

**APPENDIX B**

## LAWGibb

### Soil Investigation – December 2000 and January 2001

In December 2000 LAW sampled seventy soil borings (SB-1 through SB-70) across the property using a GeoProbe. Soil samples were, in general, collected at 0 to 18-inches below grade (shallow unsaturated zone); 24 to 48-inches below grade (water table/smear zone); and near the top of the underlying peat layer (typically seven to nine-feet below grade) at each location. All soil samples were analyzed for TPH using Method 418.1. Sampling location maps and laboratory data summary tables are included in Appendix B-1

In the shallow zone, TPH concentrations ranged from 37 mg/kg to 3,970 mg/kg, with the highest concentrations in the samples from the areas near Tanks 1 through 4, 12 and 13, and the former loading dock. TPH concentrations in the intermediate zone ranged from 15 mg/kg to 3,580 mg/kg, with the highest concentrations in the samples from areas downgradient of Tanks 2, 6, 7 and 9, and the former loading dock. The deep zone soil contained TPH at concentrations ranging from 28 mg/kg to 2,230 mg/kg, with the highest concentrations found in an area of limited extent downgradient of Tanks 12 and 13. Most deep zone samples did not contain TPH at concentrations exceeding 200 mg/kg.

### Groundwater Investigation – December 2000 and January 2001

Six groundwater monitoring wells (LMW-1 through LMW-5 and MW-3R) were installed in December 2000. The new wells and existing wells MW-1, MW-2, MW-6, OW-1, W-2, W-11 and W-12 were sampled in January 2001 for NYSDEC STARS list VOCs and SVOCs using Methods 8021 and 8270. Select samples were also analyzed for natural attenuation indicator parameters. Well location maps and laboratory data summary tables are included in Appendix B-2.

According to the LAW report, groundwater flow at the time of sampling was predominantly east and south from a northwest/southeast-trending groundwater divide near the southwest corner of the property. BTEX constituents were detected in samples from two of the 13 wells, LMW-1 (159.1 µg/l) near the former loading racks, and LMW-2 (59.99 µg/l) on the east side of Tank 9. The concentration of benzene and ethylbenzene in LMW-1 and ethylbenzene and xylenes in LMW-2 exceeded the NYSDEC groundwater standards in effect at the time the work was done. Total VOC concentrations (excluding BTEX) ranged from less than the laboratory reporting limits to approximately 446 µg/l (LMW-1). One or more individual VOC constituents in the samples from MW-3R, LMW-1 and LMW-2 were detected at concentrations exceeding NYSDEC groundwater standards. SVOCs were detected in samples from 9 of the 13 wells. Except for naphthalene, none of the individual SVOC constituents were found at concentrations exceeding the groundwater cleanup criteria. Naphthalene was detected in samples LMW-1, LMW-2 and MW-3R at 420 µg/l, 146 µg/l and 44.1 µg/l, respectively.

The results of the natural attenuation parameter analyses indicated that the saturated zone provided favorable conditions for supporting biodegradation activity.

#### Cleanup Plan for Soil and Groundwater

Based on its soil investigation findings, LAW proposed to segregate and remediate soil by TPH content. Soil with TPH content less than 500 mg/kg was considered “clean” for the purposes of reuse on the property, provided that confirmation sampling for individual STARS list VOCs and SVOCs constituents demonstrated that the material met the NYSDEC cleanup criteria.

Using the findings of its initial TPH sampling program, LAW designated a “clean area” where TPH concentrations were typically less than 500 mg/kg. The estimated boundary is shown on the map in Appendix B-3. TPH concentrations greater than 500 mg/kg are generally located on the east side of the boundary. LAW proposed a supplemental soil sampling program to further refine the TPH boundary location. As a separate task, LAW

also proposed to excavate and dispose of off site the soil from the area of PCB-impacted soil identified by SI/EG in the early 1990s.

For groundwater, LAW proposed the use of an oxidant to enhance subsurface biological activity and increase the rate of petroleum hydrocarbon degradation. LAW recommended injecting a magnesium peroxide-based oxidant into the water table using a GeoProbe, focusing on the area where the highest concentrations of petroleum residuals in groundwater were found, at wells LMW-1, LMW-2 and MW-3R.

#### Supplemental Soil and Groundwater Investigation

LAW performed additional soil and groundwater sampling in May 2001 to confirm and refine the proposed “clean area” TPH boundary and to address other issues raised by NYSDEC. The scope of work consisted of:

- sampling soil from 0 to 2-feet below grade at 21 locations (SS-1 through SS-21) and analyzing the samples for STARS list VOCs and SVOCs;
- analyzing 20-percent of the samples for RCRA metals;
- sampling eight additional borings for PCBs in the area of the PCB-impacted soil identified by SI/EG; and
- sampling “clean area” monitoring wells LMW-3, LMW-4, OW-1, W-2, MW-1, MW-2, MW-3R, W-11 and W-12 for VOCs and SVOCs.

Sampling location maps and laboratory data summary tables are included in Appendix B-4.

VOCs were not detected in any soil sample at a concentration exceeding the NYSDEC cleanup criteria. Except for chromium, RCRA metals were not found at concentrations

exceeding the soil cleanup guidelines. Chromium was detected in sample SS-6 at a concentration that marginally exceeded the cleanup guideline (10.1 µg/kg vs. 10 µg/kg guideline). The SVOC data generally confirmed the initial "clean area" TPH boundary, with only a few samples containing a limited number of chemical constituents at concentrations greater than cleanup guidelines (chrysene; benzo(b)fluoranthene; benzo(a)anthracene; dibenzo(a,h)anthracene; benzo(a)pyrene; and benzo(k)fluoranthene).

Soil samples from the PCB impact area did not reveal the presence of PCBs at concentrations exceeding NYSDEC soil cleanup guidelines.

The groundwater sampling data shows that individual VOC and SVOC constituents were each detected in only one well at concentrations exceeding NYSDEC groundwater standards. Benzene and naphthalene were found in the sample from well MW-3R; and chrysene, benzo(a)anthracene and acenaphthene were found in the sample from W-11 at concentrations exceeding standards. No other groundwater sample contained VOCs or SVOCs at concentrations greater than the cleanup criteria.

Based on the findings of its supplemental soil and groundwater sampling, LAW amended its proposed remedial approach by incorporating limited soil capping and additional excavation as part of its overall cleanup plan.

**APPENDIX B - 1**



Table 4-1. Summary of Total Petroleum Hydrocarbon Analyses for Soil Samples Collected at the Former Cibro Petroleum Facility, Island Park, New York.

