54382

TABLE 2-1

ONSITE MONITORING WELL PURGE AND WATER QUALITY DATA
PHASE I

Well I.D.	Depth (ft)	Static Water Level (ft)	Approx. Total Volume Purged (gal)	Water Quality pH	Conductivity (umho/cm)	Temp (°C)
HD	41.50	13.19	55.3	4.2	265	20
HS	26.44	13.29	25.7	3.8	300	20
QS	15.73	6.49	18.0	4.2	335	21
11	53.99	5.25	95.3	5.2	4500	30
PD	29.75	6.43	45.6	5.5	2300	22
5R	18.96	6.72	23.9	4.3	600	23
BR	38.85	5.04	66.13	5.7	2000	25
4R	23.89	11.49	24.25	4.4	800	22
10	72.42	17.96	106.52	4.9	550	-
3R	34.79	11.40	45.75	3.6	260	-
12	78.0	14.86	123.5	5.5	90	21
7	49.38	11.49	74.1	4.4	1000	23
2R2	22.10	7.24	29.0	6.6	5500	25
LD	18.71	7.63	21.6	4.2	330	26
CR2	33.51	12.53	41.0	5.7	110	-
J12	27.44	7.46	39.0	4.3	510	23
KS	17.78	5.89	23.2	2.9	5000	18
KD	27.47	6.15	41.7	2.5	12,000	17
ID	35.41	10.37	48.9	4.0	120	20
RD	36.01	9.87	51.1	5.0	200	28
9R2	67.70	23.16	87.1	4.7	80	12
MD	19.69	6.29	26.2	5.5	4000	11
MS	12.11	6.43	11.1	4.0	700	-
ND	24.20	7.25	33.1	3.4	270	20
SD	28.96	7.21	42.5	3.7	20,000	20
NS	16.82	8.35	16.5	3.6	710	21
OD	37.15	7.98	57.0	4.0	10,000	22
SS	16.77	6.24	20.5	4.1	3,800	21

1622K

TA 2-2

NL INDUSTRIES OVERSIGHT
GROUNDWATER ANALYSES
PHASE I AUGUST, 1988

EBAS=Ebasco Services Inc.
OBG=Obrien & Gere Engineers

LOCATIONS:	EBAS NL-GW-01 (OBG WELL 11)	OBG T0003 (OBG WELL 11)	EBAS NL-GW-02 (OBG WELL 4R)	OBG T0007 (OBG WELL 4R)	EBAS NL-GW-03 (OBG WELL 7)	OBG T0010 (OBG WELL 7)
Well Depth/Aquifer:	53.9'/WATER TABLE		23.8'/WATER TABLE		49.3'/WATER TABLE	
INORGANICS/ORGANICS(mg/l)						
Sulfate	2489.9	2760	648.8	553	924.3	647
Chloride	166.1	170	28.4	5	13.5	7
Total Organic Carbon	85.8	22	22.9	8	16.9	7
Total Organic Halogens	2470	1750	7.0	26.5	15.0	<10
RADIONUCLIDES:						
(pCi/L)						
Gross Alpha	14.6+/-12.0 J	<10	3.9+/-4.0 J	<3	22.9+/-4.0	<6
Gross Beta	12.7+/-11.9 J	<50	15.4+/-3.6	13.0+/-8.0	17.4+/-4.7	<20.0
TRACE METALS:						
(mg/L)						
Antimony	.06 U	<.003	.06 U	<.003 J	.06 U	<.03
Arsenic	.02 R	.03 R	.02 U	.001	.002 U	<.001
Beryllium	.0005 U	.003	.001 B	NA	.012	NA
Cadmium	.068	.134	.041	.047	.024	.031
Chromium	.01 U	.005 J	.01 U	.013	.01 U	.014
Copper	.042	.042	.010 B	<.02	.104	.113
LEAD	.035 R	.006 J	.011 R	.031	.0094 R	.008 J
Mercury	.0002 U	<.0002	.002 U	NA	.0002 U	NA
Nickel	.020 B	.063	.128	NA	.052	NA
Selenium	.020 U	<.02 R	.02 R	<.02	.02 U	<.02
Silver	.01 U	<.01	10	NA	.010	NA
Thallium	.002 U	.001	.002 U	NA	.002 U	NA
Zinc	.173 JN	.297	.214 JN	NA	.505 JN	NA
Cyanide	NA	NA	NA	NA	NA	NA

TABLE -2 Continued
NL INDUSTRIES OVERSIGHT
GROUND WATER ANALYSES AUGUST, 1988
PHASE I

	EBAS NL-GW-04 (OBG WELL 12)	OBG T0011 (OBG WELL 12)	EBAS NL-GW-05 (OBG WELL CR2)	OBG T0016 (OBG WELL CR2)	EBAS NL-GW-OF-01 (RESIDENTIAL WELL)	OBG T0031 PW7
Well Depth/Aquifer:	78.1'/FIRST CONFINED		33.5'/WATER TABLE		UNKNOWN/WATER TABLE	
INORGANICS/ORGANICS(mg/l)						
Sulfate	20.6	4	<5	4	39.7	35
Chloride	10.2	3	<10	<1	21.2	25
Total Organic Carbon	14.5	1	7.4	7	3.8	5
Total Organic Halogens	<5.0	<10	41.2	<10	42	<10
Radionuclides: (pCi/L)						
Gross Alpha	3 U	<2	3.0 U	<1	3.0+/-2.1 UJ	<1
Gross Beta	4.4+/-1.7 J	2.6+/-1.6	4.0 U	<2	4.8+/-2.6 J	4.8+/-1.6
Trace Metals: (MG/L)						
Antimony	.06 U	<.003	.06 U	<.003	.06 U	<.003
Arsenic	.002 R	.002	.001 U	<.001	.001 U	.003
Beryllium	.0005 U	NA	.001 B	NA	.002 B	NA
Cadmium	.005 U	<.001	.005 U	<.001	.005 U	<.001
Chromium	.01 U	.001 J	.011	.01	.01 U	.007 J
Copper	.01 U	<.02	.170	<.02	.425 J	<.02
LEAD	.788 R	.027 J	.0047 R	.028 J	.054 R	.005 J
Mercury	.0002 U	NA	.0002 U	NA	.0002 U	NA
Nickel	.015 U	NA	.015 U	NA	.015 U	NA
Selenium	.002 R	<.002	.002 U	<.002	.002 U	<.02
Silver	.01 U	NA	.01 U	NA	.01 U	NA
Thallium	.002 U	NA	.002 U	NA	.002 U	NA
Zinc	.039 JN	NA	.085 J	NA	.231 J	NA
Cyanide	.01 U	NA	.01 U	NA	NA	NA

TABLE 2-2 Continued

DATA REPORTING QUALIFIERS:

U: INDICATES COMPOUND WAS ANALYZED FOR, BUT NOT DETECTED.

NA: INDICATES ANALYTE WAS NOT TESTED FOR.

R: INDICATES VALUE WAS REJECTED. GENERALLY THE RESULT OF LAB OR FIELD BLANK CONTAMINATION.

J: INDICATES AN ESTIMATED VALUE.

B: INDICATES ANALYTE WAS FOUND IN THE BLANK AS WELL AS THE SAMPLE.

N: INDICATES SPIKE SAMPLE RECOVERY IS NOT WITHIN CONTROL LIMITS.

NV: Sample has been not validated.

