

2021 Hazardous Waste Scanning Project

File Form Naming Convention.

(File_Type).(Program).(Site_Number).(YYYY-MM-DD).(File_Name).pdf

Note 1: Each category is separated by a period "."

Note 2: Each word within category is separated by an underscore "_"

Specific File Naming Convention Label:

Report_HW_932020_1990-11-15_Status_of_Remedial_Activities.pdf

New York State Department of Environmental Conservation
Division of Hazardous Waste Remediation

Report of

Michael J. O'Toole, Jr., P.E.
Director, Division of Hazardous Waste Remediation
on Status of Remedial Activities
Love Canal Remedial Action Project

To

Love Canal Technical Review Committee

November 15, 1990

I. Introduction

Issue 15 of the Love Canal Landfill Update was released on October 5, 1990. A copy of the Update is available at the DEC Public Information Office.

The following activities have taken place at the Love Canal site since the last meeting of the Technical Review Committee on May 9, 1990.

II. Black and Bergholtz Creeks Remediation Contract

Sevenson Environmental Services, Inc. (SES) completed their restoration work on June 15, 1990. Negotiations for the final contract amount have been completed with the final cost being approximately 7.8% above the original bid amount due to contract changes. Once the final cost adjustment change order is approved, the general Creeks construction contract will be considered complete. The DDSF Mechanical contract and the DDSF Electrical contract are in the process of final closeout.

OCC returned to the processing facility to complete the decontamination and decommissioning of the facility. The processing equipment has been cleaned and removed from the site by the contractor. Asphalt, gravel and soil in and around the building which was contaminated during the operations has been excavated, processed, bagged, and shipped to the OCC main plant. Approximately 600 bags or 1200-1500 cubic yards were transported to the OCC main plant for storage in the T-area with other Love Canal remedial wastes. Confirmatory sampling of the facility and surrounding areas was performed by OCC under NYSDEC oversight on August 7, 1990 to determine the need for additional decontamination. The results of

this sampling indicated a few isolated areas, which were previously used to process waste materials, still were not adequately decontaminated. To address this situation, on October 2-8, 1990 under NYSDEC oversight, OCC removed additional asphalt, gravel, and soil in the contaminated areas for storage at the main plant. The entire area was resampled at 21 locations. If the analytical results indicate the facility is free of contamination, the remaining clean materials, primarily gravel and asphalt, will be disposed of in the remaining cell of the DCF. Should contamination remain, additional decontamination and sampling will be required.

III. 93rd Street School

USEPA is considering remedial alternatives consisting of off-site disposal of the excavated material from the Site. EPA will be issuing an Amendment to the ROD. NYSDEC & USEPA are preparing a Post Decision Proposed Plan. The availability of funding to EPA will determine the exact schedule for implementation of the remedy.

The analysis of soil samples collected from the site during April/May 1990 is complete and did not detect presence of 2,3,7,8 TCDD. Detection level was less than 1 ppb. The soils from this site are now considered to be non-dioxin contaminated.

IV. 97th Street Methodist Church

The draft Phase II Investigation report was received on May 21, 1990. The investigation report indicate that the site is clean and there is nothing above the level of concern. The draft final Investigation report was received on October 29, 1990, which recommends "No Further Action". The site is expected to be delisted.

V. Love Canal EDA 2 and 3

The NYSDEC has received the report from the NYSDOH regarding their "recommendation" for remediation of EDA 2-3 and is initiating an evaluation of alternatives for implementing these recommendations.

VI. Love Canal EDA 4

The draft investigation report was received from Ecology and Environment (E&E) on August 3, 1990. The levels of Beta-BHC found on two lots, 1044 100th Street and 9909 Black Creek Drive, require additional investigation. A letter was sent to the residents on August 3, 1990 by NYSDOH on the status of the findings of the April 1990 sampling (see attachment 1). Following the suggestion of NYSDOH, additional sampling in the vicinity of the above mentioned two lots was undertaken to define the limits of contaminated soils and to determine whether other Love Canal chemicals (e.g. chlorobenzenes) were also present. Accordingly E&E was tasked to undertake the additional sampling. The soil samples were collected on September 21 and 22, 1990, on 9909 Black Creek Drive, 1044 100th Street and two lots directly north of 1044 100th Street.

The results of this sampling and E&E's report are expected in early winter. Also, NYSDEC has tasked ABB Environmental Services, (ABB) (formerly E. C. Jordan) to develop the remediation plan for the EDA 4 lots. The design work will start after receipt of the additional sampling results and NYSDOH's determination on the remediation needs for the area.

VII. Frontier Avenue Storm Sewer

Frontier Avenue is located at the south boundary of the Love Canal Site. Past investigation of the storm sewer located in Frontier Avenue, west of 100th street, discovered contaminated pipe bedding. This information was shared with the public in a letter dated September 14, 1990 (see attachment 3).

The Department believes that the contamination has come from historic migration from the Love Canal site prior to remediation, because previous work to address this situation has included installation of various pipe bedding and trench cutoff walls to isolate the contaminants and stop further migration. Until recently, it was not believed that contaminants in the pipe bedding had migrated to manhole 412, which is located at the intersection of 100th street and Frontier Avenue. However, during the installation of an additional cutoff wall at the upstream (west) side of manhole 412, additional contamination was discovered in the storm sewer pipe bedding. Based on that discovery, four test pits were excavated downstream (east) of manhole 412 to manhole 406 (located between 100th and 101st Streets). Additional contamination was discovered in the pipe bedding in three of the four test pit excavations including the pit on the downstream (south) side of manhole 406.

A work assignment, under the Department's Standby Contract, with ABB has been issued to investigate the extent of migration in the storm sewer pipe bedding and develop remedial alternatives. The current scheduled completion date of the investigation and evaluation is the middle of February 1991. This will allow for the letting of a remedial construction contract in the 1991 construction season.

VIII. Love Canal Operations and Maintenance

A) Central Sector Holding Tank Access Contract

This contract with Firstrhyme Construction Corporation was substantially completed on the scheduled completion date of August 6, 1990. Pending change orders for investigatory work are

currently being negotiated and their completion will impact the close out date of this contract.

B) Pump and Electrical Renovations

Computer Logic/Control	- 25% complete
Electrical	- 60% complete
Mechanical	- 50% complete

Contract completion date will be extended approximately 2-3 months due to significant delay in delivery of submersible pumps and liquid level controllers. Estimated completion date is now Spring 1991 and may vary due to weather constraints.

