



New York State Department of Environmental Conservation

MEMORANDUM

TO: Jerry Rider
FROM: Will Welling *Will Welling*
SUBJECT: Love Canal, Site I.D.No. 932020
DATE: March 24, 1995

THE LONG-TERM MONITORING PROGRAM

The Long Term Monitoring Program examines hydrological and chemical data from the Love Canal area in order to evaluate the overall effectiveness of the containment system. In 1994, one round of samples was collected from 34 long term monitoring wells that surround the site. Approximately bi-monthly groundwater elevations are taken in six groups of piezometers located around the site.

The basic conclusion from the 1994 data is that it is similar to previous data gathered from 1989 to 1993, and that the barrier drain is functioning as designed.

This conclusion is supported by both the hydrological and chemical evidence.

Results of Groundwater Monitoring**Hydrology**

Readings were taken on six dates during the year from the six series of piezometers that were strategically placed to monitor groundwater elevations along varying cross-sections of the Canal. Figure 1 identifies these piezometers and shows the locations of monitoring wells sampled for chemical parameters in 1994. Figure 2 is a cross-sectional flow diagram representing groundwater conditions in April 1994 at the 1170 series of piezometers at right angles to the barrier drain. Groundwater flow is toward the leachate collection system. The vertical scale on the cross-section is exaggerated 5 times over the horizontal scale, to aid in interpretation.

No abnormal groundwater conditions were noted during the hydrologic sampling events of 1994 compared to 1993. The barrier drain is capturing all leachate migrating horizontally outward from the Canal, as well as pulling groundwater, which is outside the barrier drain, back toward the drain. Vertical groundwater migration is limited by layers of extremely low permeability clay and glacial till, which underlays all of the site.



Love Canal
Long-Term Monitoring
1994 Sampling

Wells Sampled:

- 8106
- 3257
- 7132
- 7130
- 7205
- 7125
- 7115
- 10150
- 10225A
- 10225B
- 10225C
- 5222
- 10135
- 10178A
- 10178B
- 10278
- 10272
- 10270
- 10215
- 10210B
- 10210C
- 10105
- 10205
- 9210
- 6209
- 9130
- 9122
- 9118
- 9113
- 9205
- 9105
- 8125
- 8210
- 8115