TABLE 2-3

ONSITE MONITORING WELL WATER QUALITY DATA (PHASE II)

Well I.D.	pH	Conductivity (uMHO/cm)	Temp (°C)
QS	4.8	600	22
NS	3.9	4,800	20
ND	3.8	3,400	18
2R2	8.7	13,000	17
MS	4.1	700	20
MD	4.9	1,400	19
LD	3.5	120	20
3R	3.1	270	17
4R	3.6	650	18
7	5.4	1,200	20
1R	4.1	4,400	22
12	5.7	125	-
HS	4.4	220	18
HD	10	12,500	18
OD	4.1	2,000	20
PD	5.7	1,600	20
ID	4.0	170	20
JD	3.6	700	20
KS	4.2	-	20
KD	3.4	500	20
RD	5.9	240	22
RS	6.1	170	22
SS	5.4	1,800	26
SD	2.3	24,000	26
CR2	5.7	130	19
BR	4.1	310	19
11	5.7	4,100	20
9R2	5.0	100	18
10	4.0	440	18

1622K

TABLE 2-4

NL INDUSTRIES OVERSIGHT
SURFACE SOIL ANALYSES

September, 1988

EBAS=Ebasco Services Inc.
OBG=Obrien & Gere Engineers

LOCATIONS:	EBAS	OBG	EBAS	OBG	EBAS	OBG	EBAS	OBG	EBAS	OBG	EBAS	OBG	EBAS	OBG	EBAS	OBG
INORGANICS (mg/kg)	NL-SO-01	T0062 (0-3 in)	NL-SO-02	T0070 (0-3 in)	NL-SO-03	T0079 (3-6 in)	NL-SO-04	T0113 (3-6 in)	NL-SO-05	T0149 (0-3 in)	NL-SO-06	T0158 (3-6 in)	NL-SO-07	T0162 (3-6 in)	NL-SO-08	T0166 (3-6 in)
LEAD	34.1	29	29.8	33	34.2	33.1	120	132	781	740	254	226	5040	2840	28700	12300
Trace Metals:																
Antimony	15.9 J	NA	13 J	NA	13.3 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	6.7 J	NA	5.1 J	NA	13.3 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	0.8 U	NA	0.7 U	NA	0.7 U	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	19.2	NA	19.1	NA	6.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	12.6	NA	8	NA	13.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	0.5 J	NA	0.4 J	NA	0.4 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin	921 J	NA	876 J	NA	644 J	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	41.5	NA	30	NA	39.3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

LOCATIONS:	EBAS	OBG	EBAS	OBG	EBAS	OBG	EBAS	OBG	EBAS	OBG	EBAS	OBG	EBAS	OBG	EBAS	OBG
INORGANICS (mg/kg)	NL-SO-09	T0181 (0-3 in)	NL-SO-10	T0186 (3-6 in)	NL-SO-11	T0201 (0-3 in)	NL-SO-12	T0217 (0-3 in)	NL-SO-13	T0364 (3-6 in)	NL-SO-14	T0246 (3-6 in)	NL-SO-15	T0253 (0-3 in)	NL-SO-16	T0269 (0-3 in)
LEAD	66.3	60	44.6	45	48.9	46.3	40.9	48.1	16.2	23.1	45.1	43.3	106	108	172	145
Trace Metals:																
Antimony	NA	NA	NA	NA	NA	<20	NA	<20	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	NA	6.3	NA	5.7	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	<1	NA	<1	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA	5.8	NA	7.9	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	5.6	NA	6.8 J	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA	<.5	NA	<.5 J	NA	NA	NA	NA	NA	NA	NA	NA
Tin	NA	NA	NA	NA	NA	<80	NA	<80	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	14.8	NA	16.7	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 2-4 Continued

SURFACE SOIL ANALYSES

LOCATIONS:	EBAS NL-SO-17	OBG T0281 (0-3 in)	EBAS NL-SO-18	OBG T0289 (0-3 in)	EBAS NL-SO-19	OBG T0297 (0-3 in)	EBAS NL-SO-20	OBG T0326 (3-6 in)	EBAS NL-SO-21	OBG T0334 (3-6 in)	EBAS NL-SO-22	OBG T0342 (3-6 in)
INORGANICS (mg/kg)												
LEAD	128	121	920	538	28.9	25	51.9	38.1	293	226	47.0	40.2
Trace Metals:												
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Arsenic	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Tin	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

TABLE 2-5
NL INDUSTRIES OVERSIGHT
SURFACE WATER ANALYSES

August, September 1988

EBAS=Ebasco Services Inc.
OBG=Obrien & Gere Engineers

INORGANICS (MG/L)	Locations EBAS NL-SW-01	OBG NO. 6	EBAS NL-SW-02	OBG NO. 5	EBAS NL-SW-03	OBG NO. 9
Antimony	.06 U	NA	NA	NA	NA	NA
Arsenic	.01 U	NA	NA	NA	NA	NA
Beryllium	.0005 U	NA	NA	NA	NA	NA
Cadmium	.005 U	NA	NA	NA	NA	NA
Chromium	.01 U	NA	NA	NA	NA	NA
Copper	.022 B	NA	NA	NA	NA	NA
LEAD	.018 R	.011	.02 R	.025	2.03	1.98
Mercury	.0002 U	NA	NA	NA	NA	NA
Nickel	.035 B	NA	NA	NA	NA	NA
Selenium	.002 U	NA	NA	NA	NA	NA
Silver	.01 U	NA	NA	NA	NA	NA
Thallium	.002 U	NA	NA	NA	NA	NA
Zinc	.088 J	NA	NA	NA	NA	NA

TABLE 2-6

NL INDUSTRIES OVERSIGHT

SEDIMENT ANALYSES August, September, 1988

EBAS=Ebasco Services Inc.

OBG=Obrien & Gere Engineers

	LOCATIONS:							
	EBAS	OBG	EBAS	OBG	EBAS	OBG	EBAS	OBG
	NL-SD-01	T0093	NL-SD-02	T0100	NL-SD-03	T0133	NL-SD-04	T0135
INORGANICS	(MARSH)	(0-6 in)	(STREAM)	809	(STREAM)	806	(STREAM)	805
(MG/KG)								
LEAD	676	1190	1143	552	42	<5	333	4350

TABLE 2-7

NL INDUSTRIES OVERSIGHT

SLAG MATERIALS October, 1988

EBAS=Ebasco Services Inc.

OBG=Obrien & Gere Engineers

	LOCATIONS:			
	EBAS	OBG	EBAS	OBG
	NL-SL-01	T0383	NL-SL-01	T0445
INORGANICS (MG/KG)				
LEAD		89,000	NA	NA
EP TOX Metals: (MG/L)				
Arsenic		NA	<.15	<.5
Barium		NA	.135	<10
Cadmium		NA	.094	1.5
Chromium		NA	<.01	<.5
Lead		NA	.137	30
Mercury		NA	<.0002	<.0005
Selenium		NA	<.35	<.1
Silver		NA	<.01	<.5

TABLE 2-8

NL INDUSTRIES OVERSIGHT
EQUIPMENT RESIDUE

October, 1988

EBAS=Ebasco Services Inc.
OBG=Obrien & Gere Engineers

	LOCATIONS:			
	EBAS	OBG	EBAS	OBG
	NL-EQ-01	T0388	NL-EQ-02	T0395
INORGANICS (mg/kg)				
LEAD	292,000	237,000	332,000	283,000