C) Love Canal Leachate Treatment Facility

The Love Canal Leachate Treatment Facility Flow Data is attached (See Attachment 2).

D) Long Term Groundwater Monitoring Program

During the period June 13 to September 13, 1990 samples were collected for chemical analysis from 54 monitoring wells in the Love Canal area. Some of these wells were sampled to assess the suitability of including them in the Long Term Monitoring Program. The samples, along with nine blanks, were analyzed by the NYSDEC Mobile Laboratory. The Laboratory has transmitted the results, which are presently undergoing review. It is expected that the review will be complete in time for publication in the 1990 Love Canal Annual Report.

A meeting was held with the NYSDOH on October 24, 1990 for interagency review of the results. Preliminary assessment indicates a predominance of "ND" results as in the past, with low levels of contaminants detected in a few wells. Preliminary evaluation suggests that these low level results are consistent with last year's findings. (As used here, "low level" refers to results which are in the low parts per billion range, generally near or below the "detection", or "quantitation" limit.)

Included in this assessment were the sampling results from new Monitoring Well 10225C. 1989 results, along with the January, May and September 1990 results from this well have consistently shown low levels of contaminants, with levels remaining constant. On September 14, 1990 a letter was mailed to the residents of the Love Canal area describing the findings at well 10225C (see Attachment 3.)

During the summer field season the consulting firm ABB was retained to locate and inspect as many monitoring wells as practicable both on- and off-site at the Love Canal. In a three week period during August 1990 their two field teams located 319 wells. We believe that this number represents approximately 90 % of the total wells installed in connection with the investigation of the Canal. When received, their written findings will be an important element in determining the future use, if any, of these wells, and identifying those which should be decommissioned. Completion of the work assignment is expected at the end of the summer of 1991.

E) Love Canal Work assignment using Standby Consultant Contractor

The NYSDEC entered into a work assignment with ABB on May 24, 1990 for Operation & Maintenance activities at the Love Canal Site. Tasks include:

- dewatering, cleaning inspection and repair of the treatment facility clarifier
- televised inspection of the leachate collection system
- Sludge Storage Tanks corrosiveness study.
- site survey
- well inventory

IX. Other Items

A) Love Canal Annual Report

Nothing to report.

X. Action Items

#69 Re-examine 93rd Street School ROD

See 93rd Street School Update.



STATE OF NEW YORK DEPARTMENT OF HEALTH

Corning Tower The Governor Nelson A. Rockefeller Empire State Plaza Albany, New York 12237

David Axelrod, M.D.
Commissioner

August 3, 1990

OFFICE OF PUBLIC HEALTH

Linda A. Randolph, M.D., M.P.H.
Director

William F. Leavy
Executive Deputy Director

Dear Residents:

This letter is to update you on the soil sampling done in Area 4 in the Love Canal EDA. As you may recall, the Department of Environmental Conservation arranged to collect soil samples to analyze for hexachlorocyclohexanes (BHC's) in April, 1990. Laboratory results are now available, and the consultant involved is preparing a formal report.

Nine lots in the vicinity of Black Creek Drive and 100th Street were sampled to investigate the elevated BHC levels which we found in two lots during the Love Canal Habitability Study (1,729 and 4,108 ppb beta-BHC). We asked for samples from nine lots bordering the two lots containing elevated levels.

The attached map shows the approximate sample locations. The laboratory analyzed the soil samples for the presence of several pesticides. Elevated levels of only BHCs were found on two separated lots (1044 100th Street and 9909 Black Creek Drive). The levels ranged from undetectable to 18,000 ppb (or 18 ppm). At these levels, beta-BHC is not considered a health hazard. These two lots showed what appear to be isolated pockets of elevated levels of BHCs. No BHCs were detected at elevated levels on the other seven lots. Additional sampling is planned in the two lots to the north of 1044 100th Street to define the extent of the BHCs. This work will be done by DEC's contractor, E. C. Jordan, starting within a few weeks.

You may recall that when scientists on the most recent Love Canal Expert Panel requested this sampling, they also advised DEC and the Health Department how to treat any findings. They said that these findings should be treated like any similar discovery elsewhere in the state, and do not affect determinations of habitability. Consistent with that guidance, E. C. Jordan will be asked to scan the samples from the lots with elevated levels of beta-BHC for other chemicals to identify if a particular person or company is the likely source of BHCs.

The BHC material is a by-product of lindane (gamma-BHC) manufacture, and large amounts of it were buried in the Love Canal and other sites in the Niagara Falls area. The pattern of two isolated areas of contamination indicates that it did not move from the Love Canal through the soil or groundwater to these lots.

DEC will develop a strategy for clean-up in consultation with DOH and EPA. At this time the properties involved are not occupied, and LCARA has been advised not to sell the affected properties until the investigation is completed.

As before, air at the worksite will be monitored throughout the drilling and sampling program. The field workers will be wearing disposable boots, tyvek suits and gloves, primarily to prevent contamination of samples. The bore holes will be backfilled with the drilling cuttings and topped with at least 12 inches of clean soil.

On a different matter, the Disaster Preparedness Commission (DPC) is required to issue findings pursuant to the State Environmental Quality Review Act prior to approving certain expenditures of funds by LCARA related to revitalization of the EDA. A copy of the draft findings statement is enclosed. The DPC will meet on August 7, 1990 at 10 am to vote on these findings. This meeting is open to the public. It will be held in Hearing Room C of the Legislative Office Building at the Empire State Plaza in Albany.

If you have any questions, please feel free to contact me at 1-800-458-1158, or Michael Podd at the DEC Public Information Office on Colvin Boulevard, (716) 297-9637.

