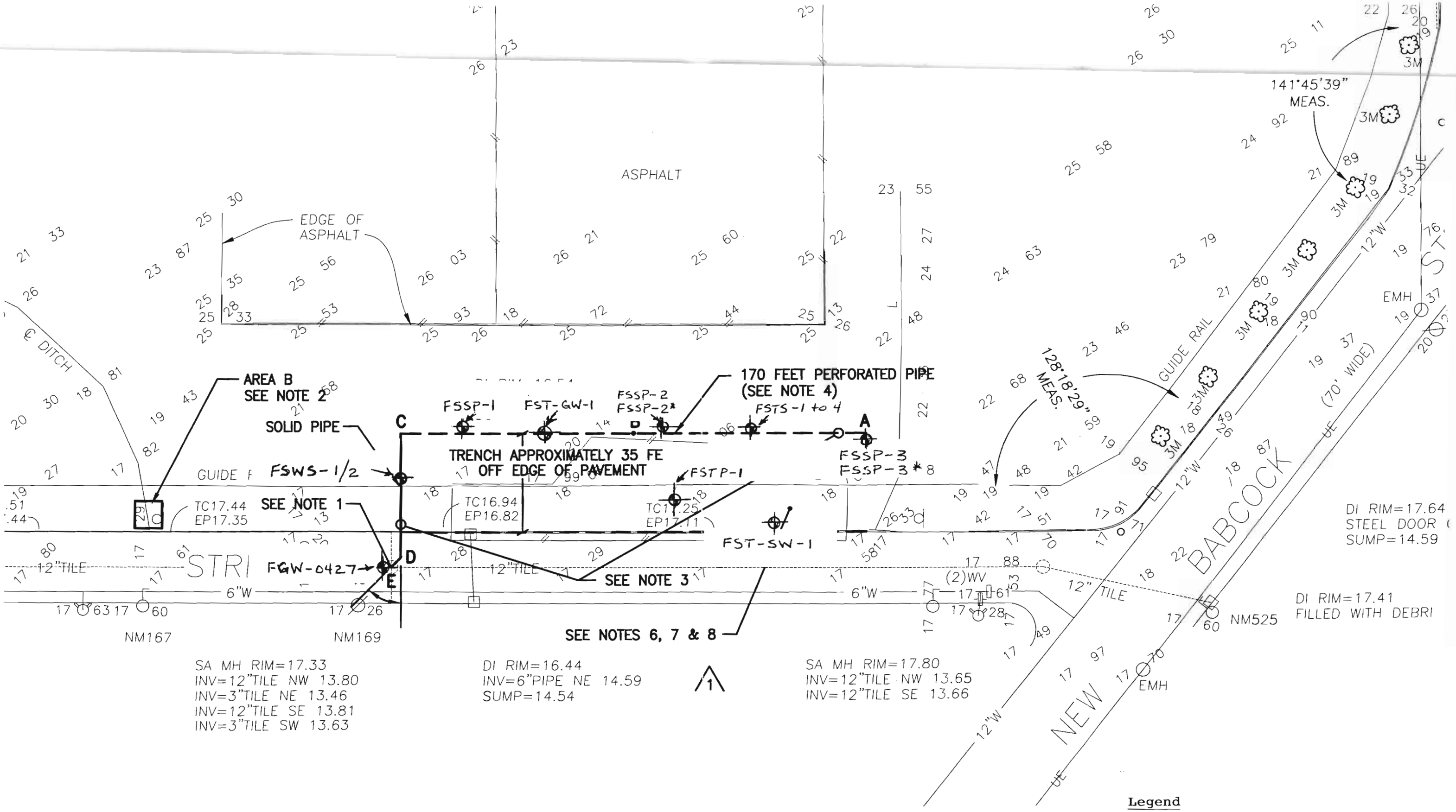
Analysis	Sample:	LSW-GW-1	FGW-0427	LFGW-0427	BSA Limits (mg/l)
	Location:	Lewis St. Tie-in	Fleming St. Tie-in	Lewis/Fleming Intersection	
Arsenic		0.665	0.068	0.037	1.8
Barium		0.035	0.021	0.024	100
Cadmium		0.015	ND<0.005	0.006	1.0
Chromium		0.032	ND<0.005	0.016	5.0
Copper		ND<0.009	0.020	0.009	16.0
Lead		0.666	ND<0.015	0.715	5.0
Mercury		ND<0.001	ND<0.001	ND<0.001	0.0008
Nickel		0.149	0.020	0.224	14.0
Silver		ND<0.005	ND<0.005	ND<0.005	2.2
Zinc		5.13	0.601	9.68	25.0