TABLE 2-9
NL INDUSTRIES OVERSIGHT
SOLID WASTE MATERIALS October, 1988

EBAS=Ebasco Services Inc.
OBG=Obrien & Gere Engineers

	LOCATIONS:					
	EBAS	OBG	EBAS	OBG	EBAS	OBG
	NL-SX-01	T0391	NL-SX-02	T0390	NL-SX-03	T0396
INORGANICS (MG/KG)						
LEAD	308,000	***	320,000	176,000	249,000	280,000

***
Value not shown in interim report.

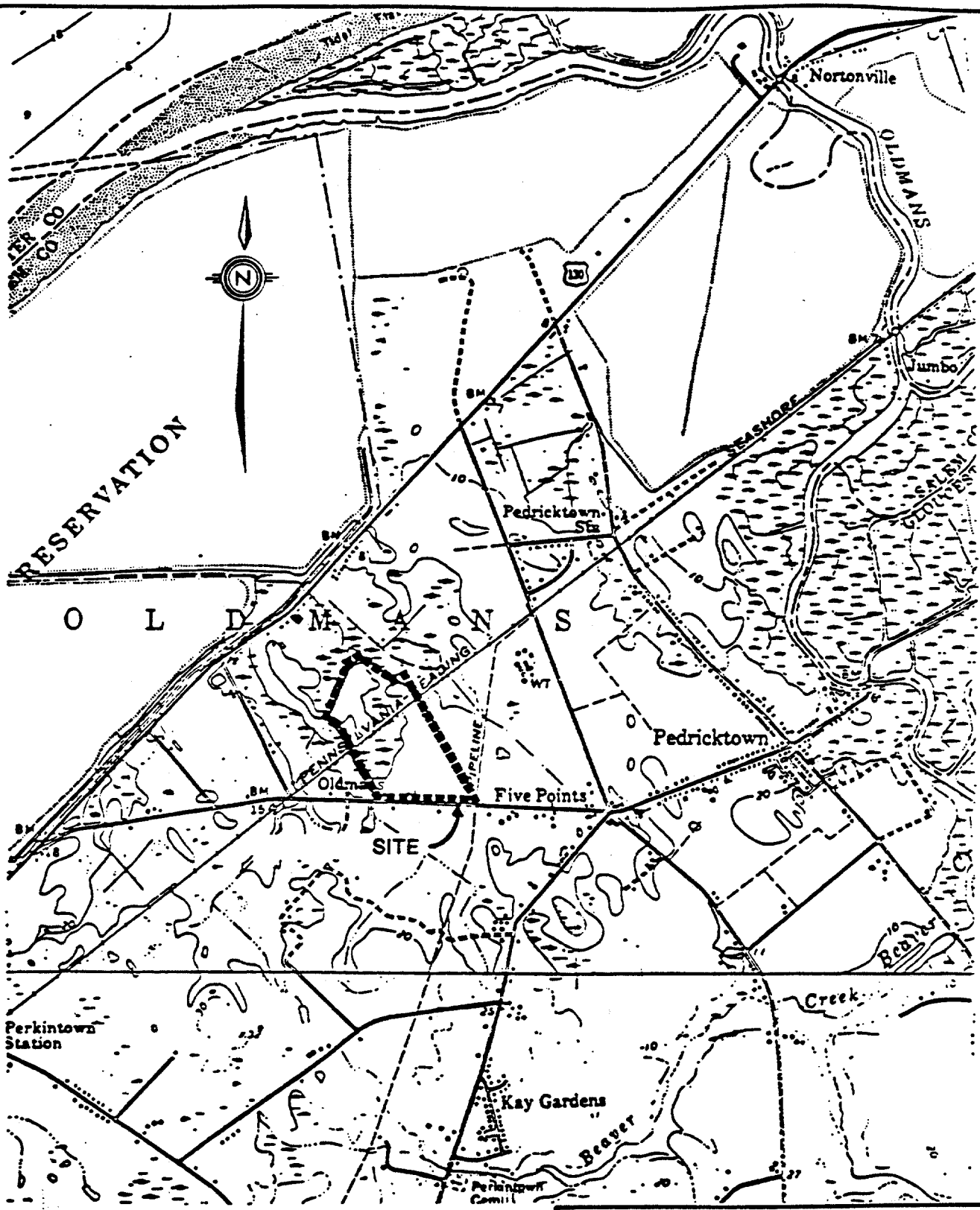
TABLE 2-10

NL INDUSTRIES OVERSIGHT
LIQUID WASTE MATERIALS October, 1988

EBAS=Ebasco Services Inc.
OBG=Obrien & Gere Engineers

LOCATIONS:	EBAS NL-LX-01	OBG T0426	EBAS NL-LX-02	OBG T0423	EBAS NL-LX-03	OBG T0431
INORGANICS (mg/L)						
Total Organic Carbon	NA	107	NA	12	6.0	7
Total Organic Halogens	NA	33	NA	NA	59	20
RADIONUCLIDES (pCi/L)						
Gross Alpha	NA	<40	NA	NA	<2.4	<10
Gross Beta	NA	240+/-80	NA	NA	<3.9	<30
TOTAL LEAD (mg/L)	10.9J	14.5	1.82J	1.62	4.60J	3.39

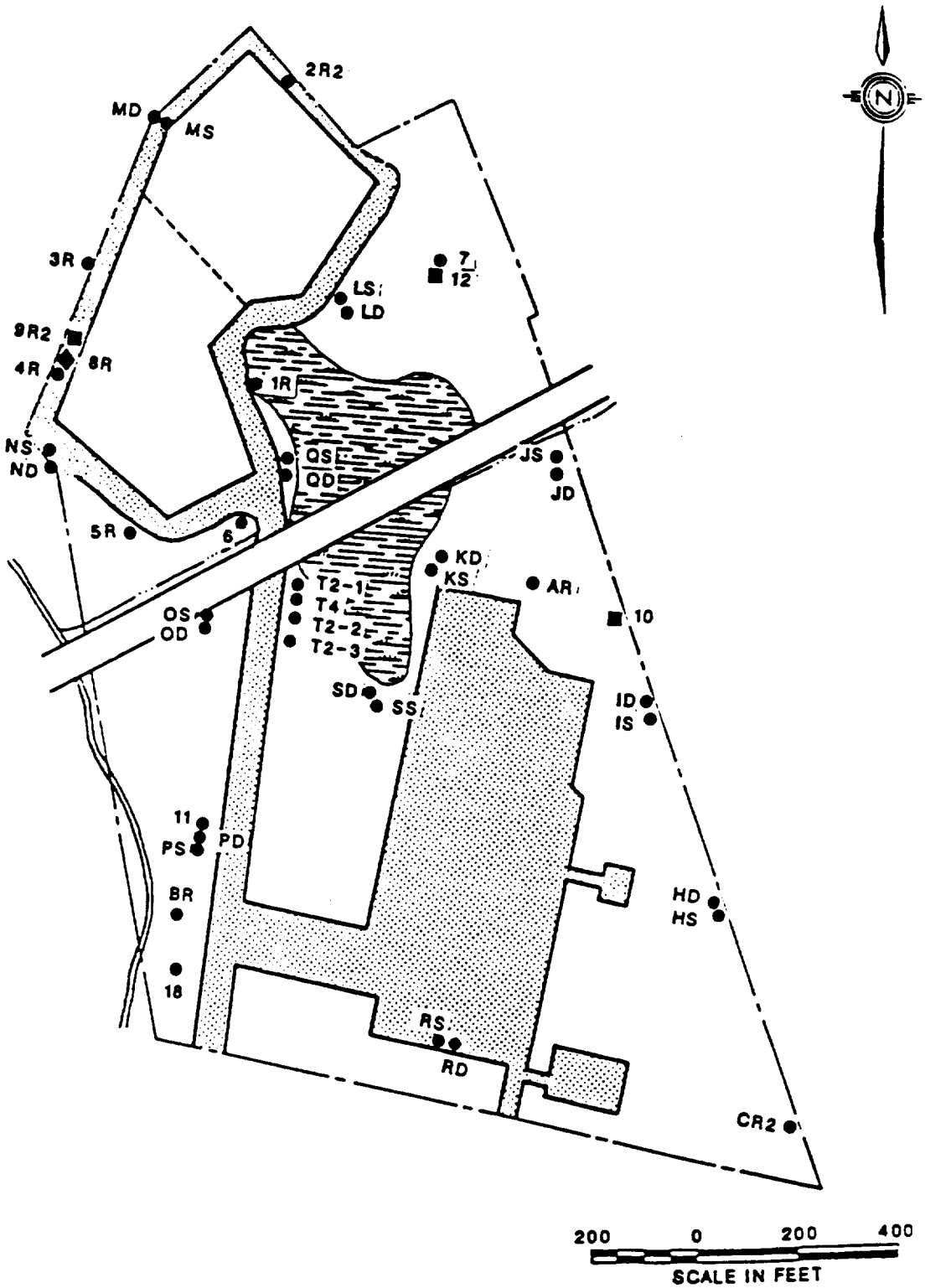
NV: DATA NOT VALIDATED.
NA: NOT ANALYZED.