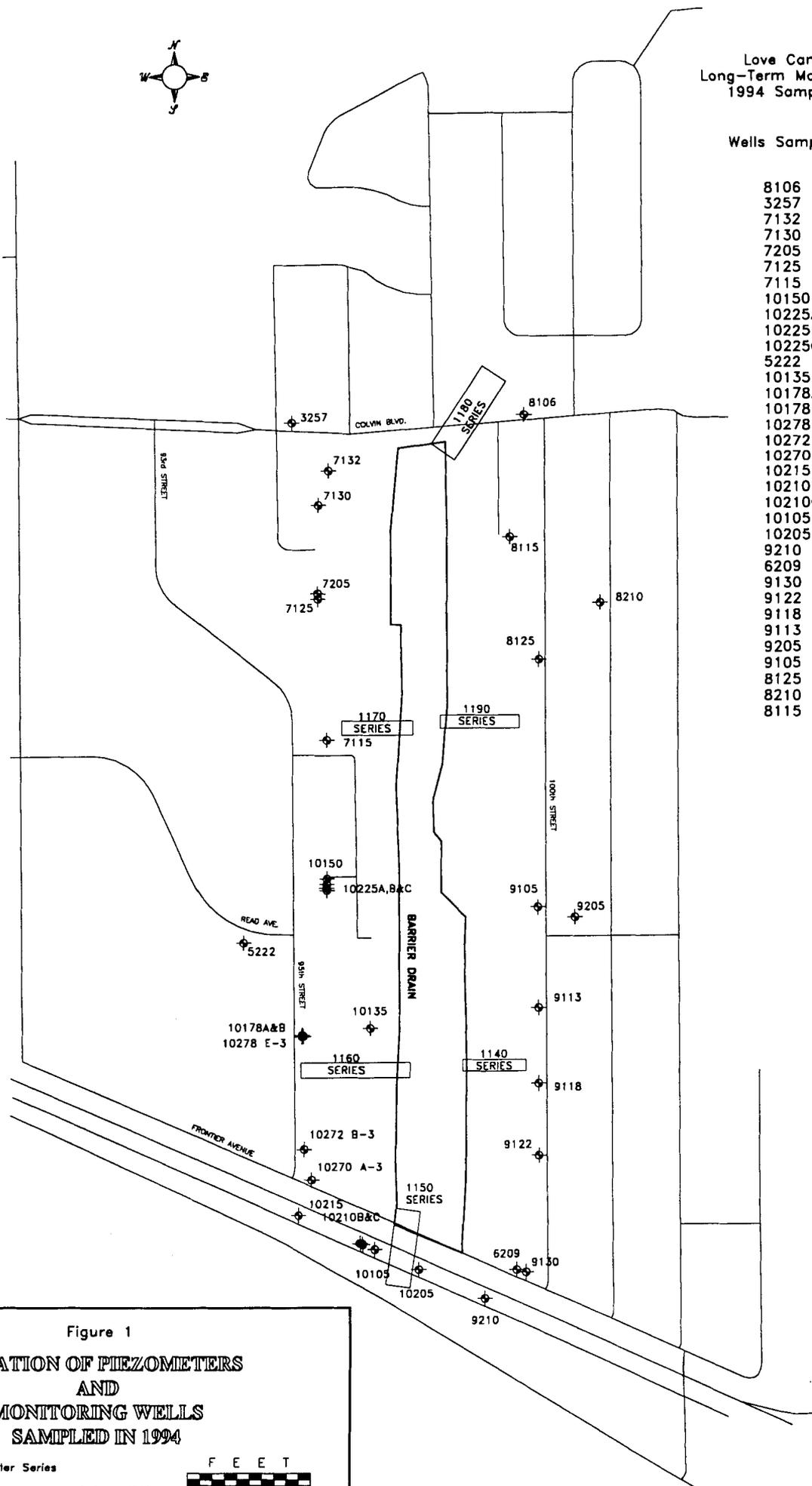


Figure 1
LOCATION OF PIEZOMETERS
AND
MONITORING WELLS
SAMPLED IN 1994

1170
SERIES

Piezometer Series

F E E T

5222

Monitoring Well Sampled in 1994

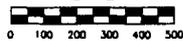
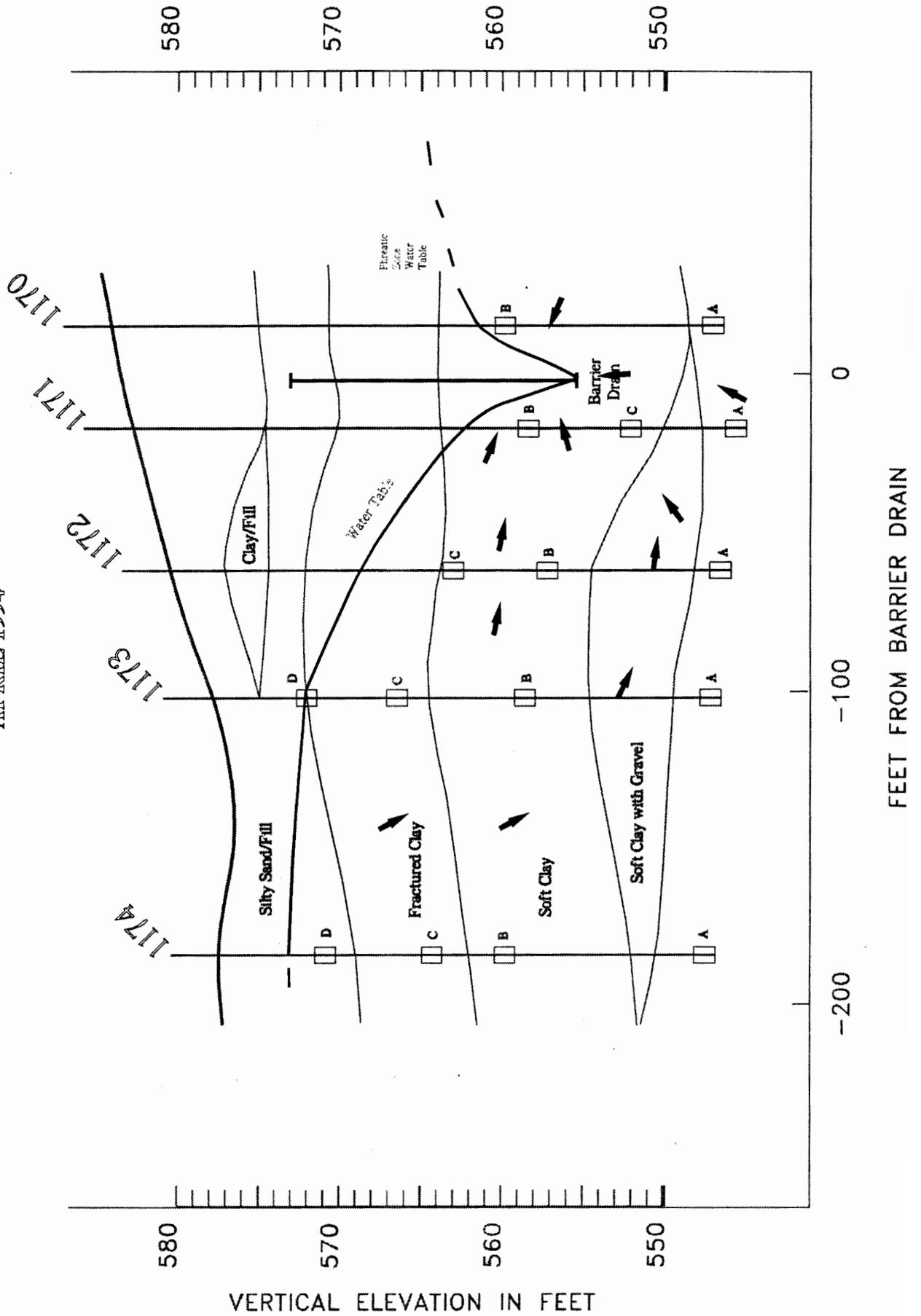


Figure 2

LOVE CANAL LONG-TERM MONITORING
FLOW DIAGRAM
APRIL 1994



Results of Groundwater Monitoring Chemistry

In addition to the piezometers, the Love Canal site has a system of overburden and bedrock wells designed primarily for monitoring the chemical quality of groundwater on both sides of the barrier drain. These wells are known as long-term monitoring wells (LTM wells) because they are located in a pattern designed to optimize their usefulness in detecting any failure that might occur in the effectiveness of the barrier drain system over time. In 1993 we began a plan of sampling half of the overburden wells around the perimeter of the site every two years. Half of the LTM wells that are screened in the overburden were sampled in 1993 and the other half were sampled in 1994. Bedrock wells are sampled every year. During 1994, samples were collected from 34 wells and 18 blanks were submitted for quality control purposes. Figure 1 indicates the location of the wells.

In 1994 the New York State Department of Health (DOH) provided analytical services for the long-term monitoring activities at the Love Canal site. Appendix A (attached) is a listing of analytical results. As in previous years, the analytical results were characterized by a predominance of non-detect ("ND") values. When the laboratory has any indication that a compound is definitely present in a sample, that fact is reported. Each time a laboratory analysis is performed there is a level for each compound called the "detection limit." If a compound is present below this level the precise quantity of the compound cannot be accurately determined. In such a case the compound is said to be "present at or below the detection limit" and the result is reported with a "J" qualifier. This reporting protocol was followed by the New York State Department of Health for the 1994 analyses.

In 1994 tentatively identified compounds were not evaluated but they are listed in Appendix A. In 1994 more tentatively identified compounds were detected than in 1993. 152 TICs were listed in 1994 compared to 61 TICs in 1993.

As in previous years, many of the samples showed relatively low levels of phthalates, particularly bis-(2-Ethylhexyl)Phthalate. It was also present in many of the associated blanks. Phthalates are common constituents of plastics used in sampling and laboratory tubing.

Each instance where contaminants were detected at or above the laboratory detection limit is discussed below. The relatively low number of contaminants detected and the fact that the levels detected are close to the detection limits does not indicate a need for action at this time. However, future results will continue to be tracked with special attention to any evidence of a change in groundwater quality.

Well-by-Well Summaries

The next section of this document describes the wells exhibiting organic chemical contamination at concentrations which are significantly greater than detection levels. Instances of laboratory blank contamination and its impact upon sampling data for an associated round of

samples has been carefully examined by a chemist from Investigation Support Section. This documentation is included as Appendix B. Chemical compounds detected in 1994 are listed immediately after the well number to which they pertain. The units for values presented are micrograms per liter which is analogous to parts per billion. All analyses were performed by the New York State Department of Health.