Sincerely,



Anita M. Gabalski
Director, Health Liaison Program
Bureau of Toxic Substance Assessment

rma 02080164

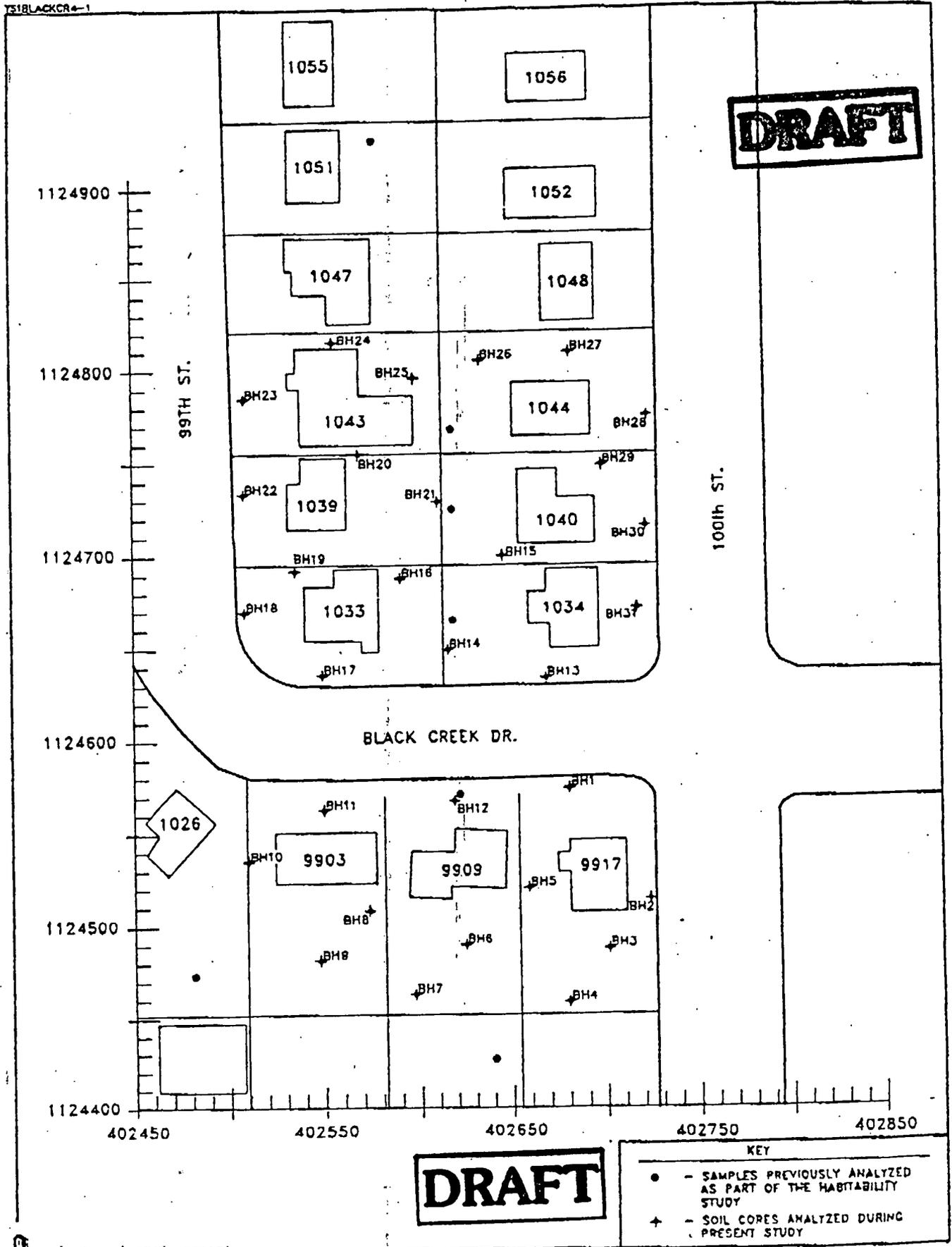


Figure 4-1 LOVE CANAL EDA4 SAMPLING LOCATIONS

NEW YORK STATE DEPARTMENT OF ENVIRONMENTAL CONSERVATION
 DIVISION OF HAZARDOUS WASTE REMEDIATION
 BUREAU OF CONSTRUCTION SERVICES
 OPERATION AND MAINTENANCE SECTION

11/07/90

LOVE CANAL LEACHATE TREATMENT FACILITY FLOW DATA (1985-1990)

INCOMING FLOW (GALLONS)

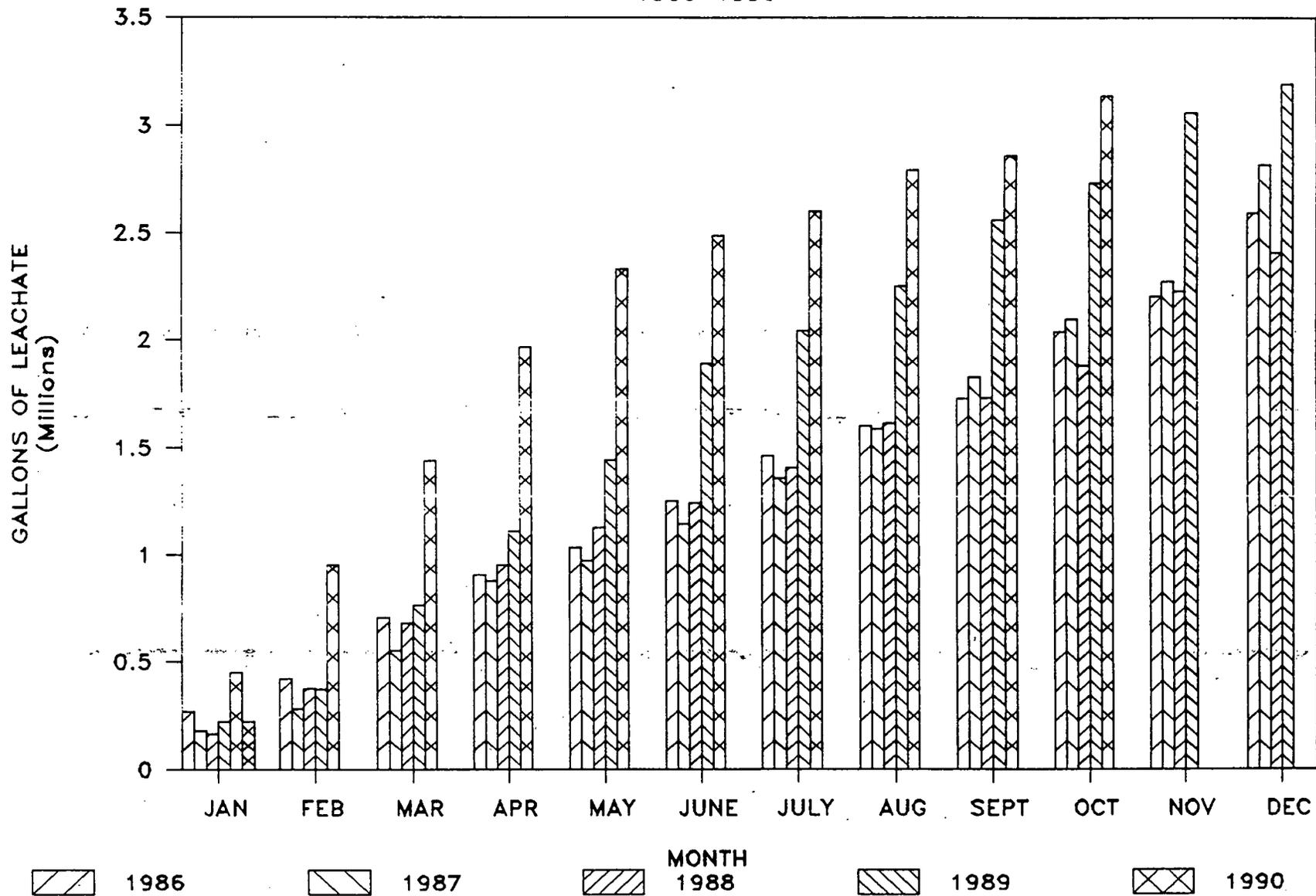
	1985		1986		1987		1988		1989		1990		
	GALLONS	OPERATING YEAR DAYS											
JAN	239150	8	268120	7	268120	181410	5	167590	4	222980	5	451670	8
FEB	451080	10	155320	4	155320	98780	4	208870	4	151230	4	503550	8
MAR	379970	9	283450	7	283450	273540	6	303260	6	393510	9	486720	9
APR	216730	6	354410	12	200870	327050	7	275560	5	342520	7	523390	9
MAY	125890	5	407210	11	129170	93850	3	174020	4	335450	7	366130	6
JUNE	103000	3	563530	15	218410	174200	4	115440	3	446670	8	156980	4
JULY	91490	3	623920	15	206915	209670	5	164610	4	155000	4	113930	3
AUG	83690	3	290240	9	141520	230600	5	207900	8	206070	5	191550	4
SEPT	92280	3	127320	4	127320	237810	5	115300	3	306020	6	67400	2
OCT	109020	4	308160	8	308160	271640	6	146490	4	173840	4	275280	5
NOV	411540	9	165350	5	165350	175320	5	349010	7	324480	6		
DEC	330420	9	388450	9	388450	543370	12	179480	4	132620	4		
TOTALS	2634260	72	3935480	106	2593055	2817240	67	2407530	56	3190390	69	3136600	57
6 MONTH TOTALS													
JAN-JUN	1515820	41	2032040	56	1255340	1148830	29	1244740	26	1892360	40	2488440	43
JUL-DEC	1118440	31	1903440	50	1337715	1668410	38	1162790	30	1298030	29	648160	14