Ground Elevation <sup>1</sup> (feet)	Sample (shallow)		TPH (mg/kg)	Sample (intermediate)		TPH (mg/kg)	Sample (deep)		TPH (mg/kg)	Depth of Peat (ft bgs)	Elevation <sup>1</sup> of Peat (feet)
	Depth (ft bgs)	Elevation <sup>1</sup> (feet)		Depth (ft bgs)	Elevation <sup>1</sup> (feet)		Depth (ft bgs)	Elevation <sup>1</sup> (feet)			
SB-1	96.6	NS	NS	1	95.60	1,430	5	91.60	177	4	92.60
SB-2	97.5	NS	NS	2	95.50	430	7	90.50	164	7	90.50
SB-3	96.5	NS	NS	1	95.50	1,140	7	89.50	135	6	90.50
SB-4	97.3	NS	NS	2	95.30	2,670	8	89.30	128	8	89.30
SB-5	98	NS	NS	2	96.00	3,130	8	90.00	211	7	91.00
SB-6	98.6	NS	NS	2	96.60	3,100	7	91.60	193	6	92.60
SB-7	97.3	NS	NS	1	96.30	2,290	9	88.30	151	8	89.30
SB-8	97.5	NS	NS	1.5	96.00	3,350	7	90.50	270	6	91.50
SB-9	97.1	NS	NS	1	96.10	3,300	8	89.10	147	8	89.10
SB-10	97.6	NS	NS	1.5	96.10	2,820	7	90.60	306	6	91.60
SB-11	98	NS	NS	2	96.00	2,850	8	90.00	212	7	91.00
SB-12	98.9	NS	NS	2	96.90	2,360	7	91.90	169	6	92.90
SB-13	98.2	NS	NS	1.5	96.70	3,120	7	91.20	182	6	92.20
SB-14	99.8	98.30	154	4	95.80	3,020	7	92.80	239	6	93.80
SB-15	99.5	NS	NS	2	97.50	167	7	92.50	62	6	93.50
SB-16	100	98.00	2,590	4	96.00	2,840	7	93.00	82	6	94.00
SB-17	99.4	97.40	652	4	95.40	2,240	10	89.40	39	9	90.40
SB-18	98.8	NS	NS	1.5	97.30	2,910	13	85.80	29	12	86.80
SB-19	100	99.00	68	3	97.00	2,690	11	89.00	75	10.5	89.50
SB-20	99.1	NS	NS	2	97.10	2,400	13	86.10	41	12	87.10
SB-21	99.4	97.40	2,400	4.5	94.90	3,100	7	92.40	82	6	93.40
SB-22	99.5	97.50	1,970	4.5	95.00	2,900	7	92.50	200	6	93.50
SB-23	99.7	NS	NS	4	95.70	2,840	9	90.70	134	8	91.70
SB-24	100	98.00	2,970	4	96.00	2,970	8	92.00	234	7	93.00
SB-25	100.7	98.70	3,040	4	96.70	3,110	9	91.70	143	8	92.70
SB-26	99.6	98.10	2,300	4	95.60	430	8	91.60	52	7	92.60
SB-27	99.7	98.20	672	3.5	96.20	78	8	91.70	48	8	91.70
SB-28	98.7	97.70	1,610	2.5	96.20	2,460	9	89.70	130	9	89.70
SB-29	99.75	97.75	2,660	4	95.75	2,390	9	90.75	113	8	91.75
SB-30	100.3	NS	NS	2	98.30	1,950	16	84.30	31	16	84.30
SB-31	100.4	98.40	439	4.5	95.90	2,910	9	91.40	617	8	92.40
SB-32	99.9	NS	NS	1.5	98.40	2,520	14	85.90	185	11	88.90
SB-33	100.1	98.10	2,930	4	96.10	2,020	9	91.10	207	9	91.10
SB-34	100.6	99.10	857	3.5	97.1	103	9	91.6	508	8	92

<sup>1</sup>Footnotes on fact sheet



Table 4-1. Summary of Total Petroleum Hydrocarbon Analyses for Soil Samples Collected at the Former Cibro Petroleum Facility, Island Park, New York.

Ground Elevation <sup>1</sup> (feet)	Sample		TPH (mg/kg)	Sample		TPH (mg/kg)	Sample		TPH (mg/kg)	Depth of Peat (ft bgs)	Elevation <sup>1</sup> of Peat (feet)
	Depth (ft bgs) (shallow)	Elevation <sup>1</sup> (feet) (shallow)		Depth (ft bgs) (intermediate)	Elevation <sup>1</sup> (feet) (intermediate)		Depth (ft bgs) (deep)	Elevation <sup>1</sup> (feet) (deep)			
SB-35	100.35	2	98.35	2,170	4.5	95.85	2,260	9	91.35	8.5	91.85
SB-36	100.95	2	98.95	2,200	5	95.95	2,410	9	91.95	8	92.95
SB-37	101.1	1.5	99.60	993	3	98.10	2,960	7	94.10	7	94.10
SB-38	100.7	1.5	99.20	2,410	4	96.70	2,340	9	91.70	8	92.70
SB-39	100.2	2	98.20	2,940	4	96.20	2,630	9	91.20	8	92.20
SB-40	100.1	1.5	98.60	2,790	4	96.10	2,480	9	91.10	9	91.10
SB-41	99.8	2	97.80	37	4	95.80	64	8	91.80	7	92.80
SB-42	100	1.5	98.50	2,940	3.5	96.50	3,140	9	91.00	8	92.00
SB-43	99.8	1.5	98.30	720	4	95.80	1,940	8	91.80	7	92.80
SB-44	100.1	1.5	98.60	3,260	4	96.10	3,010	9	91.10	8	92.10
SB-45	99.7	1.5	98.20	2,730	3.5	96.20	3,080	9	90.70	8	91.70
SB-46	99.35	1.5	97.85	2,990	4	95.35	2,860	13	86.35	12	87.35
SB-47	99.85	1.5	98.35	3,130	3.5	96.35	3,160	9	90.85	8	91.85
SB-48	99.7	1.5	98.20	1,810	5	94.70	2,190	8	91.70	7	92.70
SB-49	99	1.5	97.50	3,970	2.5	96.50	3,580	6	93.00	5	94.00
SB-50	98		NS	NS	1.5	96.50	1,540	8.5	89.50	8	90.00
SB-51	99.5	1.5	98.00	45	3	96.50	15	7	92.50	NE	NE
SB-52	99		NS	NS	4	95.00	2,770	8	91.00	8	91.00
SB-53	100.3	1.5	98.80	495	4	96.30	26	9	91.30	9	91.30
SB-54	100.5	1.5	99.00	70	3	97.50	28	8	92.50	8	92.50
SB-55	100	1.5	98.50	172	3	97.00	22	7	93.00	NE	NE
SB-56	101.5	2	99.50	177	4	97.50	73	9	92.50	9	92.50
SB-57	99.6	1.5	98.10	1,860	3.5	96.10	852	9	90.60	8	91.60
SB-58	101	1.5	99.50	83	4	97.00	1,970	11	90.00	10	91.00
SB-59	100.7	1.5	99.20	240	4	96.70	157	8	92.70	NE	NE
SB-60	100.3		NS	NS	2	98.30	452	8	92.30	8	92.30
SB-61	100.5	1.5	99.00	127	4	96.50	132	8	92.50	7	93.50
SB-62	101.1	1.5	99.60	2,190	4	97.10	2,570	8	93.10	8	93.10
SB-63	99.4		NS	NS	2.5	96.90	100	9	90.40	9	90.40
SB-64	100	1.5	98.50	1,810	4	96.00	116	8	92.00	NE	NE
SB-65	99.3		NS	NS	2	97.30	35	7	92.30	NE	NE
SB-66	99.5	1	98.50	2,410	3.5	96.00	37	7	92.50	NE	NE
SB-67	101	1.5	99.50	685	3	98.00	1,250	7	94.00	NE	NE
SB-68	99.9	1.5	98.40	290	4	95.90	808	7.5	92.40	NE	NE
SB-69	99.9	1.5	98.40	817	3	96.90	52	7	92.90	NE	NE
SB-70	100	1.5	98.50	1,610	3.5	96.50	2,710	9	91.00	9	150

Footnotes on last page.

1 - Feet relative to onsite datum.

mg/kg - Milligrams per kilogram (parts per million)

Shallow - soil samples collected at a depth of about 0-18 inches below ground surface.

Intermediate - soil samples collected at the smear zone/water table generally at a depth of about 24-48 inches below ground surface.

Deep - soil samples collected at a depth of about 7 to 9 feet below ground surface.

NS - Not sampled.

NE - Not encountered.

bgs - Below ground surface.