DATA QUALIFIERS FOR RESULTS WHICH FOLLOW

"P" indicates that there is a greater than 25% difference for detected concentrations between the two GC columns in the pesticide/Aroclor target analyte. The lower of the two values is reported.

"E" indicates that the concentration for this compound exceeded the calibration range of the GC/MS instrument for that specific analysis.

"B" indicates that the compound was also found to be present in the laboratory blank for the analytical run. Data before 1993 has not been validated to determine whether such contamination is laboratory related. In 1993 "B" flagged results which are attributable to lab contamination are not presented in the well-by-well listings.

"C" indicates that the value was confirmed either by mass spectrographic analysis or re-examination of the analytical data.

Well #5222 (DOH analysis)

bis(2-ethylhexyl)phthalate 22

Well #9105 (DOH analysis)

bis(2-ethylhexyl)phthalate 160

Well #9113 (DOH analysis)

bis(2-ethylhexyl)phthalate 23

Well #9122 (DOH analysis)

bis(2-ethylhexyl)phthalate 81

Well #10105 (DOH analysis)

bis(2-ethylhexyl)phthalate 11

Well #10115 (DOH analysis)

bis(2-ethylhexyl)phthalate 12

Well #10205 (DOH analysis)

bis(2-ethylhexyl)phthalate 13

Well #10210B (DOH analysis)

bis(2-ethylhexyl)phthalate 12

Well #10210C (DOH analysis)

acetone 19

Well #10135 (DOH analysis)

acetone	100
1,4-dichlorobenzene	91
1,2,4-trichlorobenzene	87
2,4-dichlorophenol	610
alpha-BHC	24PC
beta & gamma-BHC (sum of isomers)	24.4CE
delta-BHC	7.5CE
endrin	0.15P
vinyl chloride	61
1,2-dichloroethene (total)	650E
chloroform	120
1,1,1-trichloroethane	14
1,1,2,2-tetrachloroethane	51
trichloroethene	140
tetrachloroethene	32
phenol	91
benzene	6000E
ethylbenzene	12
chlorobenzene	2500
toluene	23000

As noted in previous reports, Well #10135 is the only well in the Long Term Monitoring network intentionally installed into an area of known contamination. It monitors groundwater close to the leachate collection system. This well has consistently shown elevated levels of chemical compounds. The results from well 10135 are used as a baseline for comparison with findings from the other monitoring wells. If the Canal were to leak, similar compounds at similar levels would begin to be detected in other wells.

Independent hydraulic evidence indicates that Well #10135 is within the hydraulic influence of the barrier drain system, thus groundwater in the vicinity is likely to be flowing back toward the leachate collection system. The well is approximately 85 feet outside the barrier drain, which is closer to the drain than other long term monitoring wells. (Refer to Figure 1 for its location).

Well #10278 (DOH analysis)

Acetone

33

Summary of 1994 Results:

- 34 wells were sampled along with 18 blanks.
- A small concentration of acetone was present in samples from wells 10210C and 10278.
- Bis(2-ethylhexyl)phthalate was present in samples from eight wells. Phthalates are common chemical ingredients in plastics and may have been introduced into the sample through contact with plastic tubing and gloves.
- Significant amounts of twenty chemical compounds were found in the sample from well 10135. From year to year, this well is expected to be contaminated since it is within the known contaminated zone. Well 10135 is sampled as a comparison well.
- Groundwater contamination is not migrating from Love Canal based upon the 1994 hydrologic and chemical data.