1986SC - FACILITY FLOW DATA INCLUDES SEWER CLEANING
 1986 - FACILITY FLOW DATA DOES NOT INCLUDE SEWER CLEANING

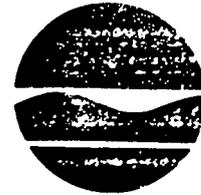
TOTAL LEACHATE PROCESSED AS OF 10/31/90: 39064120

CUMULATIVE VOLUME OF LEACHATE

1986-1990



New York State Department of Environmental Conservation
50 Wolf Road, Albany, New York 12233



Thomas C. Jorling
Commissioner

SEP 14 1990

Dear Resident:

In the 1989 Love Canal Annual Report, dated February 1990, we reported that 42 of 43 long-term monitoring wells showed no contamination. One well, No. 10225-C, showed 12.5 parts per billion (ppb) of the compound trichloroethene. This well was installed as a replacement for one eliminated by construction activities. Its location was suitable for immediate incorporation into the Long-Term Monitoring Program.

The 1989 Annual Report also included results from new wells installed to monitor the new Dewatering Containment Facility (DCF). The results indicated that some of these wells contained low levels of contamination. These wells are being evaluated for inclusion into the Long-Term Monitoring Program for the overall site.

As a result of the finding at well No. 10225-C, the New York State Department of Environmental Conservation (NYSDEC) has performed follow-up activities at this well. In response to requests, the NYSDEC is providing an interim report on its follow-up activities and laboratory findings at well No. 10225-C. The well was redeveloped, that is made functional for sampling purposes, with extensive pumping and sampling twice in 1990. Redevelopment and sampling were conducted on January 17-19, 1990 and again on May 9-11, 1990. Analytical work was performed by two separate laboratories. The only data from this well which has not previously been released was collected during these activities. Table 1 lists all the compounds which were targeted in the analyses, while Table 2 lists the compounds found. All non-target compounds that were found are also included in Table 2. For ease of reference, Table 2 includes all previous data from this well.

The NYSDEC requested that a consulting firm which is familiar with the Love Canal site and monitoring well program review the data in Table 2 and provide an independent assessment. The Department was particularly interested in the question of whether the data suggested an increasing trend in levels of contamination. The firm has responded with a letter dated July 30, 1990, which is available for inspection in the Public Information Office. The letter states that:

1. It is early to draw final conclusions concerning the presence of a trend.
2. The data should be used as a basis for comparing future data from this well to determine whether there is a trend.

NYSDEC's engineers and geologists agree with the consultant's comments and feel that the low levels of contamination in this well do not indicate a need for remedial action. However, the Department will continue to monitor this well and to evaluate it in the context of the overall Long-Term Monitoring Program.

The 1990 Love Canal Annual Report will contain a summary of long-term monitoring activities and findings and any further developments in connection with well No. 10225-C and the DCF wells. We hope to have the report available early in 1991.

Also, for your information enclosed is a "Frontier Avenue Sewer Fact Sheet" which discusses the work on Frontier Avenue which occurred recently.

If you have any questions or need additional information, please contact Mr. Michael Podd at the Love Canal Public Information Office at (716) 297-9637.

