

ADVANCED GEOSERVICES CORP.

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August 10, 2001

2001-810-10

VIA FEDERAL EXPRESS

Mr. Khai Dao
USEPA, Region III
1650 Arch Street
Philadelphia, Pennsylvania 19103-2029

RE: Exide Technologies - Reading, Pennsylvania
Bernhart Park Results

Dear Mr. Dao:

This letter was prepared on behalf of Exide Technologies (Exide) and pursuant to the reporting requirements in Section 3.0 of the Bernhart Park Sampling Work Plan (Work Plan) revised July 5, 2001. Specifically, this letter provides documentation of the sampling activities and the associated sample results.

Per the Work Plan, three composite (0"-3") soil samples were collected from each half-acre Exposure Area (EA) within the park's boundaries (Table 1). Each EA was surveyed using GPS and divided into four separate and approximately equal quadrants. Approximate EA boundaries were pre-determined using a base map of the area and CADD; in a few cases, the EA boundaries were modified in the field based on actual field observations. Modification of an EA was largely determined by the accessibility of a given EA to the local population and all EA modifications were approved by Khai Dao of the USEPA. The soil samples were collected and prepared per the Work Plan and were analyzed by XRF with twenty percent of the samples being sent to the laboratory (MJ Reider) for correlation purposes. Table 2 shows the XRF and laboratory sample results used for correlation purposes. Figure 1 shows the graph of the data with the linear trend line, correlation equation, and the R^2 value. The R^2 value of 0.96 shows a strong correlation between the XRF and the laboratory data. An R^2 value greater than 0.8 is generally considered acceptable and useful, while a value greater than 0.9 is considered excellent. Given the strong correlation, a trend line equation was used to correct the XRF data, as presented in Table 3. A mean value, using the corrected XRF data, was then calculated for each EA as presented in Table 3. The EA boundaries and mean values are also shown on Figure 2.



Mr. Khai Dao
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In accordance with the Work Plan, sediment (0"-3") and aqueous samples were collected from fifteen random locations within the reservoir, as shown on Figure 2. Aqueous samples were collected prior to sediment sampling and at two depths; 3' below the water surface and 3' above the sediment surface. In addition, aqueous samples were collected at the inlet and discharge points of the reservoir, as shown on Figure 2. All aqueous samples were analyzed and found to be less than 0.05 mg/l. This concentration has been defined by the PADEP (PA Code 25:16.51) as being protective of human health. The results of sediment, water, and field parameters are presented in Tables 4, 5, and 6, respectively. All laboratory data were validated by AGC and validation reports are provided in Attachment A.

Exide has performed a risk assessment based on the new data set and has concluded, as with the original risk assessment dated April 26, 2001, that no significant elevations in blood lead levels are expected due to Park usage. The risk assessment is included with this submission as Attachment B.

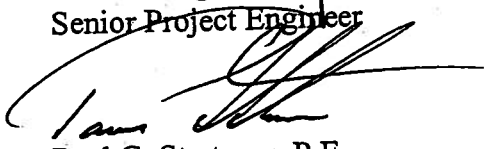
We hope that this information will aid USEPA in expeditiously re-opening the Park. Please contact Paul Hagerty at (610) 675-2113 with any questions regarding this submission.

Respectfully,

ADVANCED GEOSERVICES CORP.



Paul A. Hagerty, P.E.
Senior Project Engineer



Paul G. Stratman, P.E.
Senior Project Consultant

cc: N. Lebo - (Exide)
D. Shank - (Exide)
R. Collings - (Schnader, Harrison, Segal & Lewis)
W. Pepe - (AGC)
T. Bowers - (Gradient)
J. Flesher - (PADEP)