cc:w/att. B. Sadowski
G.D. Foster

cc:w/o att. E. Barcomb

bcc: w/att. M. Moore
W. Welling
B. Loreda
File

1984 LOVE CANAL LONG TERM MONITORING DATA

J-BELOW DETECTION LIMITS B-FOUND IN BLANK	DATE SAMPLED	WELL#	PID UNITCODE
Cyclohexane, 1-ethyl-2-methyl (RT=3.76)	06/08/94	3257	7 JUN
Cyclohexane, 1-methyl-2-prop (RT=3.82)	06/08/94	5222	7 JUN
4-nitro-3-one, 2,6-dimethyl (RT=3.82)	06/08/94	6208	6 JUN
5-norborn-4-one (RT=3.83)	06/08/94	7115	10 JUN
Benzene, 1-ethyl-2-methyl- (RT=3.89)	06/08/94	7125	11 JUN
Trialkylamine, dimethyl (RT=3.98)	06/08/94	7130	9 JUN
Benzene, 1,2,4-trimethyl- (RT=4.32)	06/08/94	7132	10 JUN
Unknown, C9H18O2 (RT=4.51)	06/08/94	7205	12 JUN
2,4-hexadiene, 3,4-dimethyl- (RT=4.72)	06/08/94	8106	11 JUN
1-hexanol, 2-ethyl- (RT=4.84)	06/08/94	8115	7 JUN
2,3-dimethyl-2-cyclopentene-1- (RT=4.83)	06/08/94	8125	10 JUN
Unknown hydrocarbon (RT=4.98)	06/08/94	8210	8 JUN
3-ethylcyclopent-2-en-1-one (RT=5.31)	06/08/94	8115	7 JUN
Ethanol, 1,2-di-2-hydroxy-2 (RT=5.64)	06/08/94	8125	2 JUN
Phosphoric acid, triethyl ester (RT=5.72)	06/08/94	8125	2 JUN
Hexanoic acid, 2-ethyl- (RT=5.80)	06/08/94	8125	2 JUN
Benzoic acid (RT=6.12)	06/08/94	8125	2 JUN
Bicyclo[3.3.0]oct-1(2)-en-3- (RT=6.30)	06/08/94	8125	2 JUN
1-methyl-2-cyano-2-piperidol (RT=6.30)	06/08/94	8125	2 JUN
Unknown, C10H20 (RT=6.41)	06/08/94	8125	2 JUN
Unknown, C9H18O (RT=6.58)	06/08/94	8125	2 JUN
Dimethyl tetraethylsilane (RT=6.62)	06/08/94	8125	2 JUN
1-cyclopent-1-yl-propane (RT=6.66)	06/08/94	8125	2 JUN
2,6-octadiene, 2,4-dimethyl- (RT=6.71)	06/08/94	8125	2 JUN
1-cyclobutyl-1-yl-butane-1- (RT=6.74)	06/08/94	8125	2 JUN
Benzoic acid (RT=6.82)	06/08/94	8125	2 JUN
Benzeneacetic acid (RT=6.95)	06/08/94	8125	2 JUN
2-uranic acid, alpha- (RT=7.02)	06/08/94	8125	2 JUN
Noronic acid (RT=7.03)	06/08/94	8125	2 JUN
4H-cyclopentadienylphenanthrene (RT=7.87)	06/08/94	8125	2 JUN
Benzaldehyde, 4-hydroxy- (RT=7.89)	06/08/94	8125	2 JUN
Benzaldehyde, 4-hydroxy-3-me (RT=8.32)	06/08/94	8125	2 JUN
Unknown hydrocarbon, B+71, MW (RT=8.67)	06/08/94	8125	2 JUN
Unknown hydrocarbon (RT=8.85)	06/08/94	8125	2 JUN
Unknown hydrocarbon, B+71, MW (RT=9.32)	06/08/94	8125	2 JUN
Unknown hydrocarbon, B+71 (RT=9.40)	06/08/94	8125	2 JUN
Dodecanoic acid (RT=9.68)	06/08/94	8125	2 JUN
Benzoic acid, 1-methyl-2-(br (RT=9.73)	06/08/94	8125	2 JUN
1,4-butanediol, monobenzoate (RT=9.90)	06/08/94	8125	2 JUN
1,4-butanediol, monobenzoate (RT=10.03)	06/08/94	8125	2 JUN
Unknown hydrocarbon, B+71 (RT=10.13)	06/08/94	8125	2 JUN
Unknown hydrocarbon, B+71 (RT=10.19)	06/08/94	8125	2 JUN
Unknown hydrocarbon, B+71 (RT=10.27)	06/08/94	8125	2 JUN
1,3-propanediol, monobenzoate (RT=11.12)	06/08/94	8125	2 JUN
Benzoic acid, 1-methyl-2-ethyl (RT=11.39)	06/08/94	8125	2 JUN
1,4-butanediol, monobenzoate (RT=11.42)	06/08/94	8125	2 JUN
1,4-butanediol, monobenzoate (RT=11.52)	06/08/94	8125	2 JUN
Unknown benzoic acid ester (RT=11.55)	06/08/94	8125	2 JUN
Tetradecanoic acid (RT=11.61)	06/08/94	8125	2 JUN
Isopropyl myristate (RT=12.25)	06/08/94	8125	2 JUN
1-hexadecanoic acid (RT=12.73)	06/08/94	8125	2 JUN
3,9-diazatricyclo[7.3.0.0]heptane (RT=13.38)	06/08/94	8125	2 JUN
Hexadecanoic acid (RT=13.45)	06/08/94	8125	2 JUN
Sulfur, mol. (S8) (RT=14.35)	06/08/94	8125	2 JUN
1,4-dibutylbutane-related (RT=14.43)	06/08/94	8125	2 JUN
1,4-dibutylbutane-related (RT=14.48)	06/08/94	8125	2 JUN
1-octadecanoic acid (RT=14.54)	06/08/94	8125	2 JUN
Unknown (RT=14.54)	06/08/94	8125	2 JUN
1-propanone, 1-(2-methyl-1-phenyl)-related (RT=14.57)	06/08/94	8125	2 JUN
Unknown CHO (RT=14.59)	06/08/94	8125	2 JUN
Benzoic acid, 4-benzoyl- (RT=14.92)	06/08/94	8125	2 JUN
1,4-dibutylbutane-related (RT=15.17)	06/08/94	8125	2 JUN
Octadecanoic acid (RT=15.29)	06/08/94	8125	2 JUN
Hexadecanoic acid, butyl ester (RT=15.30)	06/08/94	8125	2 JUN
Phenol, 4,4-(1-methyl-2-ethyl) (RT=15.35)	06/08/94	8125	2 JUN
Octadecanoic acid, butyl ester (RT=16.82)	06/08/94	8125	2 JUN
Hexadecanoic acid, diethyl ester (RT=16.91)	06/08/94	8125	2 JUN
Tetradecanoic acid (RT=16.93)	06/08/94	8125	2 JUN
derivative of 1,2-propanediol, mo (RT=17.41)	06/08/94	8125	2 JUN
derivative of 1,2-propanediol, mo (RT=17.50)	06/08/94	8125	2 JUN
derivative of 1,2-propanediol, mo (RT=17.59)	06/08/94	8125	2 JUN
Perfluorocyclohexane (RT=17.64)	06/08/94	8125	2 JUN
Phosphine oxide, diphenyl- (RT=17.88)	06/08/94	8125	2 JUN
Benzene, bis-(phenylmethyl) (RT=17.93)	06/08/94	8125	2 JUN
Oxirane, 2,2-(1,4-butanediol) (RT=18.08)	06/08/94	8125	2 JUN
Unknown (RT=18.09)	06/08/94	8125	2 JUN
Phosphine oxide, triphenyl- (RT=18.12)	06/08/94	8125	2 JUN
Benzene, bis-(phenylmethyl) (RT=18.16)	06/08/94	8125	2 JUN
Hexacosane (RT=18.32)	06/08/94	8125	2 JUN
Phosphine oxide, diphenyl (RT=18.51)	06/08/94	8125	2 JUN

1994 LOVE CANAL LONG TERM MONITORING DATA

J-BELOW DETECTION LIMITS WELLS
 B=FOUND IN BLANK LAB DATE SAMPLED DOH

HALOGEN-SEMI-VOLATILE

Compound	10225A	10225B	10225C	10270	10272	10278	TBLK	HBLK	FBLK	TBLK										
2-Chlorophenol	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Bis(2-Chloroethyl)Ether	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
1,3-Dichlorobenzene	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Bis(4-Chlorophenyl)Ether	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA									
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Bis(2-Chlorophenyl)Methane	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
2,4-Dichlorophenol	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
1,2,4-Trichlorobenzene	0.3 BU	0.4 BU	2 BU	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
4-Chlorophenol	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
4-Chloro-3-Methylphenol	0.1 J	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Hexachlorocyclopentadiene	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
2,4,6-Trichlorophenol	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
2-Chlorophenyl Ether	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Fluorene	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
4-Chlorophenyl-phenylether	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
4-Bromophenyl-phenylether	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Hexachlorobenzene	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Alpha-BHC	0.4 J	ND	0.023 J	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Gamma-BHC	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Delta-BHC	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Permethrin	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
3,3-Dichlorobenzidine	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Bis(4-Guanidino-2-Phenylamino) Ether	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Diethylstilbestrol	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Endrin	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Endrin Aldehyde	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Endrin II	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
4,4'-DDE	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
4,4'-DDD	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
4,4'-DDT	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA
Methoxychlor	ND	ND	ND	ND	ND	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA	ND	NA	NA