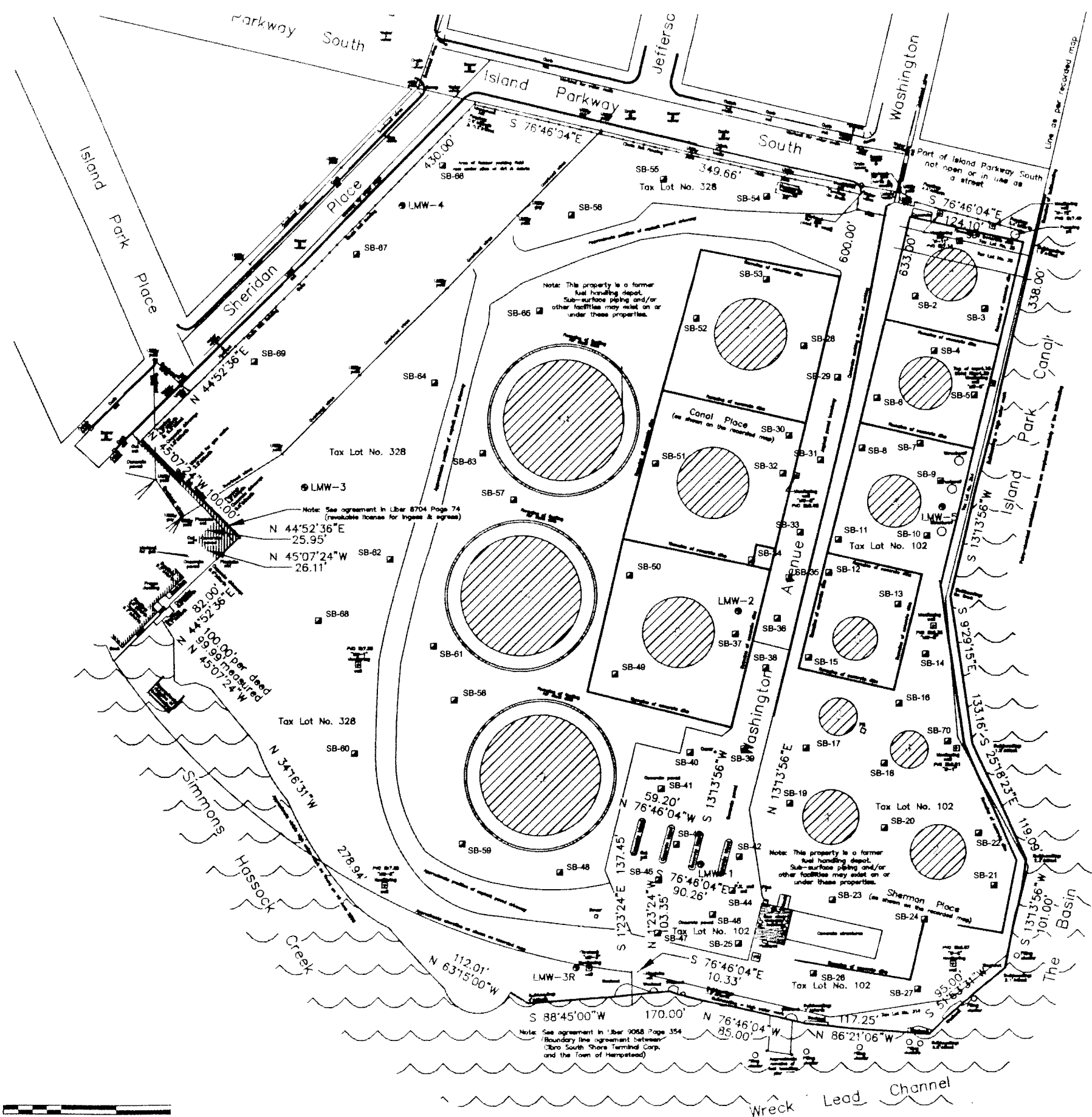
TPH - Total petroleum hydrocarbons using Method 418.1.

Prepared by/Date: SH 2/6/01

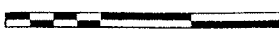
Checked by/Date: DJN 2/6/01

SH  
DJN

**APPENDIX B - 2**



- LEGEND**
- LOCATIONS OF GEOPROBE BORINGS
  - LOCATION AND DESIGNATION OF MONITORING WELLS
  - LOCATION AND DESIGNATION OF FORMER ABOVEGROUND STORAGE TANKS

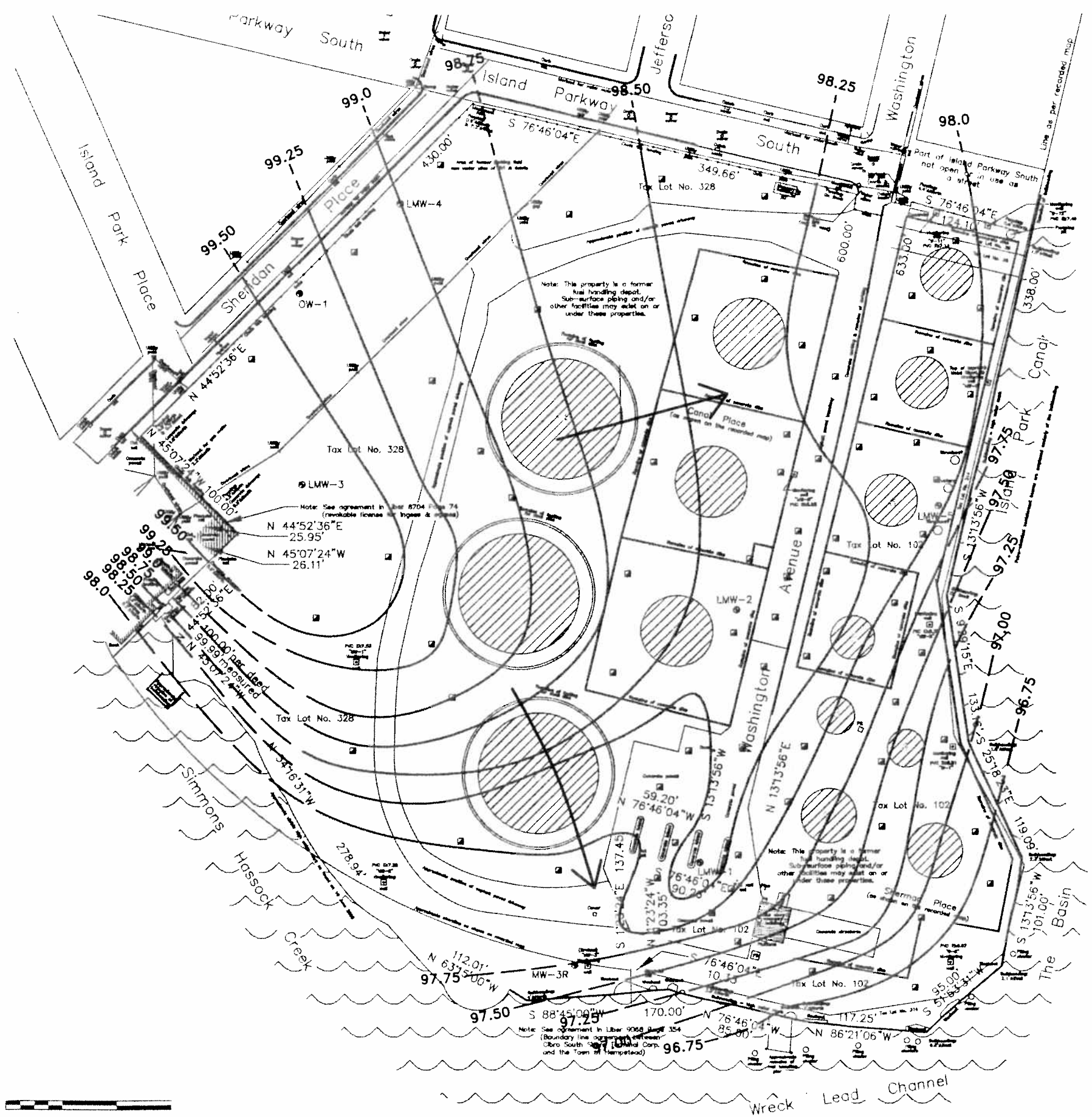


BLUE ISLAND, LLC.  
 FORMER CIBRO ISLAND PARK SITE  
 ISLAND PARK, NEW YORK



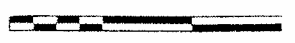
LOCATIONS OF GEOPROBES  
 AND MONITORING WELLS

DATE	2
SCALE	
PROJECT NUMBER	22000-0-0028



**LEGEND**

- LMW-2 ● LOCATION AND DESIGNATION OF MONITORING WELLS
- (98.16) GROUNDWATER ELEVATION FEET ABOVE SITE ASSUM DATUM
- 96.75 — GROUNDWATER ELEVATION CONTOURS (DASHED WHERE INFERRED)
- ← HORIZONTAL DIRECTION OF GROUNDWATER FLOW
- ⊘ LOCATION AND DESIGNATION OF FORMER ABOVEGROUND STORAGE TANKS