U.S. ENVIRONMENTAL PROTECTION AGENCY
NL INDUSTRIES, INC.
FIGURE 1-1
SITE LOCATION
EBASCO SERVICES INCORPORATED

NOTE:

MAP ADAPTED FROM U.S.G.S.
MARCUS HOOK, PA. – PENNS GROVE, N.J.
QUADRANGLES AND O'BRIEN & GERE
WORK PLAN, 1987



LEGEND :

BUILDINGS, ROADS, OR PAVED AREAS (APPROX.)

● WATER TABLE AQUIFER WELL

■ FIRST CONFINED AQUIFER WELL

◆ SECOND CONFINED AQUIFER WELL

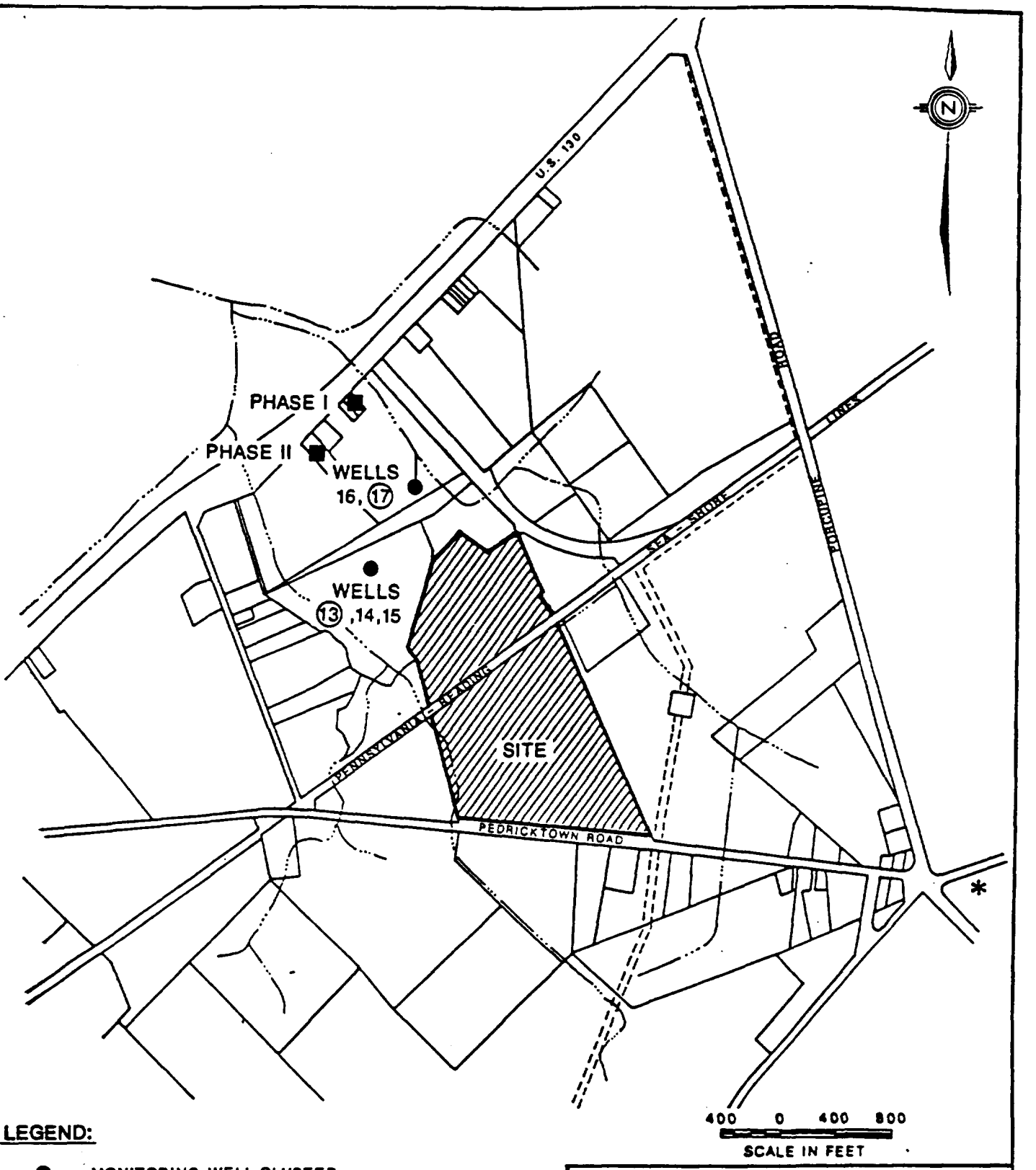
U.S. ENVIRONMENTAL PROTECTION AGENCY

NL INDUSTRIES, INC.

FIGURE 2-1

ONSITE MONITORING WELLS

EBASCO SERVICES INCORPORATED



LEGEND:

- ● MONITORING WELL CLUSTER
- ○ MONITORING WELL SPLIT SAMPLE LOCATION
- ■ RESIDENTIAL WELL SPLIT SAMPLE LOCATION
- * RESIDENTIAL WELL NON-SPLIT SAMPLE LOCATION - NOT INCLUDED IN NL INDUSTRIES PHASE II SAMPLING PROGRAM