Sincerely,



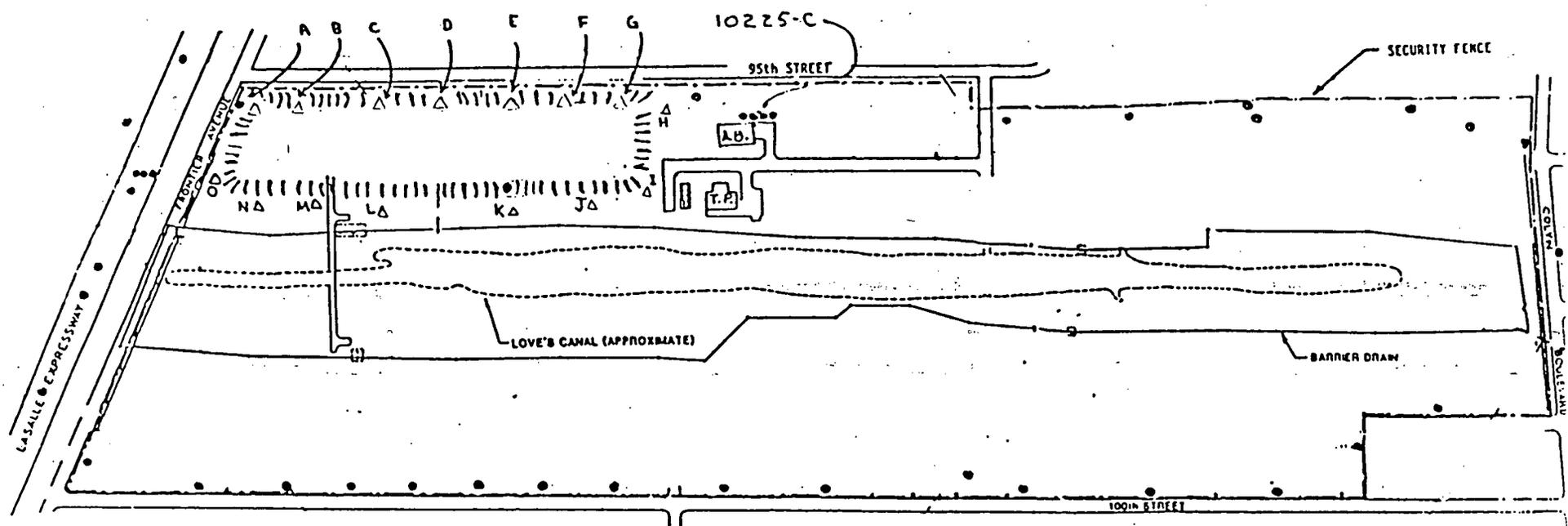
Michael J. O'Toole, Jr., P.E.
Director
Division of Hazardous Waste Remediation

Enclosure

GDF/kk/mj

bcc: M. O'Toole (2)
C. Goddard
E. Belmore
A. Rockmore
G. Rider
J. Rankin
C. Foster
E. Sullivan
Commissioner Jorling

LOVE CANAL SKETCH MAP



LEGEND

- LONG TERM MONITORING (LTM) WELLS - 1990 SAMPLING
- ▲ DCF MONITORING WELL CLUSTER

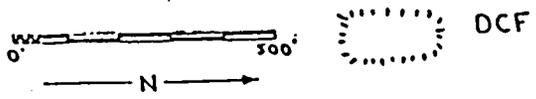


FIGURE 1

TABLE 1: COMPOUNDS TARGETED IN LOVE CANAL ANALYSES

TCL Organic Compounds

Volatile Organics

Chloromethane	2-Butanone	trans-1,3-Dichloropropene
Bromomethane	1,1,1-Trichloroethane	Bromofom
Vinyl Chloride	Carbon Tetrachloride	4-Methyl-2-Pentanone
Methylene Chloride	Vinyl Acetate	2-Hexanone
Chloromethane	Bromodichloromethane	Tetrachloroethene
Acetone	1,2-dichloropropane	1,1,2,2-Tetrachloroethane
Carbon Disulfide	cis-1,3-dichloropropene	Toluene
1,1-Dichloroethene	Trichloroethene	Chlorobenzene
1,1-Dichloroethane	Dibromochloromethane	Ethylbenzene
1,2-Dichloroethene	1,1,2-Trichloroethane	Styrene
Chloroform	Benzene	Xylene (total)
1,2-Dichloroethane		

Semi-Volatile Organics

Phenol	Hexachlorobutadiene	N-Nitrosodiphenylamine
bis(chloroethyl)ether	4-Chloro-3-methylphenol	4-Bromophenyl-phenylether
2-Chlorophenol	2-Methylnaphthalene	Hexachlorobenzene
1,3-Dichlorobenzene	Hexachlorocyclopentadiene	Pentachlorophenol
1,4-Dichlorobenzene	2,4,6-Trichlorophenol	Phenanthrene
Benzyl alcohol	2,4,5-Trichlorophenol	Anthracene
1,2-Dichlorobenzene	2-Chloronaphthalene	Di-n-butylphthalate
2-Methylphenol	2-Nitroaniline	Fluoranthene
bis(chloroisopropyl)ether	Diethylphthalate	Pyrene
4-Methylphenol	Acenaphthalene	Butylbenzylphthalate
N-nitroso dipropylamine	2,6-Dinitrotoluene	3,3'-dichlorobenzidine
Hexachloroethane	3-Nitroaniline	Benzo(a)anthracene
Nitrobenzene	Acenaphthene	Chrysene
Isophorone	2,4-Dinitrophenol	bis(2-ethylhexyl)phthalate
2-Nitrophenol	4-Nitrophenol	Di-n-Octylphthalate
2,4-Diethylphenol	Dibenzofuran	Benzo(b)fluoranthene
Benzoic acid	2,4-Dinitrotoluene	Benzo(k)fluoranthene
bis(chloroethoxy)methane	Diethylphthalate	Benzo(a)pyrene
2,4-Dichlorophenol	4-Chlorophenyl-phenylether	Indeno(1,2,3-cd)pyrene
1,2,4-Trichlorobenzene	Fluorene	Dibenz(a,h)anthracene
Naphthalene	4-Nitroaniline	Benzo(g,h,i)perylene
4-Chloroaniline	4,6-Dinitro-2-methylphenol	

Pesticides

alpha-BHC	4,4'-DDE	gamma-Chlordane
beta-BHC	Endrin	Toxaphene
delta-BHC	Endosulfan-II	Aroclor-1016
gamma-BHC (Lindane)	4,4'-DDD	Aroclor-1221
Heptachlor	Endosulfan sulfate	Aroclor-1232
Aldrin	4,4'-DDT	Aroclor-1242
Heptachlor-epoxide	Methoxychlor	Aroclor-1248
Endosulfan-I	Endrin ketone	Aroclor-1254
Dieldrin	alpha-Chlordane	Aroclor-1260