BLUE ISLAND, LLC.  
FORMER CIBRO PETROLEUM FACILITY  
ISLAND PARK, NEW YORK



CONFIGURATION OF THE  
WATER TABLE AQUIFER  
JANUARY 8, 2001

DATE	3-1
PROJECT NUMBER	22000-0-0028
DATE	31 JAN 01

**Table 4-2**  
**Well Construction Details for the Monitoring Wells Installed**  
**at the Former Cibro Petroleum Facility, Island Park, New York.**

Monitoring Well Designation	Date Completed	Well Diameter (inches)	Elevation of Measuring Point <sup>1</sup> (ft above datum)	Total Depth (ft bgs)	Screen Intervals (ft bgs)	Screen Slot Size (inches)
MW-1	NA	4	102.05	14.51	NA	NA
MW-2	NA	4	101.87	14.00	NA	NA
MW-3R	12/11/2000	2	104.55	11.00	1-11	0.02
MW-6	NA	1	98.80	4.50	NA	NA
LMW-1	12/11/2000	2	104.05	11.00	1-11	0.02
LMW-2	12/11/2000	2	103.79	11.00	1-11	0.02
LMW-3	12/11/2000	2	103.80	11.00	1-11	0.02
LMW-4	12/11/2000	2	104.69	11.00	1-11	0.02
LMW-5	12/11/2000	2	103.24	11.00	1-11	0.02
OW-1	NA	4	102.64	10.00	NA	NA
W-2	NA	4	101.07	11.00	NA	NA
W-11	NA	4	101.64	10.20	NA	NA
W-12	NA	4	101.99	10.50	NA	NA

<sup>1</sup> - Elevation relative to onsite datum.  
ft bgs - Feet below ground surface.

Table 4-3  
 Summary of Volatile Organic Compound Analyses for Ground-Water Samples Collected  
 at the Former Cibro Petroleum Facility, Island Park, New York.  
 LAW Project Number 22000-0-0026

Well Identification: Date Sampled:	MW-1 1/8/01	MW-2 1/8/01	MW-3R 1/9/01	MW-6 1/9/01	LMW-1 1/9/01	LMW-2 1/10/01	LMW-3 1/10/01	LMW-4 1/8/01	LMW-5 1/9/01	*NYSDEC Ground-Water Standards
Benzene	ND	ND	ND	ND	109	ND	ND	ND	ND	1
Toluene	ND	ND	ND	ND	ND	0.79	ND	ND	ND	5
Ethylbenzene	ND	ND	ND	ND	48	34.1	ND	ND	ND	5
m, p-xylenes	ND	ND	ND	ND	1.1	20.5	ND	ND	ND	5
o-xylenes	ND	ND	ND	ND	1	4.6	ND	ND	ND	5
Total BTEX	ND	ND	ND	ND	159.1	59.99	ND	ND	ND	NS
Isopropylbenzene	ND	ND	3.8	ND	23.3	8	ND	ND	ND	5
n-Propylbenzene	ND	ND	5.6	ND	28.5	12.1	ND	ND	ND	5
1,3,5-trimethylbenzene	ND	ND	ND	ND	4	19.9	ND	ND	ND	5
tert-butylbenzene	ND	ND	ND	ND	0.85	ND	ND	ND	ND	5
1,2,4-trimethylbenzene	ND	ND	ND	ND	ND	123	ND	ND	ND	5
sec-butylbenzene	ND	ND	2.6	ND	9.4	4.4	ND	ND	ND	5
p-isopropyltoluene	ND	ND	15.8	ND	6.1	7.9	ND	ND	ND	5
n-Butylbenzene	ND	ND	ND	ND	6.5	6.8	ND	ND	ND	5
Naphthalene	ND	ND	118	ND	352	148	ND	ND	ND	10
MTBE	ND	ND	ND	ND	15.9	ND	ND	ND	ND	50
Total Volatile Organic Compounds	ND	ND	145.8	ND	446.55**	330.10**	ND	ND	ND	NS

All concentrations in micrograms per liter; equivalent to parts per billion.  
 ND Not detected above laboratory reporting limits.

NS No Standard.

\* New York State Ambient Water Quality Standards and Guidance Values, June 1998.

\*\* Total volatile organic compounds, excluding total BTEX.

**Table 4-3**  
**Summary of Volatile Organic Compound Analyses for Ground-Water Samples Collected**  
**at the Former Cibro Petroleum Facility, Island Park, New York.**  
**LAW Project Number 22000-0-0026**

Well Identification: Date Sampled:	OW-1 1/8/01	W-2 1/10/01	W-11 1/9/01	W-12 1/9/01	FB-010801 1/8/01	FB-010901 1/9/01	TB-010801 1/8/01	TB-010901 1/10/01	*NYSDEC Ground-Water Standards
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	1
Toluene	ND	ND	ND	ND	ND	ND	ND	ND	5
Ethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	5
m, p-xylenes	ND	ND	ND	ND	ND	ND	ND	ND	5
o-xylenes	ND	ND	ND	ND	ND	ND	ND	ND	5
Total BTEX	ND	ND	ND	ND	ND	ND	ND	ND	NS
Isopropylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	5
n-Propylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	5
1,3,5-trimethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	5
tert-butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	5
1,2,4-trimethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	5
sec-butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	5
p-isopropyltoluene	ND	ND	ND	ND	ND	ND	ND	ND	5
n-Butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	5
Naphthalene	ND	ND	5.8	ND	ND	ND	ND	ND	10
MTBE	ND	ND	ND	ND	4.1	3.9	3.8	4.6	50
Total Volatile Organic Compounds	ND	ND	5.8	ND	4.1	3.9	3.8	4.6	NS

All concentrations in micrograms per liter; equivalent to parts per billion.

ND Not detected above laboratory reporting limits.

NS No Standard.

\* New York State Ambient Water Quality Standards and Guidance Values, June 1998.



**Table 4-4**  
**Summary of Base Neutral Compound Analyses for Ground-Water Samples Collected**  
**at the Former Cibro Petroleum Facility, Island Park, New York.**  
**LAW Project Number 22000-0-0026**

Well Identification: Date Sampled:	MW-1 1/8/01	MW-2 1/8/01	MW-3R 1/9/01	MW-6 1/9/01	LMW-1 1/9/01	LMW-2 1/10/01	LMW-3 1/10/01	LMW-4 1/8/01	LMW-5 1/9/01	*NYSDEC Ground-Water Standards
Naphthalene	ND	ND	44.1	0.50J	420	146	0.43J	0.43J	ND	10
Acenaphthene	ND	1.7	4.7	0.54J	7.5	6.2	ND	ND	ND	20
Fluorene	ND	ND	5.1	ND	13.8	8.9	ND	ND	ND	50
Phenanthrene	ND	ND	4.4	ND	14.3	10.8	ND	0.43J	ND	50
Anthracene	ND	ND	ND	ND	0.39J	0.77J	ND	ND	ND	50
Fluoranthene	ND	0.34J	ND	ND	ND	ND	ND	ND	ND	50
Pyrene	ND	0.24J	ND	ND	ND	ND	ND	ND	ND	50

All concentrations in micrograms per liter; equivalent to parts per billion.

ND Not detected above laboratory reporting limits.

NS No Standard.

J Indicates an estimated value; concentration reported was detected below the method detection limit.

\* New York State Ambient Water Quality Standards and Guidance Values, June 1998.

**Table 4-4**  
**Summary of Base Neutral Compound Analyses for Ground-Water Samples Collected**  
**at the Former Cibro Petroleum Facility, Island Park, New York.**  
**LAW Project Number 22000-0-0026**

Well Identification: Date Sampled:	OW-1 1/8/01	W-2 1/10/01	W-11 1/9/01	W-12 1/9/01	FB-010801 1/8/01	FB-010901 1/9/01	TB-010801 1/8/01	IB-011001 1/10/01	*NYSDEC Ground-Water Standards
Naphthalene	ND	ND	0.72J	0.33	ND	ND	NA	NA	10
Acenaphthene	ND	ND	14.7	5	ND	ND	NA	NA	20
Fluorene	ND	ND	4.4	1.5	ND	ND	NA	NA	50
Phenanthrene	ND	ND	2.7	0.87	ND	ND	NA	NA	50
Anthracene	ND	ND	0.39J	ND	ND	ND	NA	NA	50
Fluoranthene	ND	ND	0.86	ND	ND	ND	NA	NA	50
Pyrene	ND	ND	0.39J	ND	ND	ND	NA	NA	50

All concentrations in micrograms per liter; equivalent to parts per billion.