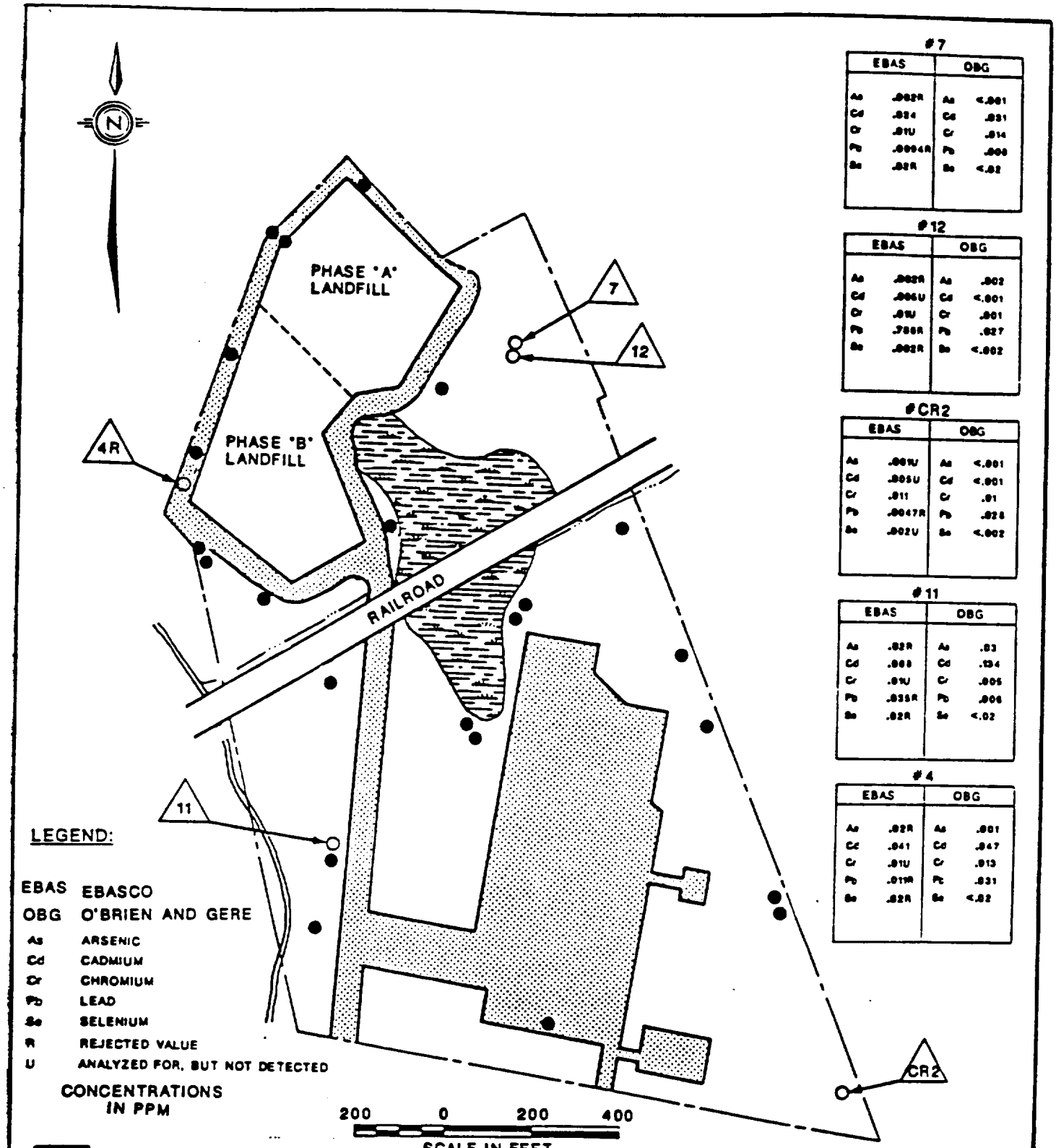
U.S. ENVIRONMENTAL PROTECTION AGENCY

NL INDUSTRIES, INC.

FIGURE 2-2

OFFSITE MONITORING WELLS

EBASCO SERVICES INCORPORATED



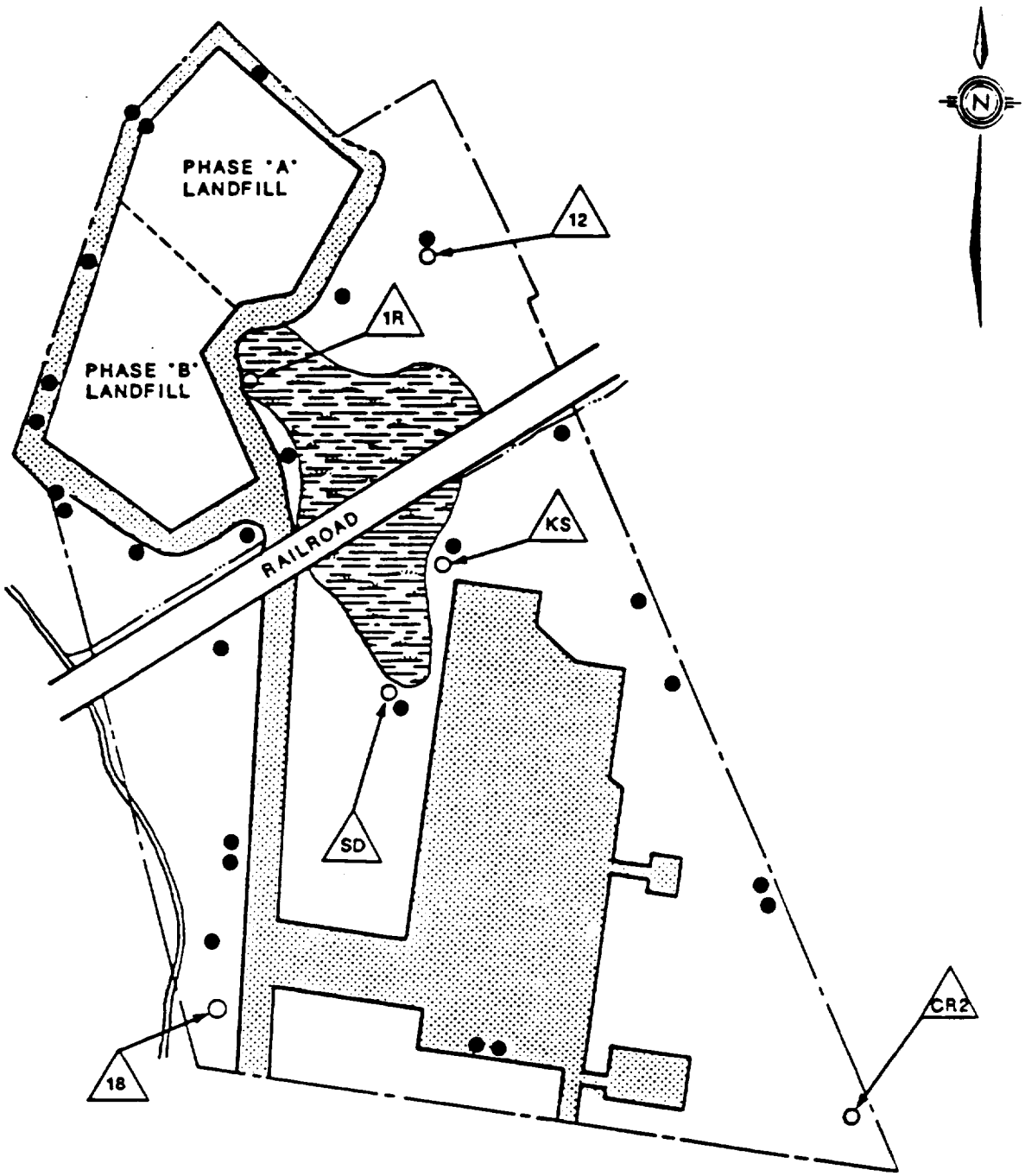
U.S. ENVIRONMENTAL PROTECTION AGENCY

NL INDUSTRIES, INC.