ND = non-detect

Table 4.9

Offsite Topsoil Results
(Materials Brought Onsite)

Sample	Location	Lead (mg/kg)	Arsenic (mg/kg)	Mercury (mg/kg)	Beryllium (mg/kg)
FSTP-1	Fleming Street	42.6	6.02	0.076	ND<0.400
LSTP-1	Lewis Street	69.0	10.8	0.106	0.992



Legend

Approximate sample location

FRANCZYK PARK
DRAINAGE IMPROVEMENT PROJECT

Figure 4.1

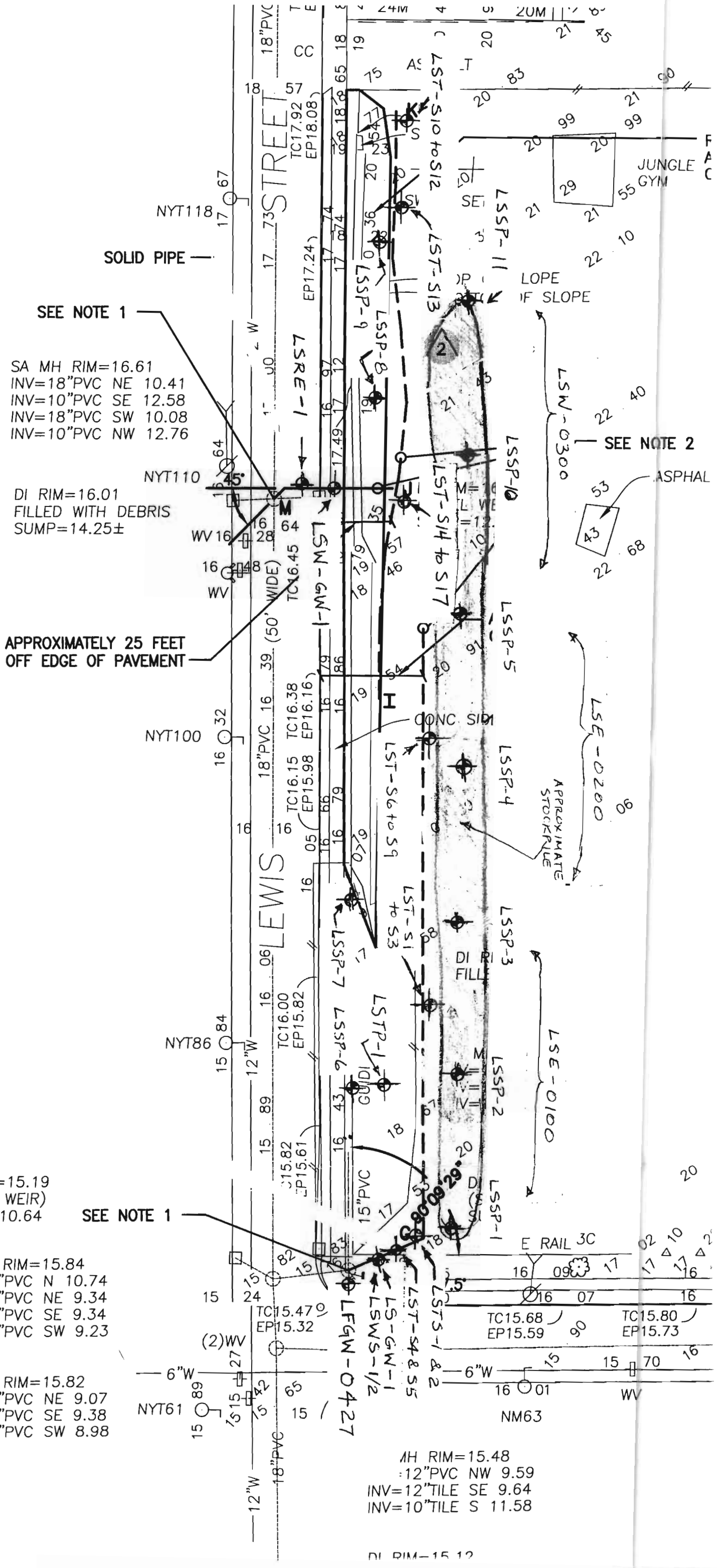


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Figure 4.2
Lewis St. Sampling Locations

5 Air Monitoring

Air monitoring began Wednesday, March 14, 2001 through Friday, April 27, 2001 and was performed every workday while excavation and/or loading for offsite disposal occurred. An air technician from Watts Engineers provided air monitoring services from March 14 through April 20. For the final week of reporting, Mr. Jerry Jones of SLC calibrated, set up, and collected air monitoring data. Appendix E contains air monitoring daily narratives from March 14 through April 20.