ND Not detected above laboratory reporting limits.

NS No Standard.

J Indicates an estimated value; concentration reported below the method detection limit.

NA Not analyzed.

\* New York State Ambient Water Quality Standards and Guidance Values, June 1998.

Table 4-5  
 Summary of Field Parameter Measurements of Ground-Water Samples Collected January 2001  
 at the Former Cibro Petroleum Facility, Island Park, New York.  
 LAW Project Number 22000-0-0026

Well ID	Date Sampled	Temperature (°C)	pH	Specific Conductance (uS/cm)	ORP (mV)	DO (mg/L)	Turbidity (NTU)	Sulfide (mg/L)	Ferrous Iron (mg/L)
MW-1	1/8/01	6.51	7.00	0.466	126.6	5.58	13.3	0	0
MW-2	1/8/01	7.03	7.83	1.056	-88	1.46	12.5	0	0
MW-3R	1/9/01	7.68	6.99	2.975	-81.1	0.59	26.1	0.25	4.2
MW-6	1/9/01	*	*	*	*	*	*	*	*
OW-1	1/8/01	4.52	7.11	1.321	-81.6	2.43	8.9	0	3.8
W-2	1/10/01	7.14	6.86	1.673	45.1	0.62	15.7	0.15	0
W-11	1/9/01	5.51	6.82	32.900	-208	0.58	15.1	6.75	0
W-12	1/9/01	2.23	7.58	29.700	101.3	7.04	1.8	0.1	0
LMW-1	1/9/01	5.49	7.61	1.921	-109.2	1.86	32.1	0	2
LMW-2	1/10/01	3.41	6.95	0.756	10.4	1.81	14.2	0	2.2
LMW-3	1/10/01	3.35	6.96	1.928	-180.3	3.82	2.2	12	2.6
LMW-4	1/8/01	5.10	7.02	0.711	-189.9	1.47	13.3	1.75	3.2
LMW-5	1/9/01	5.29	6.87	32.750	107.4	4.61	0.2	0	1.5

Field parameter readings measured at time of sample collection

°C Degrees Celsius. DO Dissolved Oxygen.  
 uS/cm Microsiemens per centimeter. mg/L Milligrams per liter.  
 ORP Oxidation-reduction potential. NTU Nephelometric turbidity units.  
 mV Millivolts. NC Not collected.  
 \* Insufficient water for parameter readings.

**Table 4-6**  
**Summary of Biogeochemical Data for Ground-Water Samples Collected**  
**at the Former Cibro Petroleum Facility, Island Park, New York.**  
**LAW Project Number 22000-0-0026**

Well Identification: Date Sampled:	MW-1 1/8/01	MW-2 1/8/01	MW-3R 1/9/01	MW-6 1/9/01	LMW-1 1/9/01	LMW-2 1/10/01	LMW-3 1/10/01	LMW-4 1/8/01	LMW-5 1/9/01
Iron (total)	1,840	739	29,600	NS	32,300	14,800	4,930	3,940	1,130
Iron (dissolved)	119J	58.9J	40.4J	NS	146J	57.2J	34.5J	78.3J	30.1J
Manganese (total)	53.9	68.8	660	NS	428	284	334	313	469
Dissolved manganese (dissolved)	20.5	52.9	426	NS	342	278	296	246	387
Total organic carbon	17.5	11.6	86	NS	240	102	67.7	67.2	29.2
Dissolved total organic carbon	8.62	10.4	68.9	NS	138	56.1	19.4	44.6	16.7
Alkalinity	94.6	227	912	NS	736	334	598	260	161
Ammonia	ND	0.23J	7.56	NS	10.7	2.67	0.23J	ND	ND
Biological Oxygen Demand (BOD)	2.2	21.4	15.9	NS	10.2	10.5	8	9.8	77
Chemical Oxygen Demand (COD)	39.9	33.5	203	NS	564	215	123	76.3	7,970
Chloride	103	220	738	NS	416	117	293	56.3	524
Nitrate	0.12	ND	0.017J	NS	ND	0.03	0.067	0.042	0.11
Nitrite	ND	ND	0.091	NS	0.033	0.03	0.38	ND	0.018J
Sulfate	36.9	68.2	11.1	NS	44.7	20.6	52.5	36.1	1,860
Carbon dioxide	16.9	NC	114.8	NC	NC	104.3	NC	NC	26.2
Oxygen	3.52	NC	ND	NC	NC	ND	NC	NC	ND
Nitrogen	14.8	NC	3.2	NC	NC	7.6	NC	NC	13.3
Methane	ND	NC	16.5	NC	NC	9.35	NC	NC	ND

All concentrations in milligrams per liter; equivalent to parts per million.

ND Not detected above laboratory reporting limits.

NS Not sampled; insufficient water for sample collection.

NC Not collected.

J Indicates an estimated value; concentration reported was detected below the method detection limit.

**Table 4-6**  
**Summary of Biogeochemical Data for Ground-Water Samples Collected**  
**at the Formerr Cibro Petroleum Facility, Island Park, New York.**  
**LAW Project Number 22000-0-0026**

Well Identification: Date Sampled:	OW-1 1/8/01	W-2 1/10/01	W-11 1/9/01	W-12 1/9/01	FB-010801 1/8/01	FB-010901 1/9/01
Iron (total)	10,800	2,670	7,410	133	ND	82.3
Iron (dissolved)	48.8J	92.5J	156J	26.1J	ND	45.3J
Manganese (total)	358	172	386	15.7	ND	0.97
Dissolved manganese (dissolved)	299	166	295	16.5	ND	4.55
Total organic carbon	54.7	36.2	26.8	13.2	0.94	15.5
Dissolved total organic carbon	30.5	22.1	2.19	8.03	0.31	4.66
Alkalinity	338	256	197	105	0.98	8.78
Ammonia	ND	0.52	ND	ND	ND	ND
Biological Oxygen Demand (BOD)	2.7	31	5	21	1.6	1.25
Chemical Oxygen Demand (COD)	102	102	3,220	4,910	12.1	29
Chloride	191	400	6,160	5,470	ND	0.19
Nitrate	0.087	1.05	0.05	1.3	0.056	0.027
Nitrite	0.013J	0.008J	0.016J	0.015J	ND	ND
Sulfate	93.3	20.5	1,800	1,320	ND	ND
Carbon dioxide	65.7	60.7	27.3	NC	NC	NC
Oxygen	0.19	ND	ND	NC	NC	NC
Nitrogen	14.7	11.3	12.4	NC	NC	NC
Methane	ND	0.49	0.44	NC	NC	NC

All concentrations in milligrams per liter; equivalent to parts per million.