TICs (tentatively identified compounds)

2,4,6-Trichlorobenzene	ND	3 BUN	6 BUN	ND	ND	ND	NA	NA												
Benzene	ND	ND	ND	ND	ND	ND	NA	NA												
Benzene, 1-chloro-2-methyl-	ND	ND	ND	ND	ND	ND	NA	NA												
Benzene, 1-chloro-4-methyl-	ND	ND	ND	ND	ND	ND	NA	NA												
2,3-Dichlorodibenzofuran	ND	ND	ND	ND	ND	ND	NA	NA												
Phenol, 4-chloro-	ND	ND	ND	ND	ND	ND	NA	NA												
Benzonitrile	ND	ND	ND	ND	ND	ND	NA	NA												
Benzonitrile, 2-chloro-	ND	ND	ND	ND	ND	ND	NA	NA												
Benzoic acid, 4-chloro-	ND	ND	ND	ND	ND	ND	NA	NA												
Benzoic acid, 2-chloro-	ND	ND	ND	ND	ND	ND	NA	NA												

HALOGEN-VOLATILE

Chloromethane	ND	ND	ND	ND	ND	ND	NA	NA												
Bromomethane	ND	ND	ND	ND	ND	ND	NA	NA												
Vinyl chloride	ND	ND	ND	ND	ND	ND	NA	NA												
Chloroethane	ND	ND	ND	ND	ND	ND	NA	NA												
Methylcyclohexane	ND	ND	ND	ND	ND	ND	NA	NA												
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	NA	NA												
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	NA	NA												
1,2-Dichloroethane (total)	ND	ND	ND	ND	ND	ND	NA	NA												
Chloroform	ND	ND	ND	ND	ND	ND	NA	NA												
1,2-Dichlorobenzene	ND	ND	ND	ND	ND	ND	NA	NA												
1,1,1-Trichloroethane	ND	ND	ND	ND	ND	ND	NA	NA												
Carbon tetrachloride	ND	ND	ND	ND	ND	ND	NA	NA												
Bromodichloromethane	ND	ND	ND	ND	ND	ND	NA	NA												
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	NA	NA												
1,1,2,2-Tetrachloroethane	ND	ND	ND	ND	ND	ND	NA	NA												
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	NA	NA												
Trans-1,3-Dichloropropane	ND	ND	ND	ND	ND	ND	NA	NA												
Bromochloroethane	ND	ND	ND	ND	ND	ND	NA	NA												
Trichloroethene	ND	ND	ND	ND	ND	ND	NA	NA												
Dichloromethylmethane	ND	ND	ND	ND	ND	ND	NA	NA												
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	NA	NA												
cis-1,3-Dichloroethane	ND	ND	ND	ND	ND	ND	NA	NA												
2-Chlorophenyl Ether	ND	ND	ND	ND	ND	ND	NA	NA												
Tetrachloroethene	ND	ND	ND	ND	ND	ND	NA	NA												
Chlorobenzene	ND	ND	ND	ND	ND	ND	NA	NA												
Total Chlorobenzene	ND	ND	ND	ND	ND	ND	NA	NA												
Total Dichlorobenzene	ND	ND	ND	ND	ND	ND	NA	NA												

TICs/tentatively identified compounds - HALOGENS

Chlorobenzene	ND	ND	ND	ND	ND	ND	NA	NA												
Chlorobenzene d6	ND	ND	ND	ND	ND	ND	NA	NA												

1994 LOVE CANAL LONG TERM MONITORING DATA

LAB	DATE SAMPLED	WELL	RESULTS	
B-F FOUND IN BLANK	DOH	10225A	08/22/94	NE
		10225B	08/22/94	NE
		10225C	08/22/94	NE
		10270	05/18/94	NE
		10272	05/18/94	NE
		10278	05/18/94	NE
		TELK	05/17/94	NA
		HBK	05/17/94	NA
		FBK	05/17/94	NE
		TLK	05/18/94	NA
		HBK	05/20/94	NE
		FBK	05/18/94	NE
		TLK	05/25/94	NE
		HBK	05/27/94	NE
		FBK	05/25/94	NE
TLK	06/08/94	NE		

NON-HALOGEN SEMI VOLATILE

2,3-Dichlorobutene (RT-19.87)	ND
Dichlorobutene (RT-20.33)	ND
Chlorobenzyl Alcohol	ND
Benzene, 1-chloro-2-methyl- (RT-16.58)	ND
Benzene, 1-chloro-2-methyl- (RT-16.74)	ND
Benzene, 1,2,4-trichloro-3-methyl (RT-20.83)	ND
Benzene, 1,2,4-trichloro-3-methyl (RT-22.85)	ND
Benzene, 1,2,4-trichloro-3-methyl (RT-23.03)	ND
Benzene, 1,2,3,4-tetrachloro (RT-24.18)	ND
Phenol	ND
Aniline	ND
Benzyl Alcohol	ND
2-Methylphenol	ND
4-Methylphenol	ND
N,N-Dimethylpropylamine	ND
Nitrobenzene	ND
Isopropenol	ND
2,4-Dichlorophenol	ND
Naphthalene	ND
Benzoic acid	ND
2-Methylnaphthalene	ND
3-Methylnaphthalene	ND
Acenaphthene	ND
2,6-Dimethylacetylphenol	ND
Dimethyl Phthalate	ND
2,4-Dinitrophenol	ND
Dibenzofuran	ND
4-Methylphenol	ND
2,4-Dinitrotoluene	ND
Diethyl phthalate	ND
2-Methyl 4,6-Dichlorophenol	ND
N-Nitrosodiphenylamine	ND
4-Nitroaniline	ND
Phenanthrene	ND
Anthracene	ND
Carbazole	ND
D,N-Dibutylphthalate	ND
Fluorene	ND
Butylbenzylphthalate	ND
Chrysene	ND
Benz(a)Anthracene	ND
Bis(2-Ethylhexyl)phthalate	ND
D,N-DOM Phthalate	ND
Benzofluoranthene	ND
Benzofluoranthene	ND
Benzo(a)Pyrene	ND
Indeno(1,2,3-cd)Pyrene	ND
Dibenz(a,h)Anthracene	ND
Benzo(g,h,i)Perylene	ND