Raw data sheets from the air monitoring can be found in a separate submittal to the City. No daily narratives were provided by Mr. Jones and SLC for April 23 through 27, although data sheets are available.

The following provides a brief summary of air monitoring. NYSDEC Technical and Administrative Guidance Memorandum (TAGM) #4031 forms the basis for the air monitoring at the site. Three monitors were typically utilized with one upwind of the work area, one upwind or downwind at the limits of the work area, and one downwind at a nearby residence/building or in a portion of the open park area downwind. The monitor locations were selected at the beginning of each day based on prevailing wind direction and their locations were changed during the day as wind direction changed.

Table 5.1 provides a summary of air monitoring results that approach or exceed the 0.15 mg/m^3 action level along with an explanation for each incident. There appears to be reasonable explanations for these higher levels. Air monitoring data overall appears to indicate that all excavation and loading for disposal activities were performed below the 0.15 mg/m^3 action level. Data sheets can be found in a separate volume titled "Air Monitoring Data".

Table 5.1
Recorded Air Monitoring Results Approaching or Exceeding 0.150 mg/m^3

Date	Unit No.	Value (mg/m^3)	Location	Explanation
03/14/01	02315	0.143 & 0.191	Upwind of excavation on Lewis Street	Upwind of work area, cold conditions and readings not representative. Soil being removed was very wet, no visible dust. Downwind samples had no elevated readings.
03/22/01	2827	0.103	Downwind of excavation on construction fence right at edge of excavation	Appears associated with exhaust from backhoe. Soil being excavated is wet, no visible dust.
04/06/01	02827	0.661	Upwind at residence on Lewis Street	Erroneous readings associated with mist, fog, and rain. Soil being excavated is wet, no visible dust. Reading high from initial setup.
04/10/01	2827	0.139	Upwind of excavation	Dust from street created by UPS truck exhaust.
04/10/01	02315	0.193	Upwind of excavation	Dust generated from pile of crushed stone dumped near air monitor. This is imported stone for use in trench.
04/11/01	2315	0.114	Upwind of excavation	Appears related to exhaust from front end loader. Soil in excavation area is wet with no visible dust.
04/11/01	2315	0.126	Upwind of excavation	Appears related to exhaust from construction equipment working in area. Soil in excavation area is wet with no visible dust.

Table 5.1
Recorded Air Monitoring Results Approaching or Exceeding 0.150 mg/m^3

Date	Unit No.	Value (mg/m^3)	Location	Explanation
04/11/01	4209	0.109	Upwind of excavation	Appears related to vehicle exhaust. Soil in excavation area is wet.
04/11/01	2827	0.113	Downwind of excavation	Appears related to exhaust from construction equipment working nearby. Soil in excavation wet with no visible dust.
04/12/01	02315	0.138	Upwind adjacent to trench on Lewis Street	Upwind monitor, appears to be dust from exposed dirt/ sand from adjacent baseball field affecting monitor. Soils from trench are wet, no visible dust.
04/12/01	2827	22.86	Upwind of work area	Cigarette smoke from person smoking next to monitor.
04/16/01	2515	0.426	Downwind of work area	Exhaust from large backhoe. Soil wet with no visible dust.
04/16/01	2515	0.122	Downwind of work area	Equipment working in area. Soil still wet with no visible dust.
04/17/01	2315	0.204 & 0.607	Downwind of work area	Appears related to exhaust from large backhoe working in area. Soil is still wet with no visible dust.
04/17/01	4209	0.117	Upwind of work area	Exhaust from vehicle on street.