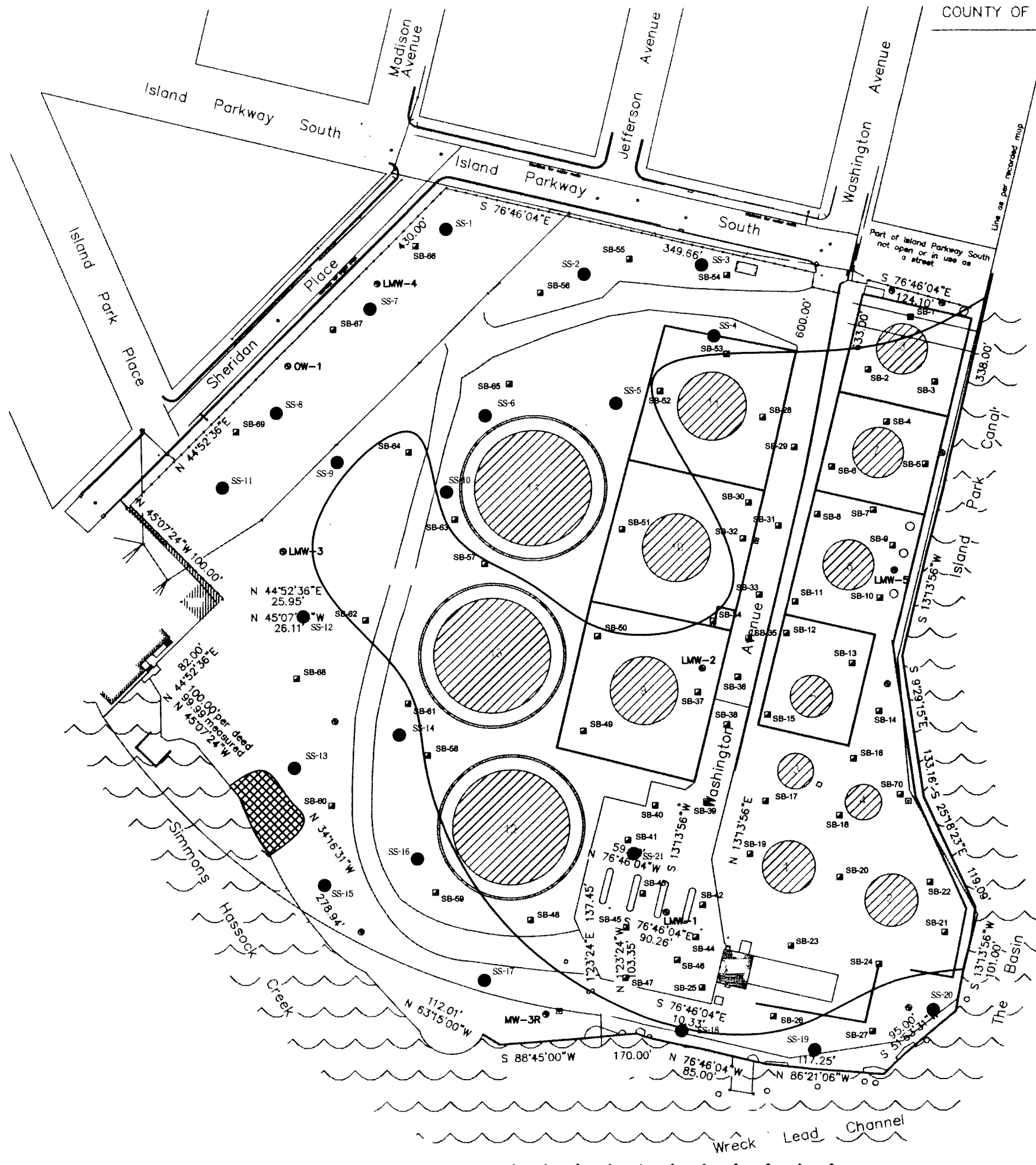
ND Not detected above laboratory reporting limits.

NS Not sampled; insufficient water for sample collection.

NC Not collected.

J Indicates an estimated value; concentration reported was detected below the method detection limit.

**APPENDIX B - 3**



NOTES:

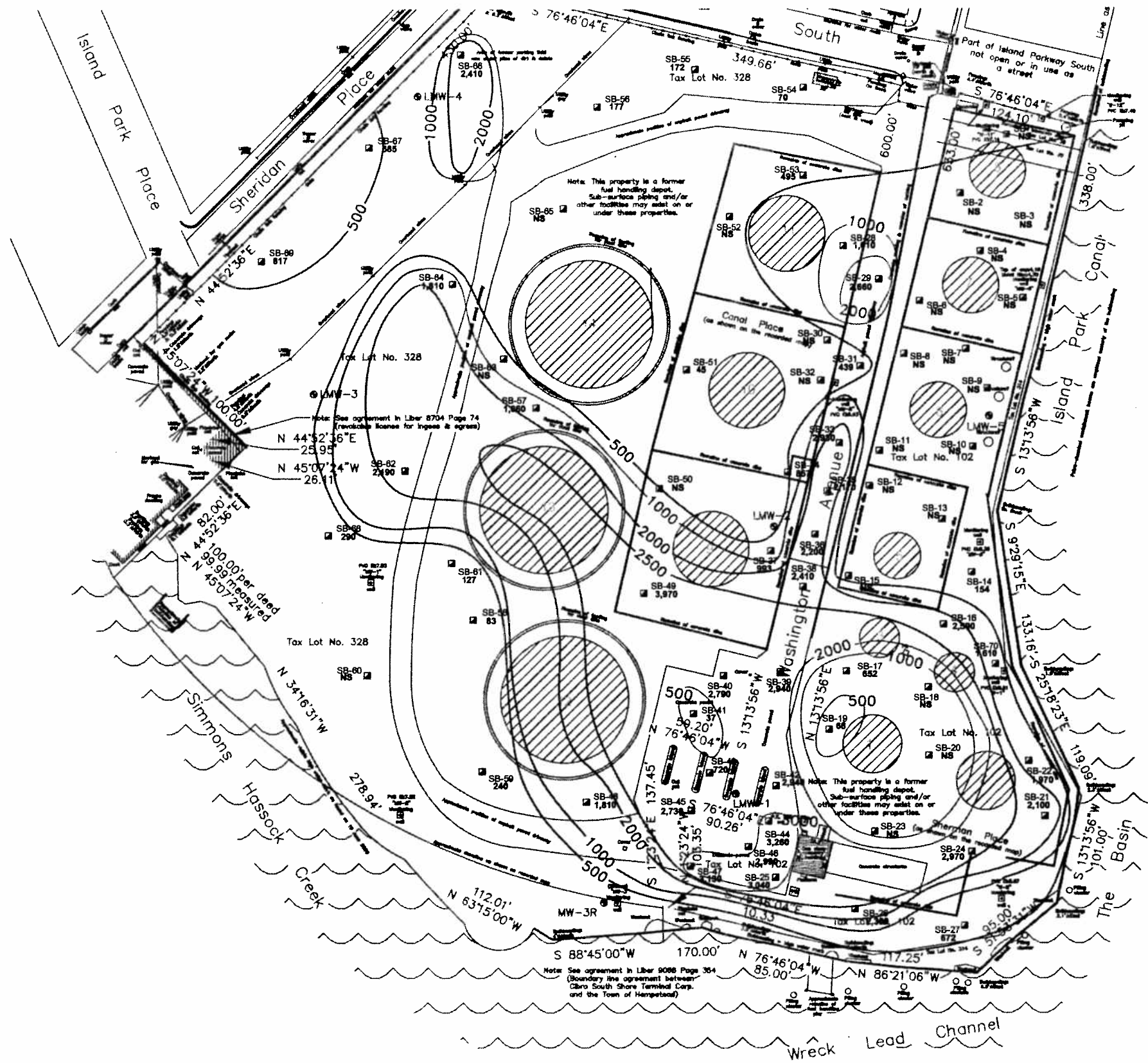
- LEGEND**
- LOCATIONS OF GEOPROBE BORINGS
  - LMW-2 LOCATION AND DESIGNATION OF MONITORING WELLS
  - (with diagonal lines) LOCATION AND DESIGNATION OF FORMER ABOVEGROUND STORAGE TANKS
  - (with dot) SS-13 LOCATION OF SUPPLEMENTAL GEOPROBE BORING
  - ▨ (cross-hatched) AREA OF POTENTIAL PCB-IMPACTED SOIL
  - BOUNDARY OF POTENTIAL CLEAN SOIL (TPH CONCENTRATION LESS THAN APPROXIMATELY 500 mg/Kg)

SURVEYED FOR & CERTIFIED TO:  
 ① BLUE ISLAND DEVELOPMENT, LLC

CERTIFIED TO:  
 ① CHICAGO TITLE INSURANCE COMPANY

SURVEYED: 23 NOVEMBER 1985  
 SURVEY BROUGHT TO DATE: 10 DECEMBER 1987  
 SURVEY BROUGHT TO DATE: 19 JUNE 2000

No.	CERTIFICATIONS REVISED ONLY	J.R.	10 AUGUST 2000
No.	DESCRIPTION	BY	DATE
REVISIONS			
Property situated at Harbor Isle near Island Park, New York			
Survey of Property			
			2



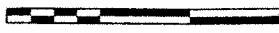
**LEGEND**

SB-7 184  
 □ SAMPLE LOCATION AND DESIGNATION.  
 ○ CONCENTRATION OF TOTAL PETROLEUM HYDROCARBONS (MILLIGRAMS PER KILOGRAM (MG/KG))

○ LOCATION AND DESIGNATION OF FORMER ABOVEGROUND STORAGE TANKS

**NOTES**

1. SHALLOW SOIL SAMPLES COLLECTED AT A DEPTH OF APPROXIMATELY 0-18 INCHES BELOW GROUND SURFACE.
2. SOIL SAMPLES ANALYZED FOR TOTAL PETROLEUM HYDROCARBONS USING METHOD 418.1.