TABLES

Table 1
 Exide Technologies
 Reading, Pennsylvania
 Bernhart Park Exposure Areas



EA ID	Actual Area (acres)
A	0.3
B	0.4
C	0.3
D	0.3
E	0.3
F	0.4
G	0.5
H	0.5
I	0.5
K	0.5
L	0.4
M	0.5
O	0.3
P	0.3
Q	0.5
R	0.3
S	0.3
T	0.2
U	0.3
V	0.3
W	0.3
X	0.3
Y	0.3
Z	0.3
AA	0.3
BB	0.5
CC	0.4
DD	0.5
EE	0.5
FF	0.5
GG	0.5
HH	0.3
II	0.4
JJ	0.3
KK	0.5
LL	0.3
MM	0.2
NN	0.5
OO	0.5
PP	0.3
QQ	0.2
RR	0.2
SS	0.3
TT	0.1
UU	0.2
VV	0.4
WW	0.5
XX	0.4
YY	0.2
ZZ	0.4
AAA	0.5
BBB	0.5
CCC	0.4
DDD	0.3

Table 2
 Exide Technologies
 Reading, Pennsylvania
 Bernhart Park
 XRF and Laboratory Data



Sample ID	XRF Result (mg/kg)	XRF ± (mg/kg)	Lab Result (mg/kg)
AA-Bernhart Park-01A	309	87	248
A-Bernhart Park-01A	336	53	318
BBB-Bernhart Park-01A	252	50	350
C-Bernhart Park-02A	432	62	1020
CC-Bernhart Park-01A	532	56	730
CCC-Bernhart Park-02A	566	71	626
DD-Bernhart Park-02A	594	70	597
E-Bernhart Park-02A	556	57	641
EE-Bernhart Park-03A	537	51	421
EE-Bernhart Park-04A	537	51	481
G-Bernhart Park-01A	1310	110	1550
GG-Bern-SCS-03A	235	45	250
JJ-Bernhart Park-03A	293	53	292
M-Bernhart Park-03A	667	51	656
NN-Bernhart Park-01A	3730	190	4530
O-Bernhart Park-02A	470	47	562
P-Bernhart Park-02A	383	47	478
PP-Bernhart Park-03A	919	74	1260
Q-Bernhart Park-01A	329	55	403
R-Bernhart Park-02A	578	65	583
RR-Bernhart Park-02A	560	52	876
RR-Bernhart Park-02B (Duplicate)	560	52	801
RR-Bernhart Park-03A	776	76	885
S-Bern-SCS-02A	1500	110	1570
SS-Bernhart Park-03A	759	74	848
V-Bernhart Park-01A	726	81	915
V-Bernhart Park-01D (Duplicate)	726	81	873
VV-Bernhart Park-03A	470	62	562
W-Bernhart Park-01A	1000	87	1150
W-Bernhart Park-02A	891	88	1130
W-Bernhart Park-03A	836	61	924
X-Bernhart Park-01A	1250	95	1570
XX-Bernhart Park-03A	842	87	831
Y-Bernhart Park-01A	1120	93	1340
Y-Bernhart Park-02A	1150	95	1390
YY-Bernhart Park-01A	519	69	556
Z-Bernhart Park-01A	1160	100	1270
Z-Bernhart Park-02A	1070	93	1220
ZZ-Bernhart Park-02A	764	75	777

Table 3
 Exide Technologies
 Reading, Pennsylvania
 Bernhart Park
 Soil Sampling Results