TIC (relatively identified compounds) - NON-HALOGEN

Cyclohexanol (RT-2.19)	NE
Unknown C10H20 (RT-2.28)	NE
2-hexene 2,3-dimethyl- (RT-2.33)	NE
3-hexene 2,3-dimethyl- (RT-2.36)	NE
Unknown C10H20 (RT-2.36)	NE
Cyclohexane, 1,1,3,4-tetra- (RT-2.38)	NE
Methane sulfonamide (RT-3.05)	NE
Acetaldehyde, 2-hydroxyhydrin (RT-3.24)	NE
(Z)-2,3,4,5-tetraethyl-3-hex (RT-3.25)	NE
3-Penten-2-one (RT-3.25)	NE
1,2,3,4-pentamethyl-cyclopentane (RT-3.29)	NE
2-hexanone, 3-hydroxy-3,5-di (RT-3.33)	NE
Unknown C9H16O (RT-3.43)	NE
Unknown C10H20 (RT-3.43)	NE
Unknown C10H20 (RT-3.45)	NE
Unknown C9H16O (RT-3.46)	NE
Unknown C9H16O2 (RT-3.48)	NE
Cyclohexane, 1,2,3-trimethyl- (RT-3.50)	NE
2,2-bifuran, oxidohydro- (RT-3.50)	NE
Cyclohexanol, 3-methyl- (RT-3.52)	NE
Butane, 2-chloro-2-methyl- (RT-3.63)	NE
Unknown C10H20 (RT-3.78)	NE
Dicumylene (RT-3.79)	NE
Cyclohexane, 1-methyl-3-prop (RT-3.82)	NE

1994 LOVE CANAL LONG TERM MONITORING DATA

J-BELOW DETECTION LIMITS B-FOUND IN BLANK LAB	WELL# DATE SAMPLED	HBK 06/10/94 DOH	FBK 06/09/94 DOH	TBLK 06/15/94 DOH	HBK 06/17/94 DOH	FBK 06/15/94 DOH	TBLK 06/22/94 DOH	HBK 06/22/04 DOH
2,3-Dichlorotoluene (RT=19.87)		NE	NE	NE	NE	NE	NE	NE
3,5-Dichlorotoluene (RT=20.33)		NE	NE	NE	NE	NE	NE	NE
Dichlorophenol		NE	NE	NE	NE	NE	NE	NE
Chlorobenzene/methanol(ol)		NE	NE	NE	NE	NE	NE	NE
Chlorobenzyl Alcohol		NE	NE	NE	NE	NE	NE	NE
Benzene, 1-chloro-2-methyl- (RT=16.59)		NE	NE	NE	NE	NE	NE	NE
Benzene, 1,2,3-trichloro-3-methyl- (RT=16.74)		NE	NE	NE	NE	NE	NE	NE
Benzene, 1,2,3-trichloro-3-methyl (RT=20.83)		NE	NE	NE	NE	NE	NE	NE
Benzene, 1,2,4-trichloro-3-methyl (RT=22.85)		NE	NE	NE	NE	NE	NE	NE
Benzene, 1,2,4-trichloro-3-methyl (RT=23.03)		NE	NE	NE	NE	NE	NE	NE
Benzene, 1,2,3,4-tetrachloro (RT=24.18)		NE	NE	NE	NE	NE	NE	NE

NON HALOGEN SEMI VOLATILE

Phenol	NA							
Aniline	NA							
Benzyl Alcohol	NA							
2-Methylphenol	NA							
4-Methylphenol	NA							
N-Nitroso-di-propylamine	NA							
Nitrobenzene	NA							
Isophorone	NA							
2-Nitrophenol	NA							
2,4-Dimethylphenol	NA							
Naphthalene	NA							
Benzoic acid	NA							
2-Methylnaphthalene	NA							
3-Nitroaniline	NA							
Acenaphthylene	NA							
2,6-Dinitrotoluene	NA							
Acenaphthene	NA							
Dimethyl Phthalate	NA							
2,4-Dinitrophenol	NA							
Dibenzofuran	NA							
4-Nitrophenol	NA							
2,4-Dinitrotoluene	NA							
Diethylphthalate	NA							
2-Methyl 4,6-Dinitrophenol	NA							
N-Nitrosodiphenylamine	NA							
4-Nitroaniline	NA							
Phenanthrene	NA							
Anthracene	NA							
Carbazole	NA							
Di-N-Butyphthalate	NA							
Fluoranthene	NA							
Pyrene	NA							
Butylbenzylphthalate	NA							
Chrysene	NA							
Benzo (a) Anthracene	NA							
bis(2-Ethylhexyl)Phthalate	NA							
Di-N-Octyl Phthalate	NA							
Benzo(b)Fluoranthene	NA							
Benzo(k)Fluoranthene	NA							
Benzo(a)Pyrene	NA							
Indeno(1,2,3-cd)Pyrene	NA							
Dibenz(a,h)Anthracene	NA							
Benzo(g,h,i)Perylene	NA							

TICs(tentatively identified compounds) - NON-HALOGEN

Cyclohexanol (RT=2.19)	NA	NE	NA	NA	NA	NE	NA	NA
Unknown, C10H20 (RT=2.28)	NA	NE	3 BUN ✓	NA	NA	NE	NA	NA
2-hexene, 2,3-dimethyl- (RT=2.33)	NA	NE	NA	NA	NA	NE	NA	NA
3-hexene, 2,3-dimethyl- (RT=2.36)	NA	NE	NA	NA	NA	NE	NA	NA
Unknown, C10H20 (RT=2.36)	NA	NE	NA	NA	NA	NE	NA	NA
Cyclopentane, 1,1,3,4-tetram (RT=2.38)	NA	NE	NA	NA	NA	NE	NA	NA
Methane, sulfonyl-bis- (RT=3.05)	NA	NE	NA	NA	NA	NE	NA	NA
Acetaldehyde, 2-butylmethyl- (RT=3.24)	NA	NE	NA	NA	NA	NE	NA	NA
(2),2,3,4,5-tetramethyl-3-the (RT=3.25)	NA	NE	NA	NA	NA	NE	NA	NA
3-pentan-2-one (RT=3.25)	NA	NE	NA	NA	NA	NE	NA	NA
1,2,3,4,5-pentamethyl-cyclopentane (RT=3.29)	NA	NE	9 JN ✓	NA	NA	NE	NA	NA
2-hexanone, 3-hydroxy-3,5-di (RT=3.33)	NA	NE	3 BUN ✓	NA	NA	NE	NA	NA
Unknown, C9H16O (RT=3.43)	NA	NE	NA	NA	NA	NE	NA	NA
Unknown, C10H20 (RT=3.43)	NA	NE	NA	NA	NA	NE	NA	NA
Unknown, C10H20 (RT=3.45)	NA	NE	NA	NA	NA	NE	NA	NA
Unknown, C9H16O (RT=3.46)	NA	NE	NA	NA	NA	NE	NA	NA
Unknown, C9H18O2 (RT=3.48)	NA	NE	NA	NA	NA	NE	NA	NA
Cyclohexane, 1,2,3-trimethyl (RT=3.50)	NA	NE	NA	NA	NA	NE	NA	NA
2,2'-bifuran, octalindro- (RT=3.50)	NA	NE	NA	NA	NA	NE	NA	NA
Cyclohexanol, 3-methyl (RT=3.62)	NA	NE	NA	NA	NA	NE	NA	NA
Butane, 2-chloro-2-methyl- (RT=3.63)	NA	NE	NA	NA	NA	NE	NA	NA
Unknown, C10H20 (RT=3.78)	NA	NE	NA	NA	NA	NE	NA	NA
Disoamylene (RT=3.79)	NA	NE	4 BUN ✓	NA	NA	NE	NA	NA
Cyclohexane, 1-methyl-3-prop (RT=3.62)	NA	NE	NA	NA	NA	NE	NA	NA