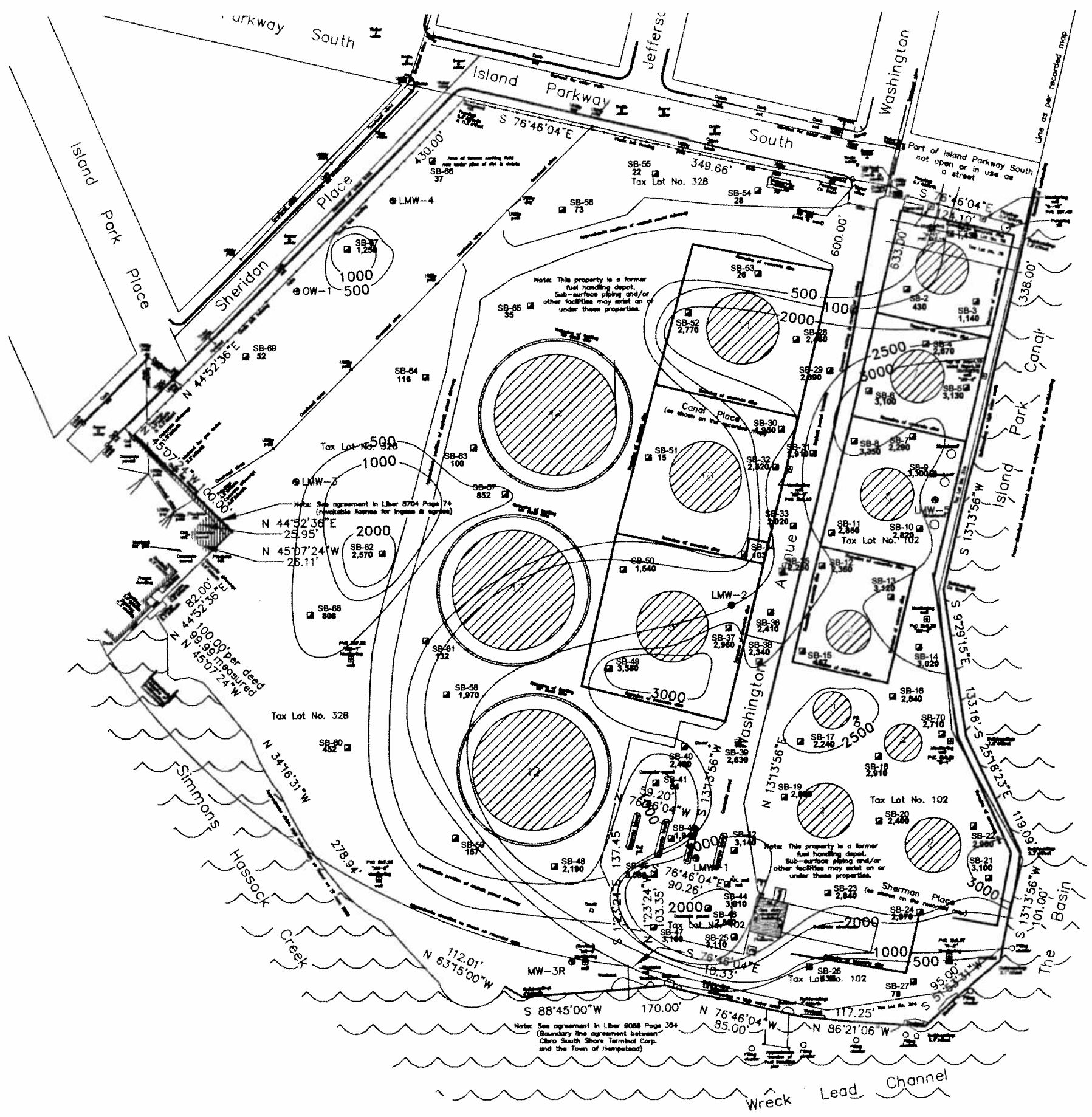
BLUE ISLAND, LLC.  
 FORMER CIBRO PETROLEUM FACILITY  
 ISLAND PARK, NEW YORK

**LAW**  
 ENGINEERING AND ENVIRONMENTAL SERVICES, INC.


ISOCONCENTRATION MAP OF TOTAL PETROLEUM HYDROCARBONS IN THE SHALLOW SOIL LAYER

DRAWING TITLE	ISOCONCENTRATION MAP OF TOTAL PETROLEUM HYDROCARBONS IN THE SHALLOW SOIL LAYER
FIGURE NUMBER	4-1
SCALE	1"=50'
PROJECT NUMBER	22000-0-0028
ISSUE DATE	10/20/00






**LEGEND**

 SB-7  
2,154  
 LOCATION AND DESIGNATION OF SOIL BORING  
 CONCENTRATION OF TOTAL PETROLEUM  
 HYDROCARBONS  
 (MILLIGRAMS PER KILOGRAM (MG/KG))

**NOTES**

1. INTERMEDIATE SOIL SAMPLES COLLECTED AT A DEPTH OF APPROXIMATELY 24-48 INCHES BELOW GROUND SURFACE.
2. SOIL SAMPLES ANALYZED FOR TOTAL PETROLEUM HYDROCARBONS USING METHOD 418.1.