Sample ID	Pb (XRF)	Corrected Value	Mean Corrected Value
	(mg/kg)	(mg/kg)	(mg/kg)
AA-BP-01A	309.2	351.1	443.9
AA-BP-02A	427.2	492.5	
AA-BP-02A (Dup)	474.8	549.5	
AA-BP-03A	335.4	382.5	374.8
A-BP-01A	336.2	383.5	
A-BP-02A	398.6	458.2	
A-BP-03A	252.2	282.8	1062.8
BB-BP-01A	462.4	534.7	
BB-BP-02A	517.6	600.8	
BB-BP-03A	1729.6	2053.0	328.6
B-BP-01A	252.6	283.3	
B-BP-02A	294.6	333.6	
B-BP-03A	324.0	368.8	790.9
C-BP-01A	662.4	774.3	
C-BP-02A	432.0	498.2	
C-BP-03A	934.4	1100.2	526.4
CC-BP-01A	532.0	618.1	
CC-BP-02A	481.6	557.7	
CC-BP-03A	352.8	403.3	667.0
D-BP-01A	586.4	683.2	
D-BP-02A	559.2	650.7	
D-BP-03A	572.8	667.0	955.3
DD-BP-01A	1100.0	1298.6	
DD-BP-02A	594.0	692.4	
DD-BP-03A	746.4	875.0	619.7
E-BERN-01A	730.0	855.3	
E-BERN-02A	555.6	646.3	
E-BERN-03A	314.6	357.6	525.6
EE-BERN-01A	336.2	383.5	
EE-BERN-02A	491.2	569.2	
EE-BERN-03A	537.2	624.3	1147.2
F-BERN-01A	1080.0	1274.7	
F-BERN-02A	930.4	1095.4	
F-BERN-03A	910.4	1071.5	437.5
FF-BP-01A	511.2	593.1	
FF-BP-02A	233.8	260.8	
FF-BP-03A	399.0	458.7	1140.8
G-BP-01A	1309.6	1549.8	
G-BP-02A	692.8	810.7	
G-BP-03A	902.4	1061.9	204.9
GG-BP-01A	141.7	150.4	
GG-BP-02A	184.9	202.2	
GG-BP-03A	235.0	262.2	

Table 3
 Exide Technologies
 Reading, Pennsylvania
 Bernhart Park
 Soil Sampling Results



Sample ID	Pb (XRF) (mg/kg)	Corrected Value (mg/kg)	Mean Corrected Value (mg/kg)
H-BP-01A	779.2	914.3	564.5
H-BP-02A	282.8	319.5	
H-BP-03A	399.8	459.7	
HH-BERN-01A	372.8	427.3	462.1
HH-BERN-02A	417.6	481.0	
HH-BERN-03A	415.2	478.1	
I-BP-01A	333.6	380.3	419.8
I-BP-02A	397.6	457.0	
I-BP-03A	368.4	422.0	
II-BP-01A	272.6	307.3	471.6
II-BP-02A	585.6	682.3	
II-BP-03A	371.2	425.4	
JJ-BP-01A	347.6	397.1	337.9
JJ-BP-02A	253.6	284.5	
JJ-BP-03A	293.4	332.2	
K-BP-01A	466.4	539.5	639.8
K-BP-02A	738.8	865.9	
K-BP-03A	445.2	514.1	
KK-BERN-01A	632.4	738.4	692.7
KK-BERN-02A	571.6	665.5	
KK-BERN-03A	578.8	674.1	
L-BP-01A	325.8	371.0	323.7
L-BP-02A	167.1	180.8	
L-BP-03A	366.2	419.4	
M-BP-01A	849.6	998.6	860.3
M-BP-02A	686.0	802.6	
M-BP-03A	666.8	779.6	
O-BP-01A	895.2	1053.3	750.3
O-BP-02A	470.4	544.3	
O-BP-03A	561.6	653.5	
P-BP-01A	723.6	847.6	607.1
P-BP-02A	382.6	439.1	
P-BP-03A	462.4	534.7	
Q-BP-01A	328.8	374.6	462.1
Q-BP-02A	383.2	439.8	
Q-BP-03A	493.6	572.1	
R-BP-01A	649.0	758.3	618.3
R-BP-02A	577.6	672.7	
R-BP-03A	370.0	424.0	
S-BERN-01A	634.4	740.8	1128.7
S-BERN-02A	1500.0	1777.9	
S-BERN-03A	740.0	867.3	
T-BERN-01A	2160.0	2568.7	1921.4
T-BERN-02A	1429.6	1693.6	
T-BERN-03A	1269.6	1501.9	

Table 3
 Exide Technologies
 Reading, Pennsylvania
 Bernhart Park
 Soil Sampling Results