TABLE 2: Love canal Monitoring Well 10225-C

WELL NUMBER 10225-C	02-Aug-89	07-Sep-89	17-Jan-90	10-May-90	11-May-90	10-May-90
DATE:	RECRA	DEC	RECRA	RECRA	RECRA	DEC
LAB:	RECRA	DEC	RECRA	RECRA	RECRA	DEC
SAMPLE FROM TOF or BOTTOM OF WELL:	not known	not known	BOTTOM	BOTTOM	BOTTOM	BOTTOM
Volatiles:	*	*	*	*	*	*
Acetone	ND	ND	ND	ND	ND	ND
Benzene	ND	ND	4.4 J	5.0	1.0 J	3.5 B
Butanone	ND	ND	ND	ND	ND	ND
Chlorobenzene	ND	ND	6.0 J	2.0 J	2.0 J	2.5 J
Chlorotoluene	ND	ND	ND	6 J	8 J	17
Chlorotrifluorotoluene	ND	ND	ND	13 J	8 J	6 J
Dichloroethene	ND	ND	1.6 J	ND	ND	ND
Ethylbenzene	ND	ND	7.2 J	2.0 J	ND	ND
Methylene Chloride	ND	ND	ND	2 BJ	ND	ND
Toluene	ND	ND	6.0 J	2.0 J	0.6 J	2.0 J
Trichloroethene	ND	12.5	10.0	11.0	16.0 B	18.0 B
Tetrachloroethene	ND	ND	ND	0.6 J	2.0 J	2.5 J
Xylene	ND	ND	5.0 J	3.0 J	ND	ND
Semi-volatiles:	*	*	*	*	*	*
bis-2 Ethyl hexylphthalate	ND	ND	ND	NA	NA	ND
Trichlorobenzene	ND	ND	1.9 J	NA	NA	ND
Pesticides:	*	*	*	*	*	*
Aldrin	ND	ND	ND	NA	NA	ND
A-BHC	0.012	NA	0.033	NA	0.062	NA
B-BHC	ND	NA	0.023	NA	ND	NA
G-BHC	ND	NA	0.01	NA	0.02 J	NA
Dieldrin	ND	NA	ND	NA	ND	NA
Heptachlor	ND	NA	0.023	NA	ND	NA

* In this column, B = compound also found in blank; J = quantity found is below detection limit.

TABLE 2: Love canal Monitoring Well 10225-C

WELL NUMBER 10225-C

DATE: LAB:	19-Jan-90 RECRA TOF	19-Jan-90 DEC TOF	10-May-90 DEC TOF	10-May-90 RECRA TOF	11-May-90 RECRA TOF
Acetone	ND	ND	ND	ND	31.0
Benzene	ND	ND	2.0 B	ND	ND
Butanone	ND	ND	ND	ND	18.0
Chlorobenzene	6.0 J	ND	ND	ND	1.0 J
Chlorotoluene	ND	1.0 J	4 J	ND	ND
Chlorotrifluorotoluene	ND	ND	2.5 J	6 J	ND
Dichloroethene	ND	ND	1.5 J	ND	ND
Ethylbenzene	ND	ND	ND	ND	ND
Methylene Chloride	ND	ND	ND	2 BJ	ND
Toluene	ND	1.0 J	ND	ND	ND
Trichloroethene	4.8	5.0	8.0 B	8.0	12.0 B
Tetrachloroethene	ND	ND	ND	ND	0.8 J
Xylene	ND	ND	ND	ND	ND
Semi-volatiles:					
bis-2 Ethyl hexylphthalate	2.5 J	ND	NA	NA	NA
Trichlorobenzene	1.9	ND	NA	NA	NA
Pesticides:					
Aldrin	0.01 J	NA	NA	NA	NA
A-BHC	0.079	NA	NA	NA	NA
B-BHC	0.02	NA	NA	NA	NA
G-BHC	0.039	NA	NA	NA	NA
Dieldrin	ND	NA	NA	NA	NA
Heptachlor	0.048	NA	NA	NA	NA

* In this column, B = compound also found in blank; J = quantity found is below detection limit

New York State Department of Environmental Conservation
New York State Department of Health

Fact Sheet

Love Canal Site
Frontier Avenue Storm Sewer

The storm sewer located on Frontier Avenue has been the subject of several investigations and actions since contaminants were detected migrating from the Love Canal in the late 1970's. Frontier Avenue is the street which forms the southern boundary of the Love Canal site. Historically, Love Canal contaminants were found in the bedding stone under this sewer at different times and different locations during various remedial contracts. Cutoff walls have been installed to eliminate the potential for contaminant migration along the Frontier Avenue storm sewer from the Love Canal. In the spring of 1988 chemicals were identified in samples of water from the storm sewer and reported at the June 21, 1988 Technical Review Committee (TRC) meeting. This led to a decision to install an additional cut off wall and abandon the storm sewer in order to isolate the chemicals known to exist in the sewer bedding in this area. The scope of this work was first reported at the May 17, 1989 TRC meeting. The attached chronology shows the various remedial actions associated with the Frontier Avenue storm sewer.

The cutoff wall was to be installed adjacent to the west side of storm sewer manhole no. 412 (see Figure 1), as part of a recent contract, to further isolate any potential contaminant migration along the pipe bedding. On August 6, 1990, during the excavation for the cutoff wall, contamination was discovered in the bedding stone of the storm sewer. As a result of this discovery, additional test pit excavations along the pipe east of manhole 412 and south of manhole 406 were initiated on August 21 and 22, 1990. Four test pits were dug into the pipe bedding of the storm sewer with three out of four pits identifying the presence of contamination in the bedding stone. Samples were collected of the contaminated bedding material, the groundwater in the bedding, as well as the water inside manhole 406. These samples will be analyzed for the full range of volatile and semi-volatile compounds. The attached Figure 1 illustrates the location of the contamination and storm sewers in the area.

The DEC plans further investigations to determine the extent of the contaminated bedding and will implement an appropriate remedial action. In addition to the above, the following questions and answers have been developed to further explain the current situation:

1. Q: Does the discovery of additional contamination in the Frontier Avenue storm sewer bedding mean that Love Canal is leaking?
A: No. Before the leachate collection system was installed, the stone bedding around the Frontier Avenue Storm sewer created a pathway for chemicals to migrate from the Canal faster than they would through nearby natural soils, which are denser. The presence of

contamination in the bedding is due to off-site migration before the leachate collection system was constructed. In 1979, a clay plug was placed around the sewer to prevent migration. In 1984, a concrete cutoff wall was installed severing the bedding at a second location. Apparently, the contaminants had previously passed the areas plugged in 1979 and 1984 and were still present in the sewer bedding.

2. Q: How do you know that other sewers in the Love Canal Area do not have contaminated bedding?

A: During the installation of utility cutoff walls at seven locations around the Canal, contamination was only encountered in the pipe bedding at the Frontier Avenue location. Furthermore, studies of the sewer system performed in 1985 included borings into the pipe bedding which did not identify the presence of Love Canal contaminants. What these studies did discover was that unlike Frontier Avenue, most of the sewers are bedded directly in the native clay rather than stone. Therefore, for the majority of the sewers in the Love Canal area there is no bedding stone which could serve as a reservoir for chemicals and pathway for movement, as was the case on Frontier Avenue.