 LOCATION AND DESIGNATION OF FORMER ABOVEGROUND STORAGE TANKS

BLUE ISLAND, LLC.  
FORMER CIBRO PETROLEUM FACILITY  
ISLAND PARK, NEW YORK

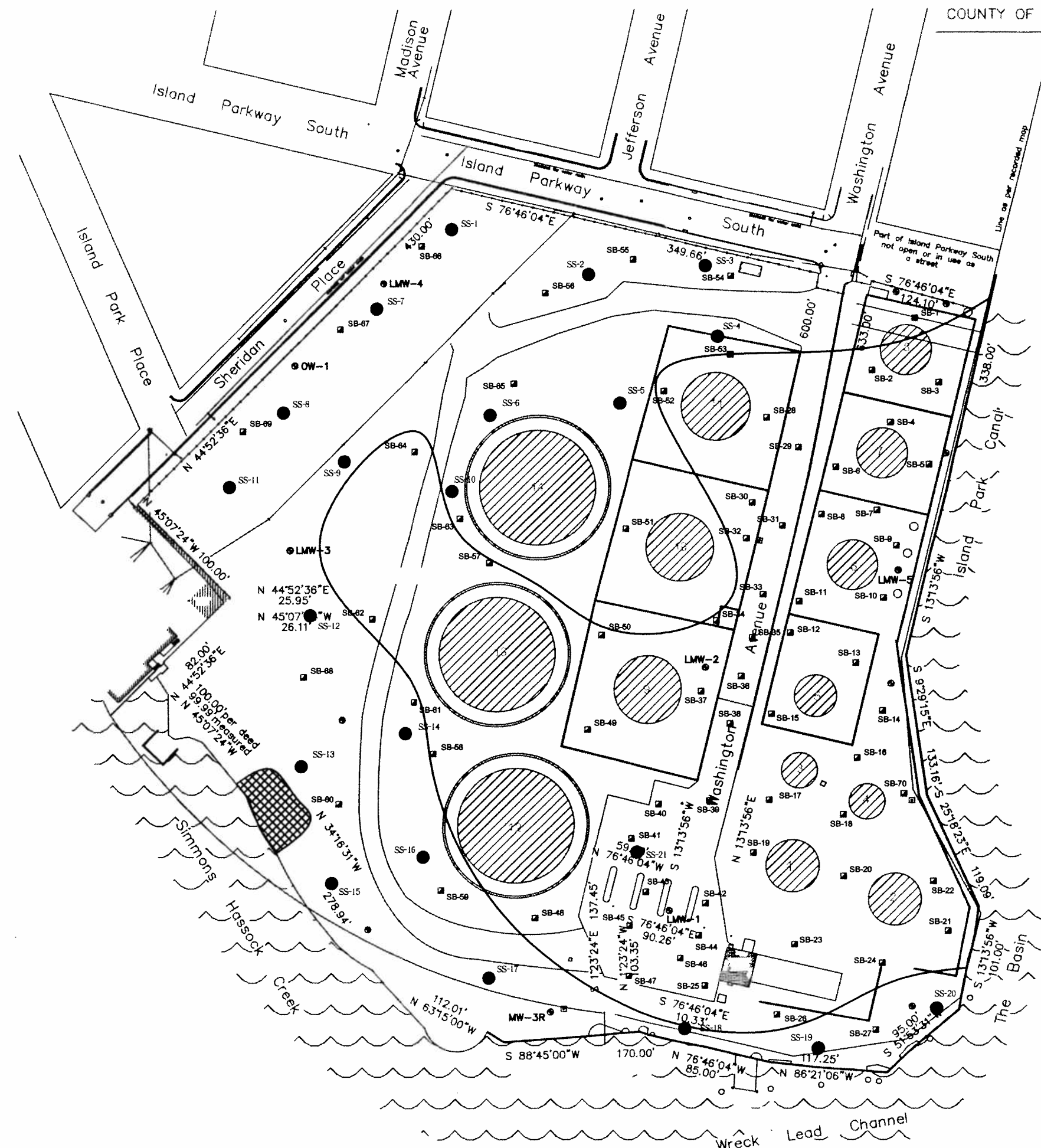
**LAW**  
ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

ISOCONCENTRATION MAP OF TOTAL  
PETROLEUM HYDROCARBONS IN  
THE INTERMEDIATE SOIL LAYER

DRAWING TITLE	4-2
DRAWING NUMBER	22000-0-0028
SCALE	AS SHOWN
DATE	31 JAN 01



**APPENDIX B - 4**



NOTES:

- LEGEND**
- LOCATIONS OF GEOPROBE BORINGS
  - LMW-2 LOCATION AND DESIGNATION OF MONITORING WELLS
  - ⊘ LOCATION AND DESIGNATION OF FORMER ABOVEGROUND STORAGE TANKS
  - SS-13 LOCATION OF SUPPLEMENTAL GEOPROBE BORING
  - ⊞ AREA OF POTENTIAL PCB-IMPACTED SOIL
  - BOUNDARY OF POTENTIAL CLEAN SOIL (TPH CONCENTRATION LESS THAN APPROXIMATELY 500 mg/Kg)

SURVEYED FOR & CERTIFIED TO:  
 ① BLUE ISLAND DEVELOPMENT, LLC

CERTIFIED TO:  
 ① CHICAGO TITLE INSURANCE COMPANY

SURVEYED: 23 NOVEMBER 1985  
 SURVEY BROUGHT TO DATE: 10 DECEMBER 1987  
 SURVEY BROUGHT TO DATE: 19 JUNE 2000

No.	CERTIFICATIONS REVISED ONLY	JLR	10 AUGUST 2000
No.	DESCRIPTION	BY	DATE
REVISIONS			
Property situated at Harbor Isle near Island Park, New York			
Survey of Property			
			2

Table 1. Summary of Semi-Volatile Organic Compounds Reported at Concentrations Above NYSDEC Recommended Soil Cleanup Objectives in Soil Samples Collected at the Former Cibro Petroleum Facility, Island Park, New York.

Compound (ug/kg)	Sample ID:		SS-9		SS-11		SS-12		NYSDEC Soil		NYSDEC Recommended Soil Cleanup Objective
	Lab ID:	Date Sampled:	Lab ID:	Date Sampled:	Lab ID:	Date Sampled:	Lab ID:	Date Sampled:	Cleanup Objectives to Protect	Ground Water	
Chrysene	L2919-3	5/14/01	L2919-4	5/14/01	L2619-8	5/14/01	L2619-12	5/14/01		400	400
Benzo(b)fluoranthene	L2919-3	5/14/01	L2919-4	5/14/01	L2619-8	5/14/01	L2619-12	5/14/01		1,100	1,100
Benzo(a)anthracene	L2919-3	5/14/01	L2919-4	5/14/01	L2619-8	5/14/01	L2619-12	5/14/01		3,000	224
Dibenzo(a,h)anthracene	L2919-3	5/14/01	L2919-4	5/14/01	L2619-8	5/14/01	L2619-12	5/14/01		165,000,000	14
Benzo(a)pyrene	L2919-3	5/14/01	L2919-4	5/14/01	L2619-8	5/14/01	L2619-12	5/14/01		11,000	61

Compound (ug/kg)	Sample ID:		SS-16		SS-17		SS-19		NYSDEC Soil		NYSDEC Recommended Soil Cleanup Objective
	Lab ID:	Date Sampled:	Lab ID:	Date Sampled:	Lab ID:	Date Sampled:	Lab ID:	Date Sampled:	Cleanup Objectives to Protect	Ground Water	
Chrysene	L2919-13	5/14/01	L2919-14	5/14/01	L2619-16	5/14/01	L2619-19	5/14/01		400	400
Benzo(b)fluoranthene	L2919-13	5/14/01	L2919-14	5/14/01	L2619-16	5/14/01	L2619-19	5/14/01		1,100	1,100
Benzo(a)anthracene	L2919-13	5/14/01	L2919-14	5/14/01	L2619-16	5/14/01	L2619-19	5/14/01		3,000	224
Dibenzo(a,h)anthracene	L2919-13	5/14/01	L2919-14	5/14/01	L2619-16	5/14/01	L2619-19	5/14/01		165,000,000	14
Benzo(a)pyrene	L2919-13	5/14/01	L2919-14	5/14/01	L2619-16	5/14/01	L2619-19	5/14/01		11,000	61
Benzo(k)fluoranthene	L2919-13	5/14/01	L2919-14	5/14/01	L2619-16	5/14/01	L2619-19	5/14/01		1,100	1,100

ug/kg Micrograms per kilogram; equivalent to parts per billion.

-- Compound either not detected above laboratory reporting limits or below NYSDEC standards.

Soil samples collected at locations SS-1, SS-2, SS-5, SS-6, SS-7, SS-10, SS-20, and SS-21 did not have constituents above NYSDEC standards and were not included in this table (see results in Attachment A)

Prepared/Date: DJN 7/10/01  
Checked/Date: SH 7/12/01

Table 2. Summary of Detected Volatile and Semi-Volatile Organic Compounds Reported at Concentrations Above NYSDEC Ambient Water Quality Standards in Ground-Water Samples Collected at the Former Cibro Petroleum Facility, Island Park, New York.

Compound (ug/L)	Sample ID: Lab ID: Date Sampled:	W-11 L2919-3 5/15/01	MW-3R L2919-4 5/15/01	NYSDEC Ambient Water Quality Standards
<b><u>VOCs</u></b>				
Benzene		--	3.8	1
Naphthalene		--	67.3	10
<b><u>SVOCs</u></b>				
Chrysene		0.55	--	0.002
Benzo(a)anthracene		0.72	--	0.002
Acenaothene		37.5	--	20

ug/L Micrograms per liter; equivalent to parts per billion.

-- Compound either not detected above laboratory reporting limits or below NYSDEC standards.

Ground-water samples collected in monitoring wells MW-1, MW-2, LMW-3, LMW-4, OW-1, W-2, and W-12 did not have constituents detected above NYSDEC standards and were not included in this table (see results in Attachment A)

Prepared/Date: DJN 7/10/01 *DJN*

Checked/Date: SH 7/12/01 *SH*