Sample ID	Pb (XRF)	Corrected Value	Mean Corrected Value
	(mg/kg)	(mg/kg)	(mg/kg)
	952.0	1121.3	1176.7
	653.2	763.3	
U-BERN-01A	1389.6	1645.6	
U-BERN-02A	726.0	850.5	875.6
U-BERN-03A	702.8	822.7	
V-BERN-01A	812.0	953.6	
V-BERN-02A	126	131.6	
V-BERN-03A	113	116.0	126.4
Sed Pond-01A	152	162.8	
Sed Pond-02A	60	52.6	
Sed Pond-03A	157	168.7	
Sed Pond-04A	1249.6	1477.9	1526.1
Sed Pond-05A	1220.0	1442.4	
X-BERNHART PARK-01A	1400.0	1658.1	
X-BERNHART PARK-02A	893.6	1051.3	852.9
X-BERNHART PARK-03A	448.0	517.4	
XX-BERN-01A	842.4	990.0	
XX-BERN-02A	1120.0	1322.6	1522.1
XX-BERN-03A	1150.0	1358.6	
Y-BERNHART PARK-01A	1589.6	1885.3	
Y-BERNHART PARK-02A	519.2	602.7	829.0
Y-BERNHART PARK-03A	840.0	987.1	
YY-BERN-01A	764.8	897.0	
YY-BERN-02A	1160.0	1370.5	1108.5
YY-BERN-03A	1069.6	1262.2	
Z-BERN-01A	594.4	692.8	
Z-BERN-02A	921.6	1084.9	1022.1
Z-BERN-03A	763.6	895.6	
ZZ-Bern-01A	922.4	1085.8	
ZZ-Bern-02A	676.0	790.6	631.6
ZZ-Bern-03A	543.6	632.0	
AAA-BERN-01A	410.4	472.4	
AAA-BERN-02A	252.0	282.6	360.9
AAA-BERN-03A	353.0	403.6	
BBB-BP-01A	347.0	396.4	
BBB-BP-02A	459.6	531.3	590.6
BBB-BP-03A	565.6	658.3	
CCC-BP-01A	502.0	582.1	
CCC-BP-02A	1009.6	1190.3	963.3
CCC-BP-03A	948.0	1116.5	
DDD-BP-01A	502.8	583.1	
DDD-BP-02A	1269.6	1501.9	1294.5
DDD-BP-03A	1160.0	1370.5	
LL-BERNHART-01A	860.0	1011.1	2029.5
LL-BERNHART-02A	1710.0	2029.5	
LL-BERNHART-03A	3730.0	4449.9	4845.3
MM-BERNHART-01A (Composite of 5 Discrete Samples)	4770.0	5696.0	
NN-BERNHART-01A	3680.0	4390.0	
NN-BERNHART-02A	2499.2	2975.2	3654.6
NN-BERNHART-03A	2889.6	3442.9	
OO-BERNHART PARK-01A	3810.0	4545.8	
OO-BERNHART PARK-02A	600.0	699.5	1154.5
OO-BERNHART PARK-03A	1420.0	1682.1	
PP-BERNHART PARK-01A	919.2	1082.0	
PP-BERNHART PARK-02A	1200.0	1418.5	1006.4
PP-BERNHART PARK-03A	674.8	789.2	
QQ-BERN-01A	693.6	811.7	
QQ-BERN-02A			
QQ-BERN-03A			

Table 3
 Exide Technologies
 Reading, Pennsylvania
 Bernhart Park
 Soil Sampling Results



Sample ID	Pb (XRF) (mg/kg)	Corrected Value (mg/kg)	Mean Corrected Value (mg/kg)
RR-BERNHART PARK-01A	573.2	667.4	743.0
RR-BERNHART PARK-02A	560.0	651.6	
RR-BERNHART PARK-03A	775.6	909.9	
SS-BERN-01A	903.2	1062.8	1016.3
SS-BERN-02A	931.2	1096.4	
SS-BERN-03A	758.8	889.8	
TT-BERN P-01A	1629.6	1933.2	1973.2
TT-BERN P-02A	1420.0	1682.1	
TT-BP-03A	1939.2	2304.2	
VV-BERN-01A	660.8	772.4	628.0
VV-BERN-02A	490.4	568.2	
VV-BERN-03A	469.6	543.3	
W-BERNHART PARK-01A	1000.0	1178.8	1069.9
W-BERNHART PARK-02A	891.2	1048.5	
W-BERNHART PARK-03A	836.0	982.3	
WW-BERN-01A	426.0	491.1	577.0
WW-BERN-02A	441.2	509.3	
WW-BERN-03A	626.0	730.7	
UU-BERN-01A (Composite of 5 Discrete Samples)	2280	2712.5	2712.5