FIGURE 2-3

ONSITE MONITORING WELL SAMPLE LOCATIONS PHASE I

EBASCO SERVICES INCORPORATED



LEGEND:

- BUILDINGS, ROADS, OR PAVED AREAS (APPROX.)
- MARSHLAND
- WELL ID NUMBER
- ● NON-SPLIT SAMPLE LOCATION
- ○ SPLIT SAMPLE LOCATION

200 0 200 400
SCALE IN FEET

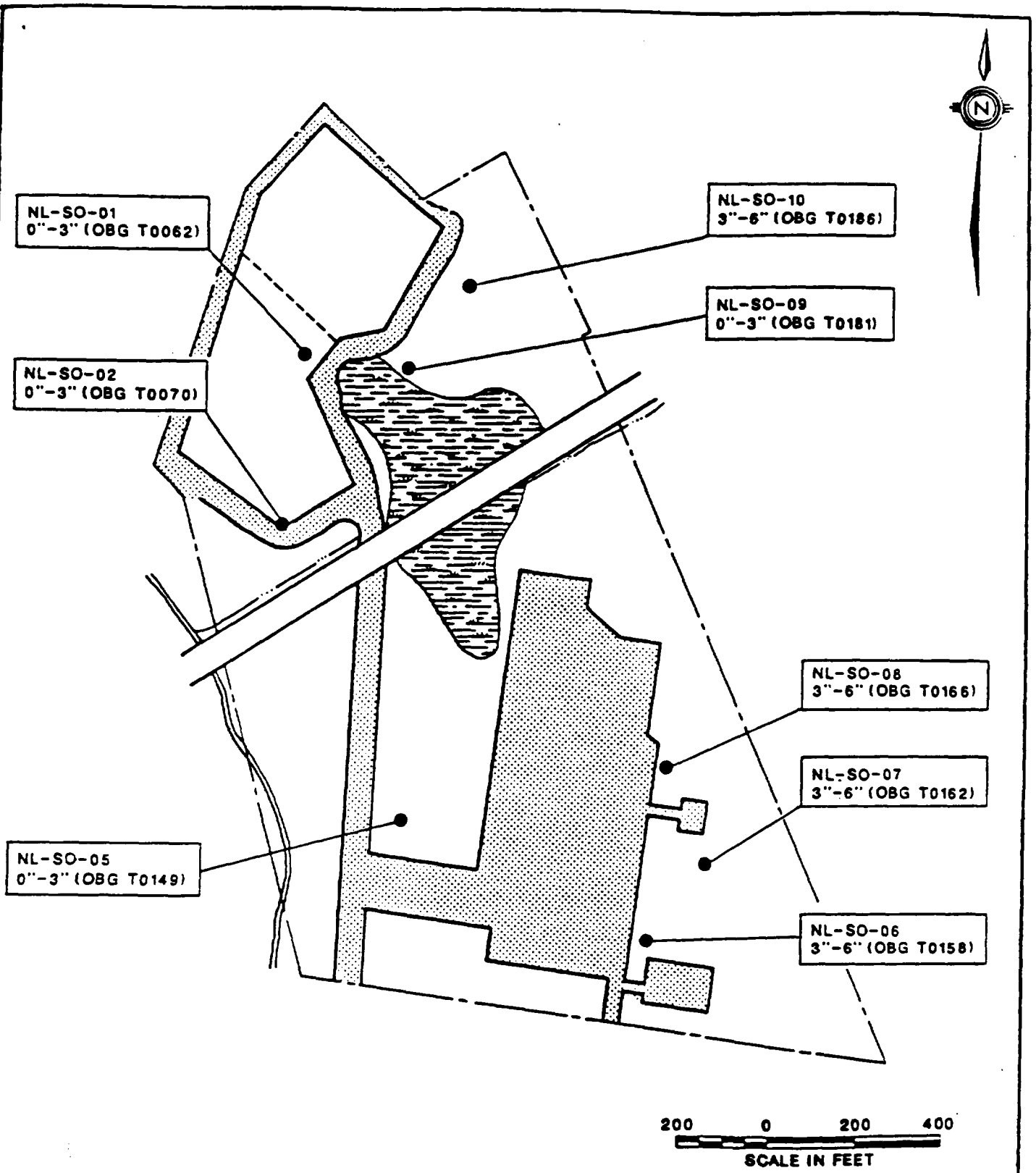
U.S. ENVIRONMENTAL PROTECTION AGENCY

NL INDUSTRIES, INC.