Table 5.1
Recorded Air Monitoring Results Approaching or Exceeding 0.150 mg/m^3

Date	Unit No.	Value (mg/m^3)	Location	Explanation
04/20/01	02315	0.133	Upwind of work area near construction fence	Ground had dried sufficiently that dust was generated by wind gust. No people in area, appears to be isolated incident. Location upwind of work area.
04/23/01	2315	0.221 & 0.356	Upwind of site near Lewis Street residence	Result of dust generated from saw cutting pavement.
04/23/01	2315	0.363 & 0.105	Upwind of site near Lewis Street residence	Exhaust from vehicles parked and idling next to monitor location.
04/27/01	2827	0.108	Downwind of work area	Exhaust from backhoe moving through area.
04/27/01	2315	0.102	Upwind of site near residence	Possible vehicle exhaust. Location is upwind of loading operations.

6 Conclusions and Recommendations

6.1 Conclusions

The drainage trenches were successfully installed along Fleming Street and Lewis Street and appear to be functioning properly. All three discharge points were sampled, and the results appear to indicate that each discharge is in compliance with the City's Buffalo Sewer Authority (BSA) permit influent limits.

The hot, dry weather has limited the redevelopment of vegetative cover over the site. Grass has been established, but it is not as thick as adjacent non-work areas.

Approximately 504 tons of lead contaminated hazardous soil were hauled offsite and disposed at CWM's Model City, New York facility. In addition, approximately 683 tons of non-hazardous (solid waste) soil were hauled to Waste Management's Chaffee, New York landfill for disposal. These quantities were above the estimated amounts due to conditions encountered during the trenching. The difficult conditions included the time of year the work was undertaken, trench instability due to extremely wet soil conditions, caving, weak soil layers, buried debris, and high groundwater conditions requiring dewatering.

The topsoil imported to replace the soils removed was analyzed for contaminant concentrations. The topsoil (reportedly from a site in Orchard Park) contained some measurable amount of lead and arsenic. This information should be used in subsequent evaluations of baseline conditions for the work areas on this project.

The analytical testing performed during the construction activities indicates that contaminant levels for the two key contaminants of concern (lead and arsenic) vary significantly across the site. Contamination does not appear to be present in an identifiable source zone but rather present in relatively thin layers at various depths and small zones that could extend from a few feet to tens of feet. There are also three major "visual" soils that appear to indicate contamination. These include a red/purple crushed brick, yellow/white material, and black ash and cinders.

The contamination appears to extend beyond the drainage trench work areas. Most contamination appears to be at least 9 inches to 1 ft below ground surface and typically extends (in areas we trenched) to a maximum of about 5 ft. However, several individuals from the neighborhood have stated that trenches filled with drums, tanks, and other demolition debris are present at the site. The only residual building structures encountered during construction were a number of old building foundations parallel and perpendicular to Lewis Street.

6.2 Recommendations

Further investigation activities are recommended in an attempt to better delineate contamination that may be present at the site. The following is a program that outlines possible activities at the site.

a) Geophysical survey (electromagnetic) to identify if any buried trenches full of drums or other demolition debris exist. This would be a site-wide survey. There are likely to be cultural interferences (fencing in particular); however, this survey would be a first step in assessing areas for further investigation.

b) Prepare a background report for Franczyk Park that summarizes all the analytical results and their approximate locations. This report should be undertaken such that all existing data is readily available for review prior to defining areas to be investigated.

c) Geoprobe investigation in "suspect" areas based on the geophysical survey, any historical site maps, previous analytical results, and interviews with local citizens. It is expected that such a program would include 50 to 100 holes to a depth of about 8 ft in most locations. The rationale to use geoprobes is to reduce the material that would have to be handled or disposed when compared to conventional drilling or test pits.

d) Test pit excavations in areas where significant contaminants were identified in a, b, and c above. It is expected that this part of the program would include 5 to 10 test pits extending to a maximum depth of 8 ft in most locations. This would limit the potentially hazardous materials that may be exposed, thus reducing the amount to be handled, disposed, and areas to be backfilled with clean material.

e) Monitoring well installation at several (5 to 8 locations) to determine groundwater flow direction and contaminant concentrations site-wide.

f) Analytical testing of soil layers and groundwater that are the result of activities c, d, and e. The soils and groundwater would be tested for arsenic and lead. It is anticipated that as many as 300 to 400 samples may be taken.

It is suggested that the geophysical survey be performed as soon as practicable such that the results can be used to assist with identifying investigation and test pit locations. The background report would also assist the City in planning any investigation activities.