Table 4
Exide Technologies
Reading, Pennsylvania
Bernhart Park
Bernhart Park Sediment Sampling Results



Sample ID	Pb (mg/kg)	Mean Pb (mg/kg)
RESERVOIR SEDIMENT RESULTS		
Bernhart 1W Sed	246	298.3
Bernhart 2W Sed	308	
Bernhart 3W Sed	212	
Bernhart 4W Sed	286	
Bernhart 5W Sed	417	
Bernhart 6W Sed	279	
Bernhart 7W Sed	326	
Bernhart 8W Sed	246	
Bernhart 9W Sed	221	
Bernhart 10W Sed	197	
Bernhart 11W Sed	267	
Bernhart 12W Sed	278	
Bernhart 13W Sed	203	
Bernhart 14W Sed	470	
Bernhart 15W Sed	345	
Bernhart 16W Sed (Duplicate of 14W Sed)	471	

Table 5
 Exide Technologies
 Reading, Pennsylvania
 Bernhart Park
 Bernhart Park Water Sampling Results



Sample ID	(mg/l)
RESERVOIR WATER RESULTS	
	Pb MDL = 0.05 (mg/L)
Bernhart 1 WA Total	<0.05
Bernhart 1 WA Dissolved	<0.05
Bernhart 1 WB Total	<0.05
Bernhart 1 WB Dissolved	<0.05
Bernhart 1 WC Total	<0.05
Bernhart 1 WD Dissolved	<0.05
Bernhart 2 WA Total	<0.05
Bernhart 2 WA Dissolved	<0.05
Bernhart 2 WB Total	<0.05
Bernhart 2 WB Dissolved	<0.05
Bernhart 3 WA Total	<0.05
Bernhart 3 WA Dissolved	<0.05
Bernhart 3 WB Total	<0.05
Bernhart 3 WB Dissolved	<0.05
Bernhart 4 WA Total	<0.05
Bernhart 4 WA Dissolved	<0.05
Bernhart 4 WB Total	<0.05
Bernhart 4 WB Dissolved	<0.05
Bernhart 5 WA Total	<0.05
Bernhart 5 WA Dissolved	<0.05
Bernhart 5 WB Total	<0.05
Bernhart 5 WB Dissolved	<0.05
Bernhart 6 WA Total	<0.05
Bernhart 6 WA Dissolved	<0.05
Bernhart 6 WB Total	<0.05
Bernhart 6 WB Dissolved	<0.05
Bernhart 6 WE Total	<0.05
Bernhart 6 WF Dissolved	<0.05
Bernhart 7 WA Total	<0.05
Bernhart 7 WA Dissolved	<0.05
Bernhart 7 WB Total	<0.05
Bernhart 7 WB Dissolved	<0.05
Bernhart 8 WA Total	<0.05
Bernhart 8 WA Dissolved	<0.05
Bernhart 8 WB Total	<0.05
Bernhart 8 WB Dissolved	<0.05
Bernhart 9 WA Total	<0.05
Bernhart 9 WA Dissolved	<0.05
Bernhart 9 WB Total	<0.05
Bernhart 9 WB Dissolved	<0.05
Bernhart 10 WA Total	<0.05
Bernhart 10 WA Dissolved	<0.05

Table 5
 Exide Technologies
 Reading, Pennsylvania
 Bernhart Park
 Bernhart Park Water Sampling Results