1994 LOVE CANAL LONG TERM MONITORING DATA

LAB	DATE SAMPLED	WELL#	HLK	FBLK	TBLK	HLK	FBLK	TBLK	HLK
B-BELOW DETECTION LIMITS	LAB	DOH	DOH	DOH	DOH	DOH	DOH	DOH	DOH
Cyclohexane, 1-ethyl-2-methyl (RT=3.76)		NA	NE	NA	NA	NA	NE	NA	NA
Cyclohexane, 1-methyl-2-prop (RT=3.82)		NA	NE	NA	NA	NA	NE	NA	NA
4-hepten-3-one, 2,6-dimethyl (RT=3.82)		NA	NE	NA	NA	NA	NE	NA	NA
5-nonene-4-one (RT=3.83)		NA	NE	NA	NA	NA	NE	NA	NA
Benzene, 1-ethyl-2-methyl- (RT=3.89)		NA	NE	NA	NA	NA	NE	NA	NA
Trisulfide, dimethyl (RT=3.98)		NA	NE	NA	NA	NA	NE	NA	NA
Benzene, 1,2,4-trimethyl- (RT=4.32)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown, C9H18O2 (RT=4.51)		NA	NE	NA	NA	NA	NE	NA	NA
2,4-hexadiene, 3,4-dimethyl- (RT=4.72)		NA	NE	NA	NA	NA	NE	NA	NA
1-hexanol, 2-ethyl- (RT=4.84)		NA	NE	NA	NA	NA	NE	NA	NA
2,3-dimethyl-2-cyclopentan-1 (RT=4.93)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown hydrocarbon (RT=4.98)		NA	NE	NA	NA	NA	NE	NA	NA
3-ethylcyclopent-2-en-one (RT=5.31)		NA	NE	NA	NA	NA	NE	NA	NA
Ethanol, 1,2-di-2-turamyl-2 (RT=5.64)		NA	NE	NA	NA	NA	NE	NA	NA
Phosphoric acid, triethyl ester (RT=5.72)		NA	NE	NA	NA	NA	NE	NA	NA
Hexanoic acid, 2-ethyl-, (RT=5.80)		NA	NE	NA	NA	NA	NE	NA	NA
Oxalic acid (RT=6.12)		NA	NE	NA	NA	NA	NE	NA	NA
Benzoic acid (RT=6.25)		NA	NE	NA	NA	NA	NE	NA	NA
Bicyclo[3.3.0]hept-1(2)-en-3- (RT=6.30)		NA	NE	NA	NA	NA	NE	NA	NA
1-methyl-2-cyano-2-piperidin (RT=6.30)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown C10H20 (RT=6.41)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown, C9H18O (RT=6.58)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown, C9H18O (RT=6.60)		NA	NE	NA	NA	NA	NE	NA	NA
Dimethyl tetraaldehyde (RT=6.62)		NA	NE	NA	NA	NA	NE	NA	NA
1-cyclopentene-1-yl-propane- (RT=6.66)		NA	NE	NA	NA	NA	NE	NA	NA
2,6-octadiene, 2,4-dimethyl- (RT=6.71)		NA	NE	NA	NA	NA	NE	NA	NA
1-cyclobutene-1-yl-butane-1- (RT=6.74)		NA	NE	NA	NA	NA	NE	NA	NA
Benzoic acid (RT=6.82)		NA	NE	NA	NA	NA	NE	NA	NA
Benzeneacetic acid (RT=6.95)		NA	NE	NA	NA	NA	NE	NA	NA
2-turaneacetic acid, alpha-, (RT=7.02)		NA	NE	NA	NA	NA	NE	NA	NA
Nonanoic acid (RT=7.03)		NA	NE	NA	NA	NA	NE	NA	NA
4H-cyclopent[1,4]phenanthrene (RT=7.87)		NA	NE	NA	NA	NA	NE	NA	NA
Benzaldehyde, 4-hydroxy-, (RT=7.88)		NA	NE	NA	NA	NA	NE	NA	NA
Benzaldehyde, 4-hydroxy-3-methoxy- (RT=8.32)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown hydrocarbon B-71, MW (RT=8.67)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown hydrocarbon (RT=8.85)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown hydrocarbon B-71, MW (RT=9.32)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown hydrocarbon B-71 (RT=9.40)		NA	NE	NA	NA	NA	NE	NA	NA
Dodecanoic acid (RT=9.68)		NA	NE	NA	NA	NA	NE	NA	NA
Benzoic acid, 1-methyl-2-(p- (RT=9.79)		NA	NE	NA	NA	NA	NE	NA	NA
1,4-butanediol, monobenzoate (RT=9.90)		NA	NE	NA	NA	NA	NE	NA	NA
1,4-butanediol, monobenzoate (RT=10.03)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown hydrocarbon B-71 (RT=10.13)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown hydrocarbon B-71 (RT=10.19)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown hydrocarbon B-71 (RT=10.27)		NA	NE	NA	NA	NA	NE	NA	NA
1,3-propanediol, monobenzoate (RT=11.12)		NA	NE	NA	NA	NA	NE	NA	NA
Benzoic acid, 1-methyl-1-(p- (RT=11.39)		NA	NE	NA	NA	NA	NE	NA	NA
1,4-butanediol, monobenzoate (RT=11.42)		NA	NE	NA	NA	NA	NE	NA	NA
1,4-butanediol, monobenzoate (RT=11.52)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown benzoic acid ester (RT=11.55)		NA	NE	NA	NA	NA	NE	NA	NA
Tetradecanoic acid (RT=11.61)		NA	NE	NA	NA	NA	NE	NA	NA
Isopropyl myristate (RT=12.25)		NA	NE	NA	NA	NA	NE	NA	NA
1-hexadecanoic acid (RT=12.73)		NA	NE	NA	NA	NA	NE	NA	NA
3,9-diazabicyclo[7.3.0]dodecane (RT=13.38)		NA	NE	NA	NA	NA	NE	NA	NA
Hexadecanoic acid (RT=13.45)		NA	NE	NA	NA	NA	NE	NA	NA
Sulfur, mol. (S8) (RT=14.35)		NA	NE	NA	NA	NA	NE	NA	NA
1,4-dibutylbutane-related (RT=14.43)		NA	NE	NA	NA	NA	NE	NA	NA
1-octadecanoic acid (RT=14.48)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown P (RT=14.51)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown (RT=14.54)		NA	NE	NA	NA	NA	NE	NA	NA
1-propanone, 1-phenyl- (related) (RT=14.57)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown CHO (RT=14.59)		NA	NE	NA	NA	NA	NE	NA	NA
Benzoic acid, 4-benzoyl- (rel) (RT=14.92)		NA	NE	NA	NA	NA	NE	NA	NA
1,4-dibutylbutane-related (RT=15.17)		NA	NE	NA	NA	NA	NE	NA	NA
Octadecanoic acid (RT=15.29)		NA	NE	NA	NA	NA	NE	NA	NA
Hexadecanoic acid, butyl est (RT=15.30)		NA	NE	NA	NA	NA	NE	NA	NA
Phenol, 4,4-(1-methyl-1-yl) (RT=15.33)		NA	NE	NA	NA	NA	NE	NA	NA
Octadecanoic acid, butyl est (RT=16.82)		NA	NE	NA	NA	NA	NE	NA	NA
Hexanedioic acid, diethyl ester (RT=16.91)		NA	NE	NA	NA	NA	NE	NA	NA
Tetradecanoic acid (RT=16.93)		NA	NE	NA	NA	NA	NE	NA	NA
derm of 1,2-propanediol, mo (RT=17.41)		NA	NE	NA	NA	NA	NE	NA	NA
derm of 1,2-propanediol, mo (RT=17.50)		NA	NE	NA	NA	NA	NE	NA	NA
derm of 1,2-propanediol, mo (RT=17.59)		NA	NE	NA	NA	NA	NE	NA	NA
Pentacosane (RT=17.64)		NA	NE	NA	NA	NA	NE	NA	NA
Phosphine oxide, diphenyl-, (RT=17.88)		NA	NE	NA	NA	NA	NE	NA	NA
Benzene, bis-(phenoxymethyl) (RT=17.93)		NA	NE	NA	NA	NA	NE	NA	NA
Oxirane, 2,2-(1,4-butenediyl) (RT=18.08)		NA	NE	NA	NA	NA	NE	NA	NA
Unknown (RT=18.09)		NA	NE	NA	NA	NA	NE	NA	NA
Phosphine oxide, triphenyl-, (RT=18.12)		NA	NE	NA	NA	NA	NE	NA	NA
Benzene, bis-(phenoxymethyl) (RT=18.16)		NA	NE	NA	NA	NA	NE	NA	NA
h-xacosane (RT=18.32)		NA	NE	NA	NA	NA	NE	NA	NA
Phosphine oxide, diphenyl (RT=18.51)		NA	NE	NA	NA	NA	NE	NA	NA