3. Q: Were the chemicals that were discovered earlier in the storm sewer bedding removed?

A: No. They were contained in place eight feet below the ground surface and could no longer migrate, therefore, it was not considered to be a problem. The chemicals encountered in the most recent test pits are the result of migration prior to 1979 when the bedding was cut off from its past direct connection to Love Canal.

4. Q: When will the investigation of the extent of the contaminated storm sewer bedding be started and completed? What will the investigation consist of?

A: The investigation will begin in the fall and should take a few months to complete. The investigation will consist of the excavation of test pits into the bedding stone on all sewer lines adjacent to the area where contamination has been identified. Test pits will be excavated on each sewer line in the area (i.e. storm sewer on 100th Street north of Frontier). If contaminants are present another pit further along the line will be dug until clean material is encountered. These excavations are intended to establish reliable limits of the area impacted by the past migration of contamination and that area requiring remediation.

5. Q: What is a possible solution to this problem?

A: It appears that the contamination is limited to the sewer bedding in an area about eight feet below the ground surface. Several engineering solutions exist, from excavation of the material and reconstruction of the storm sewer to the installation of a lining in the sewer with the contamination being isolated and remaining in place. Depending upon the extent of the past migration it is likely that some combination of these two technologies will be utilized.

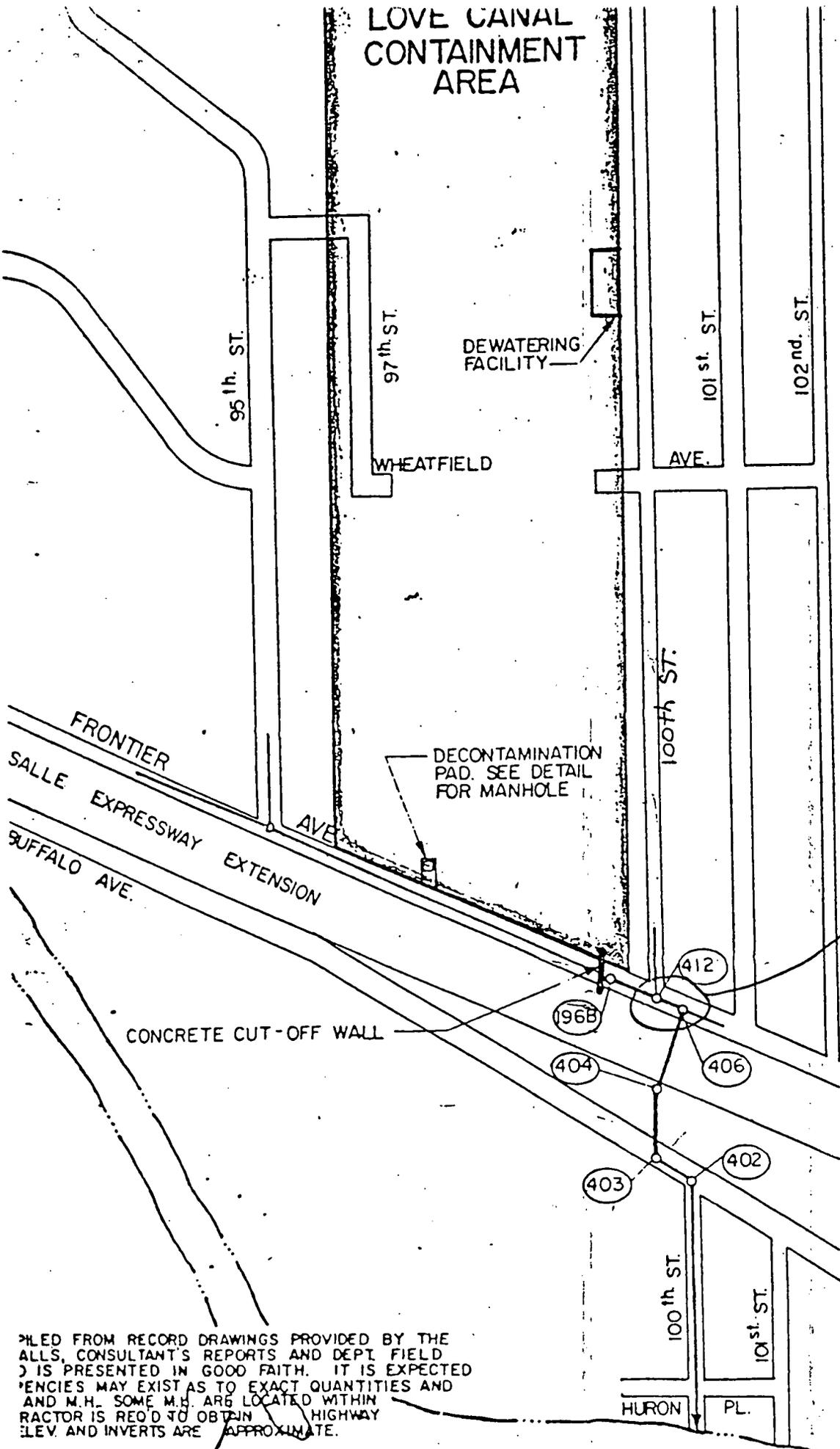
6. Q: Will you monitor the effectiveness of the selected remedy?
- A: Yes. The sewers will continue to be monitored as part of the Long Term Monitoring of the Love Canal.
7. Q: How does the monitoring system work?
- A: As part of the Long Term Monitoring program for the Love Canal, in addition to sampling wells, samples are collected from the storm and sanitary sewers in the area. These sewers are monitored as a check on the effectiveness of the sewer cleaning program. The first indication of the impact of the chemistry in the sewer bedding on the storm sewer was the result of this sampling.
8. Q: Are any chemicals being discharged by the storm sewer into the Niagara River?
- A: At this time, it appears that some small quantities of chemicals may be entering the storm sewer which discharges to the Niagara River.
9. Q: Does this finding of contamination impact the Habitability Decision?
- A: No. The habitability criteria, upon which Dr. Axelrod's decision was based, accounted for remedial programs that were underway at the time to address known migration of contaminants from the Love Canal. When the criteria were developed, the habitability decision was to await completion of the storm and sanitary sewer cleaning and development of plans to remedy other known areas of TCDD contamination (the creeks). The inside of the sewers were cleaned in 1987. A localized area of contamination outside of the sewer was noted during other remedial activities. At the time of the habitability decision, the presence of this contamination was known and the clean-up strategy was developed.