Sample ID	(mg/l)
RESERVOIR WATER RESULTS	
	Pb
	MDL = 0.05 (mg/L)
Bernhart 10 WB Total	<0.05
Bernhart 10 WB Dissolved	<0.05
Bernhart 11 WA Total	<0.05
Bernhart 11 WA Dissolved	<0.05
Bernhart 11 WB Total	<0.05
Bernhart 11 WB Dissolved	<0.05
Bernhart 12 WA Total	<0.05
Bernhart 12 WA Dissolved	<0.05
Bernhart 12 WB Total	<0.05
Bernhart 12 WB Dissolved	<0.05
Bernhart 13 WA Total	<0.05
Bernhart 13 WA Dissolved	<0.05
Bernhart 13 WB Total	<0.05
Bernhart 13 WB Dissolved	<0.05
Bernhart 14 WA Total	<0.05
Bernhart 14 WA Dissolved	<0.05
Bernhart 14 WB Total	<0.05
Bernhart 14 WB Dissolved	<0.05
Bernhart 15 WA Total	<0.05
Bernhart 15 WA Dissolved	<0.05
Bernhart 15 WB Total	<0.05
Bernhart 15 WB Dissolved	<0.05
Bernhart Inlet Total	<0.05
Bernhart Inlet Dissolved	<0.05
Bernhart Outlet Total	<0.05
Bernhart Outlet Dissolved	<0.05
Bernhart SED Pond Total	<0.05
Bernhart SED Pond Dissolved	<0.05

Note 1: WA samples taken at 3 feet below surface.

Note 2: WB samples taken at 3 feet from bottom.

Note 3: WC and WE samples are duplicates of WA samples.

Note 4: WD and WF samples are duplicates of WB samples.

Note 5: MDL = Method Detection Limit

Table 6
 Exide Technologies
 Reading, Pennsylvania
 Bernhart Park Field Data



ID	D.O. (mg/l)	pH	Temp (C)	SpC (mS)	ORP (mV)
Point 1	8.32	8.2	26.6	249	22
Point 2	8.33	8.11	27	238	71
Point 3	8.35	8.05	24.7	243	68
Point 4	6.85	7.59	23.3	240	31
Point 5	7.35	6.17	23.5	241	15
Point 6	9.81	8.32	25.2	232	72
Point 7	8.41	8.39	27.4	239	81
Point 8	8.01	7.78	24.3	239	70
Point 9	8.05	8.19	23.9	238	23
Point 10	6.65	7.77	20.3	249	46
Point 11	9.51	8.35	25.2	233	81
Point 12	8.88	8.33	24.3	235	70
Point 13	7.9	7.81	24.1	240	56
Point 14	9.01	8.14	27.2	235	48
Point 15	7.15	8.08	23.2	236	26
Inlet	8.43	8.45	26	249	22
Outlet	9.04	8.15	25.5	245	30
Minimum	6.65	6.17	20.3	232	15
Average	8.24	7.99	24.8	240	49
Maximum	9.81	8.45	27.4	249	81