1994 LOVE CANAL LONG TERM MONITORING DATA

LAB	DATE SAMPLED	WELL#	HEBK DOH	FBLK DOH	TBLK DOH	HEBK DOH	FBLK DOH	TBLK DOH	HEBK DOH	
J-BELOW DETECTION LIMITS										
B-FOUND IN BLANK										
Heptacosane (RT=19.97)			NA	2 BLN	NA	NA	NE	NA	NA	
9-octadecenoic acid (Z) (RT=19.50)			NA	NE	NA	NA	NE	NA	NA	
Eicosane (RT=19.45)			NA	NE	NA	NA	NE	NA	NA	
Heptacosane (RT=19.50)			NA	NE	NA	NA	NE	NA	NA	
Octacosane (RT=19.61)			NA	NE	NA	NA	NE	NA	NA	
2,6,10,14,18,22,26-tetrasubstanzane (RT=19.82)			NA	1 BLN	NA	NA	NE	NA	NA	
Tricosane (RT=20.21)			NA	NE	NA	NA	NE	NA	NA	
Octacosane (RT=20.83)			NA	NE	NA	NA	NE	NA	NA	
Oxirane, 2,2'-(1,4-dioxane) (RT=21.10)			NA	NE	NA	NA	NE	NA	NA	
Heptacosane (RT=21.50)			NA	NE	NA	NA	NE	NA	NA	
Heptacosane (RT=22.06)			NA	NE	NA	NA	NE	NA	NA	
Octacosane (RT=22.22)			NA	NE	NA	NA	NE	NA	NA	
Tricosane (RT=23.04)			NA	NE	NA	NA	NE	NA	NA	
Tetradecanoic acid (RT=23.92)			NA	NE	NA	NA	NE	NA	NA	
Oxirane, 2,2'-(1,4-dioxane) (RT=25.02)			NA	NE	NA	NA	NE	NA	NA	
NON HALOGEN-VOLATILE										
Acetone			ND							
Carbon disulfide			ND							
2-Butanone			ND							
Vinyl acetate			NA							
Benzene			ND							
2-Tetrazene			ND							
4-Methyl-2-pentanone			ND							
Toluene			ND							
Ethylbenzene			ND							
Styrene			ND							
o-Xylenes			ND							
3-Methyl pentane			NA							
TICs (tentatively identified compounds) - NON HALOGEN										
Methyl Sulfoxide (RT=0.91)			NE							
Methanol (RT=1.42)			NE							
Methyl Tertiary Butyl Ether (RT=2.39)			NE							
Ethane (methyl) (RT=3.11)			NE							
Dimethyl Sulfide (RT=10.08)			NE							
Benzene 1-methyl-3-(1-methyl) (RT=18.02)			NE							
Bicyclic 2,1-Thiophene-2-one (RT=19.21)			NE							
Molecular sulfur (RT=28.99)			NE							
Sulfur, mol. (S8) (RT=52.61)			NE							

2 BLN

0.72

0.5 J

0.6 J

0.5 J