Another criterion for the decision was that the Love Canal be contained. These new findings are consistent with previous information that was available at the time of the decision and do not demonstrate that Love Canal containment has been breached. Rather, the contaminants are believed to have moved from the canal before installation of the drain collection system.

Finally, the material is not located close to any current or planned residences. Remedial work can be carried out without affecting residents.

LOVE CANAL CONTAINMENT AREA

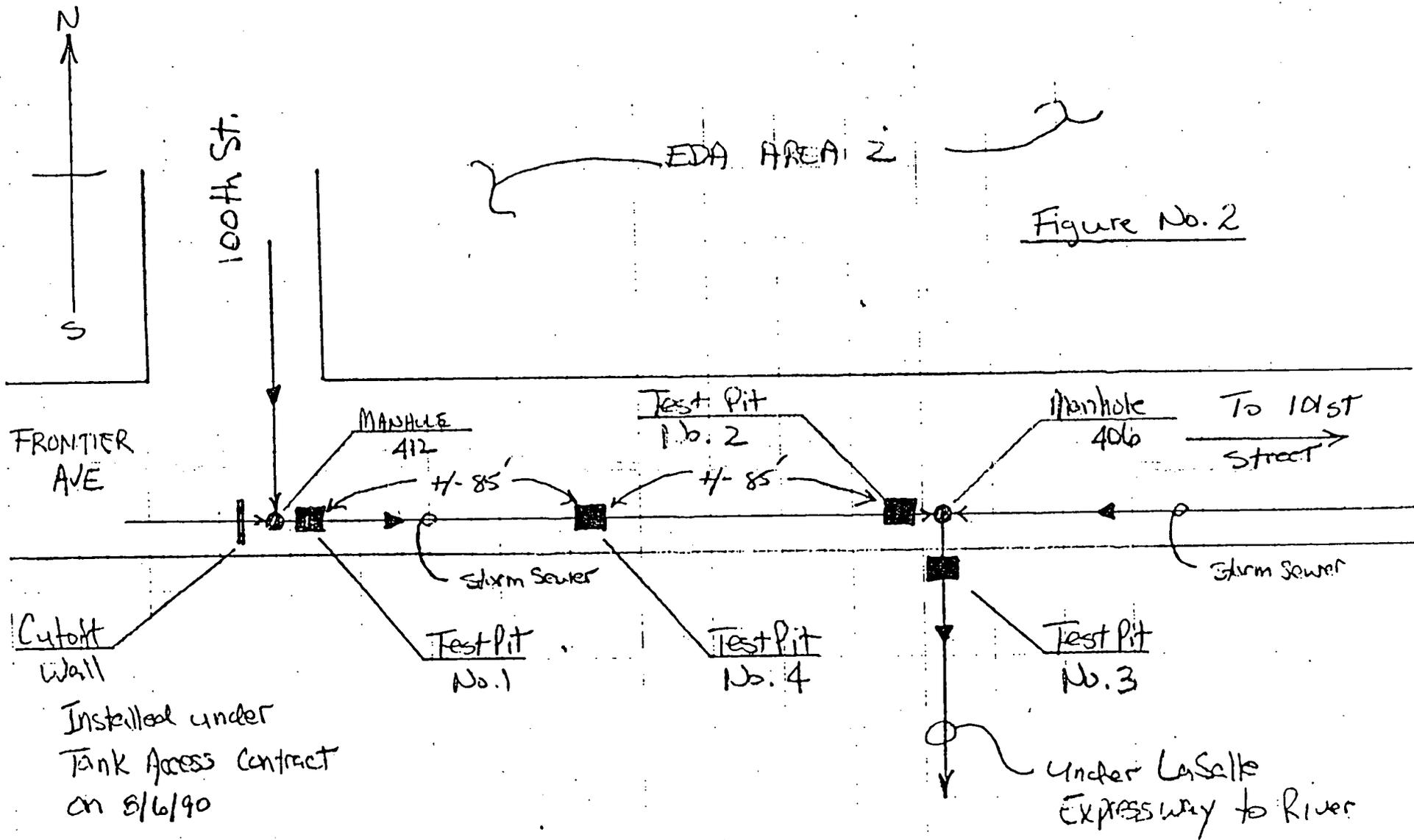
Figure No. 1



see figure
no. 2

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FILED FROM RECORD DRAWINGS PROVIDED BY THE
ALLS, CONSULTANT'S REPORTS AND DEPT. FIELD
IS PRESENTED IN GOOD FAITH. IT IS EXPECTED
AGENCIES MAY EXIST AS TO EXACT QUANTITIES AND
AND M.H. SOME M.H. ARE LOCATED WITHIN
TRACTOR IS REQ'D TO OBTAIN HIGHWAY
ELEV. AND INVERTS ARE APPROXIMATE.



ATTACHMENT 1

Actions which have involved the storm sewer on Frontier Avenue:

- 1978 - South sector barrier drain installed which did not extend into Frontier Avenue.
- 1979 - South sector barrier drain extended under North/Central sector contact when waste deposition found to extend into Frontier Avenue. Clay bedding cutoff walls installed immediately outside locations where Frontier Avenue storm sewer passed over/through the barrier drain.
- 1984 - Concrete cutoff walls installed across Frontier Avenue. Sewer passed through wall. Love Canal contaminants discovered in bedding outside wall on the eastern side.
- 1986 - E.C. Jordan completed 3 borings in bedding east of the east concrete cutoff wall. Boring immediately east of the wall confirmed presence of chemicals, however no chemistry was identified by two additional borings located approximately 100' and 200' east of the first boring.
- 1985 to
1986 - Sewer investigations confirm chemistry in sewers.
- 1986 - Initial EDA storm and sanitary sewer cleaning project. Did not clean Frontier sewers since potential for contamination by infiltration from canal still existed.
- Spring
1987 - Sewer modification contract abandoned sewer inside east concrete cutoff wall. Confirmed chemicals outside wall when catch basin installed.
- Fall
1987 - Cleaned sewer under separate Frontier Avenue sewer cleaning project.
- Spring
1988 - Sampling as part of Long Term Monitoring program showed chemistry. Catch basin installed was found to have chemical odors. After investigation, determined chemistry in bedding was infiltrating line. Proposed additional cutoff wall at manhole 412 and abandoning of storm sewer west of that location. Contaminants in bedding believed to be limited to this area based on 1986 borings.
- 1990 - New cutoff wall installed and additional chemistry discovered. Subsequent test pits found bedding contaminated to at least south side of MH 406.