Note: D.O.
 SpC
 ORP

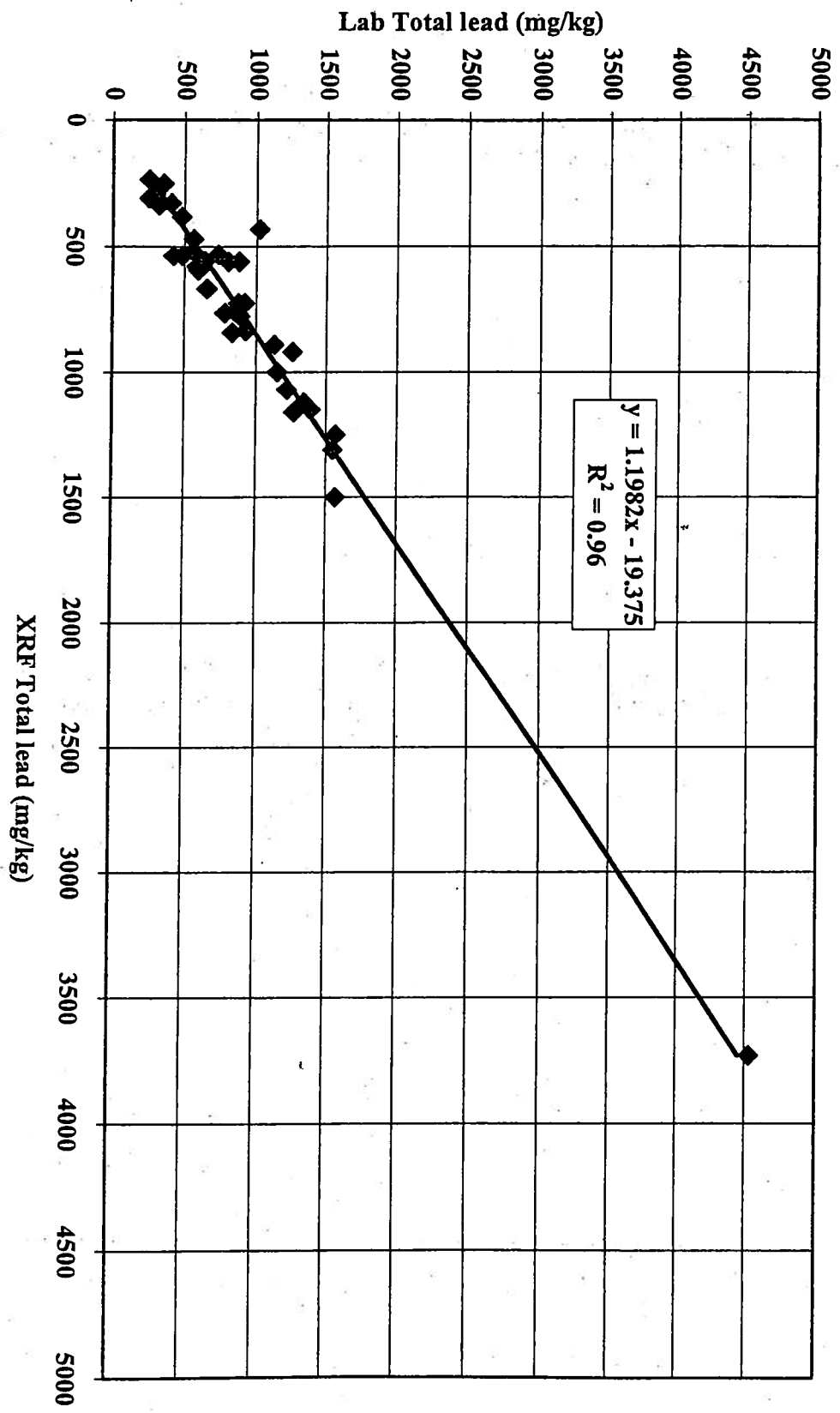
Dissolved Oxygen
 Specific Conductance
 Oxidation Reduction Potential

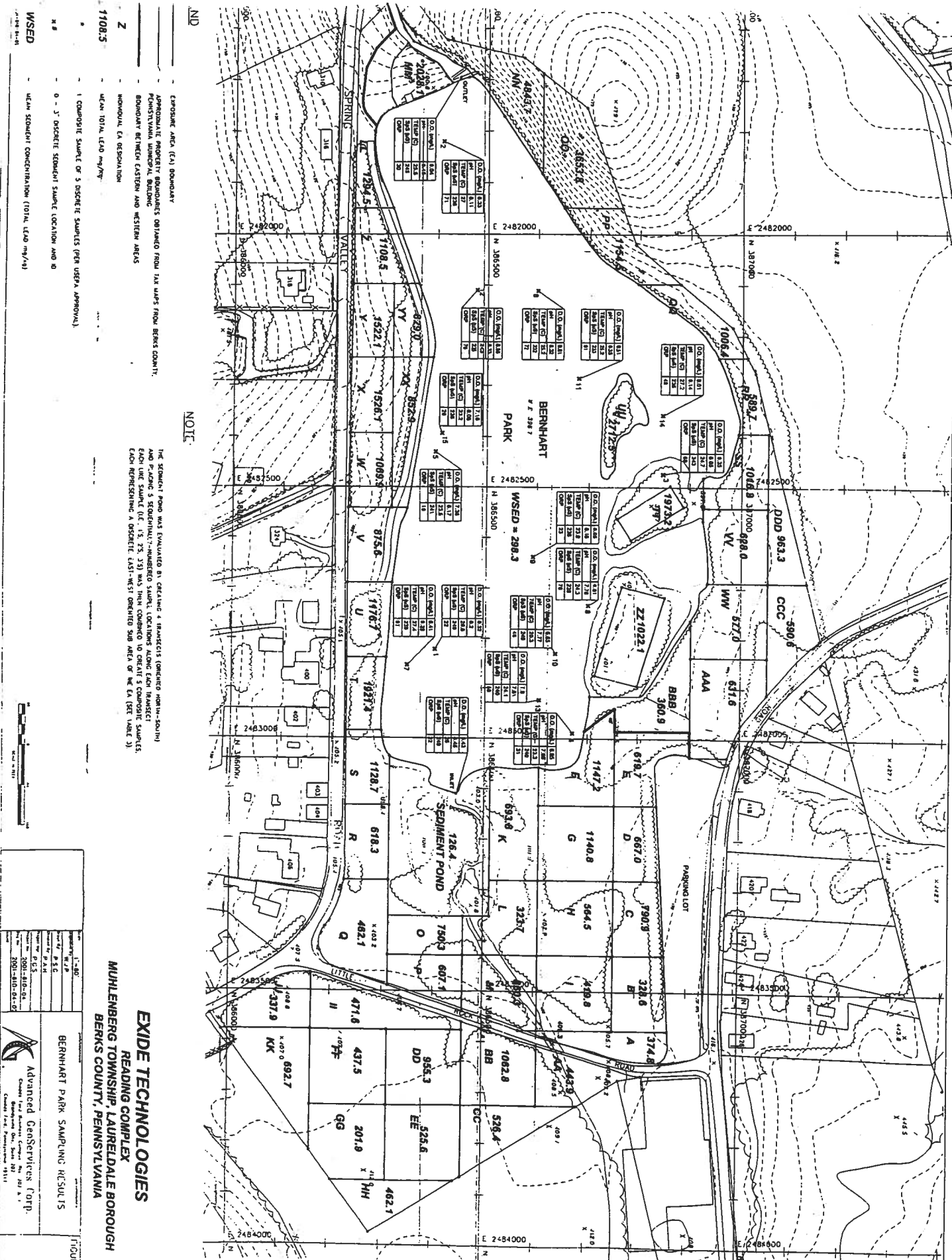


FIGURES



XRF vs Lab





ND - EXPOSURE AREA (EA) BOUNDARY

APPROXIMATE PROPERTY BOUNDARIES OBTAINED FROM TAX MAPS FROM BERKS COUNTY, PENNSYLVANIA, UNLESS OTHERWISE NOTED.

BOUNDARY BETWEEN EASTERN AND WESTERN AREAS

WORLDWIDE E.A. DESIGNATION

1108.3 - MEAN TOTAL LEAD (mg/lv)

Z - COMPOSITE SAMPLE OF 3 DISCRETE SAMPLES (PER USEPA APPROVAL)

0 - 3' - DISCRETE STODHART SAMPLE LOCATION AND ID

WSED - MEAN STODHART CONCENTRATION (TOTAL LEAD (mg/lv))

NOTE

THE STODHART POND WAS EVALUATED BY CREATING 4 SAMPLES (LOCATED WITHIN 200 FT) AND PLACING 3 STODHART NUMBERED SAMPLERS. LOCATIONS INDICATED ON THIS MAP. EACH USE SAMPLE (IE. 1'S, 2'S, 3'S) WAS THEN COMBINED TO CREATE 1 COMPOSITE SAMPLE. EACH REPRESENTING A DISCRETE, EAST-WEST ORIENTED SUB AREA OF THE EA (SEE TABLE 3)

EXIDE TECHNOLOGIES
READING COMPLEX
MUHLENBERG TOWNSHIP, LAURELDALE BOROUGH
BERKS COUNTY, PENNSYLVANIA

BERNHART PARK SAMPLING RESULTS

DATE	1-1-00
PROJECT	W.S.P.
CLIENT	BERKS COUNTY
ANALYST	R.S.C.
FIELD	P.A.H.
LAB	O.C.S.
PHONE	700-810-0100
FAX	700-810-0100
EMAIL	3001-810-0100

Advanced GenServices Corp.
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