FIGURE 2-4

ONSITE
MONITORING WELL SAMPLE LOCATIONS
PHASE II

EBASCO SERVICES INCORPORATED



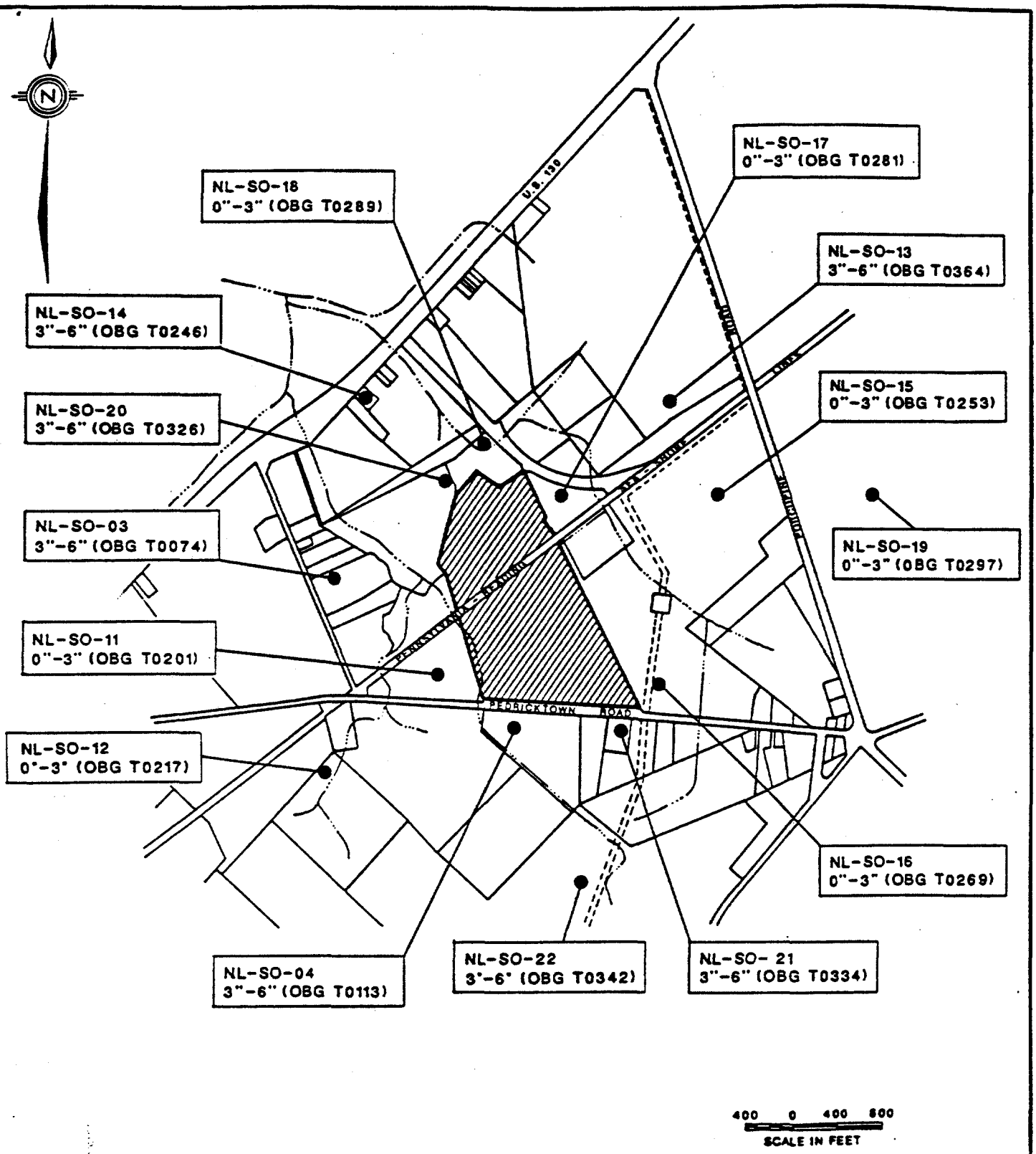
U.S. ENVIRONMENTAL PROTECTION AGENCY

NL INDUSTRIES, INC.

FIGURE 2-5

ONSITE
SURFACE SOIL SPLIT SAMPLE LOCATIONS
PHASE I

EBASCO SERVICES INCORPORATED

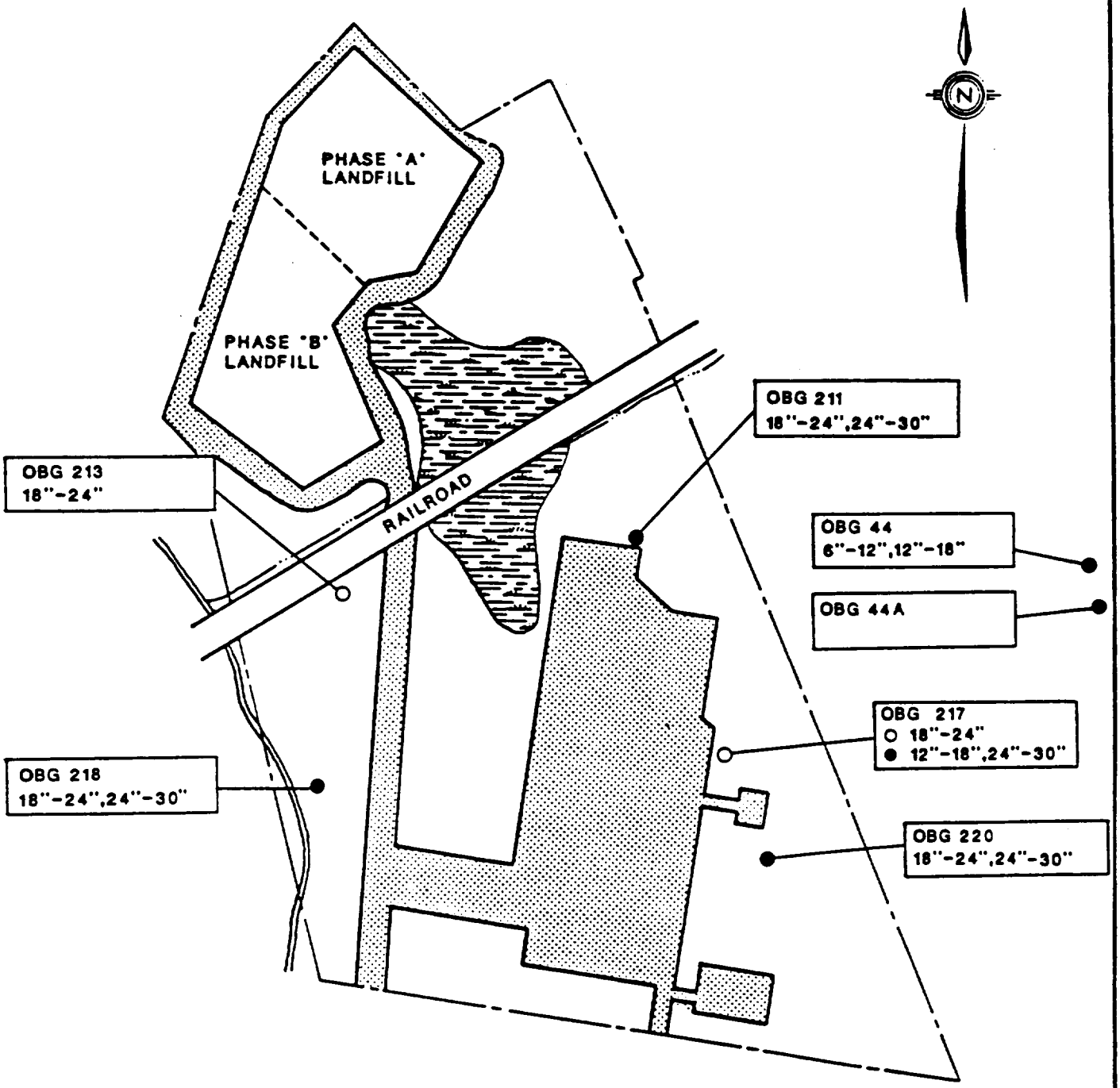


400 0 400 800
SCALE IN FEET

LEGEND:

SITE

U.S. ENVIRONMENTAL PROTECTION AGENCY
NL INDUSTRIES, INC.
FIGURE 2-6 OFFSITE SURFACE SOIL SPLIT SAMPLE LOCATIONS PHASE I
EBASCO SERVICES INCORPORATED



LEGEND:

- BUILDINGS, ROADS, OR PAVED AREAS (APPROX.)
- MARSHLAND
- ● NON-SPLIT SAMPLE LOCATION
- ○ SPLIT SAMPLE LOCATION

200 0 200 400
SCALE IN FEET

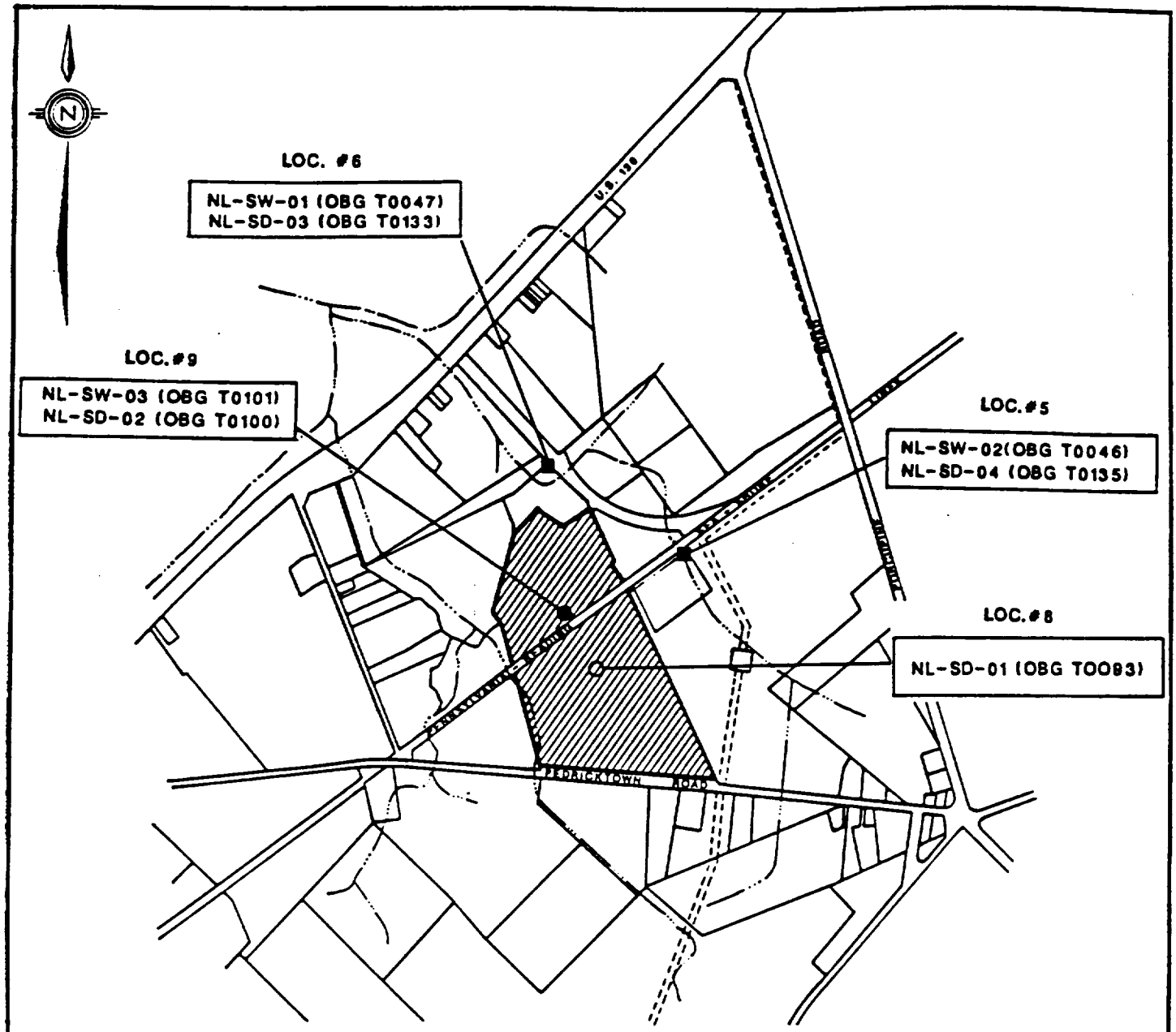
U.S. ENVIRONMENTAL PROTECTION AGENCY

NL INDUSTRIES, INC.

FIGURE 2-7

SURFACE SOIL SAMPLE LOCATIONS PHASE II

EBASCO SERVICES INCORPORATED



LEGEND:

- ○ ONSITE MARSH SEDIMENT SAMPLE LOCATION
- ● ONSITE SURFACE WATER & SEDIMENT SAMPLE LOCATION
- ■ OFFSITE SURFACE WATER & SEDIMENT SAMPLE LOCATION
- ▨ SITE

400 0 400 800
SCALE IN FEET

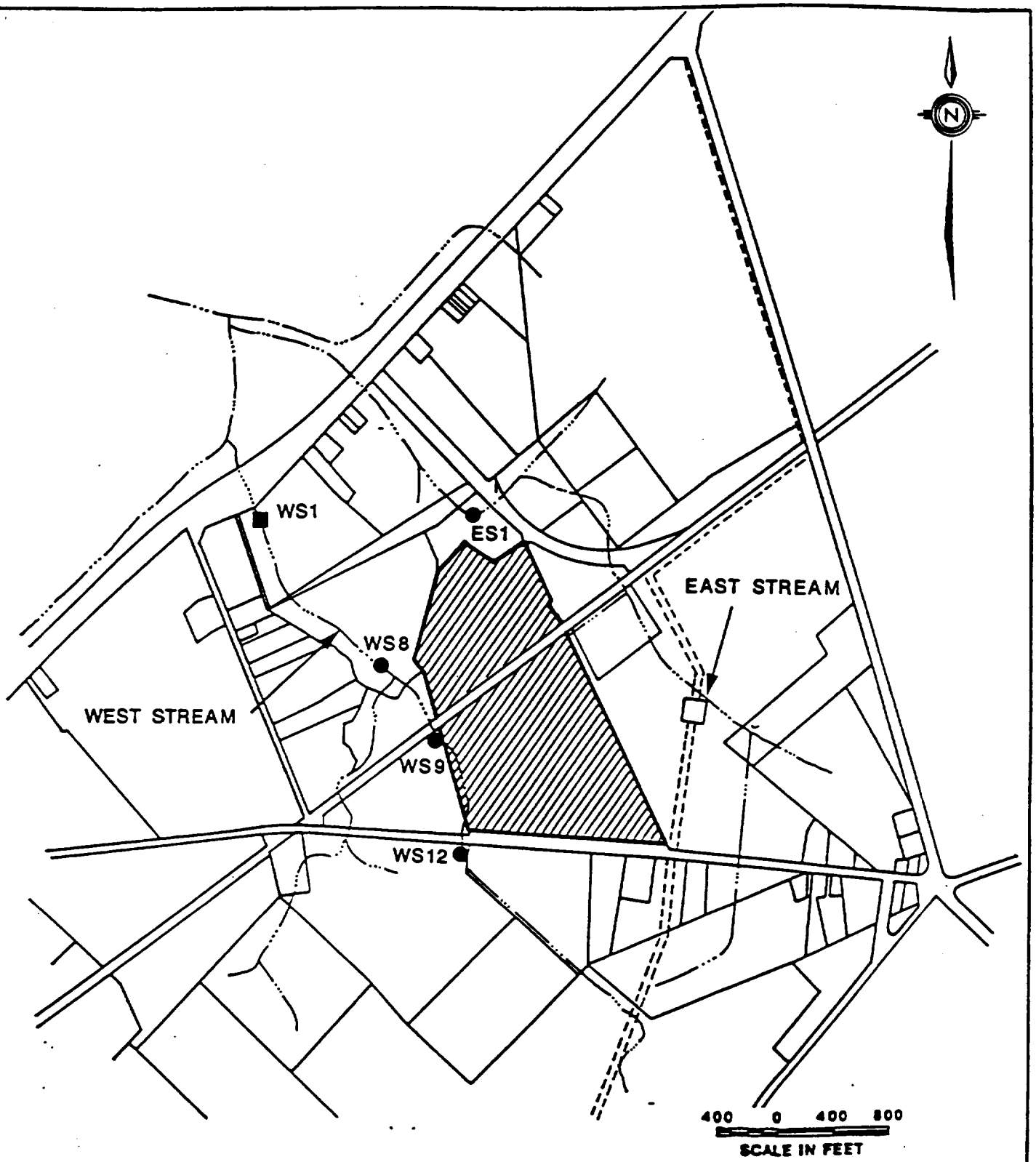
U.S. ENVIRONMENTAL PROTECTION AGENCY

NL INDUSTRIES, INC.

FIGURE 2-8

SURFACE WATER/ SEDIMENT SPLIT SAMPLE LOCATIONS PHASE I

EBASCO SERVICES INCORPORATED



LEGEND:

- SITE
- SEDIMENT SAMPLES (MULTIPLE DEPTH) LOCATION
- SURFACE WATER AND SEDIMENT SAMPLES (MULTIPLE DEPTH) LOCATION

U.S. ENVIRONMENTAL PROTECTION AGENCY

NL INDUSTRIES, INC.

FIGURE 2-9

SURFACE WATER/ SEDIMENT SPLIT SAMPLE LOCATIONS PHASE II

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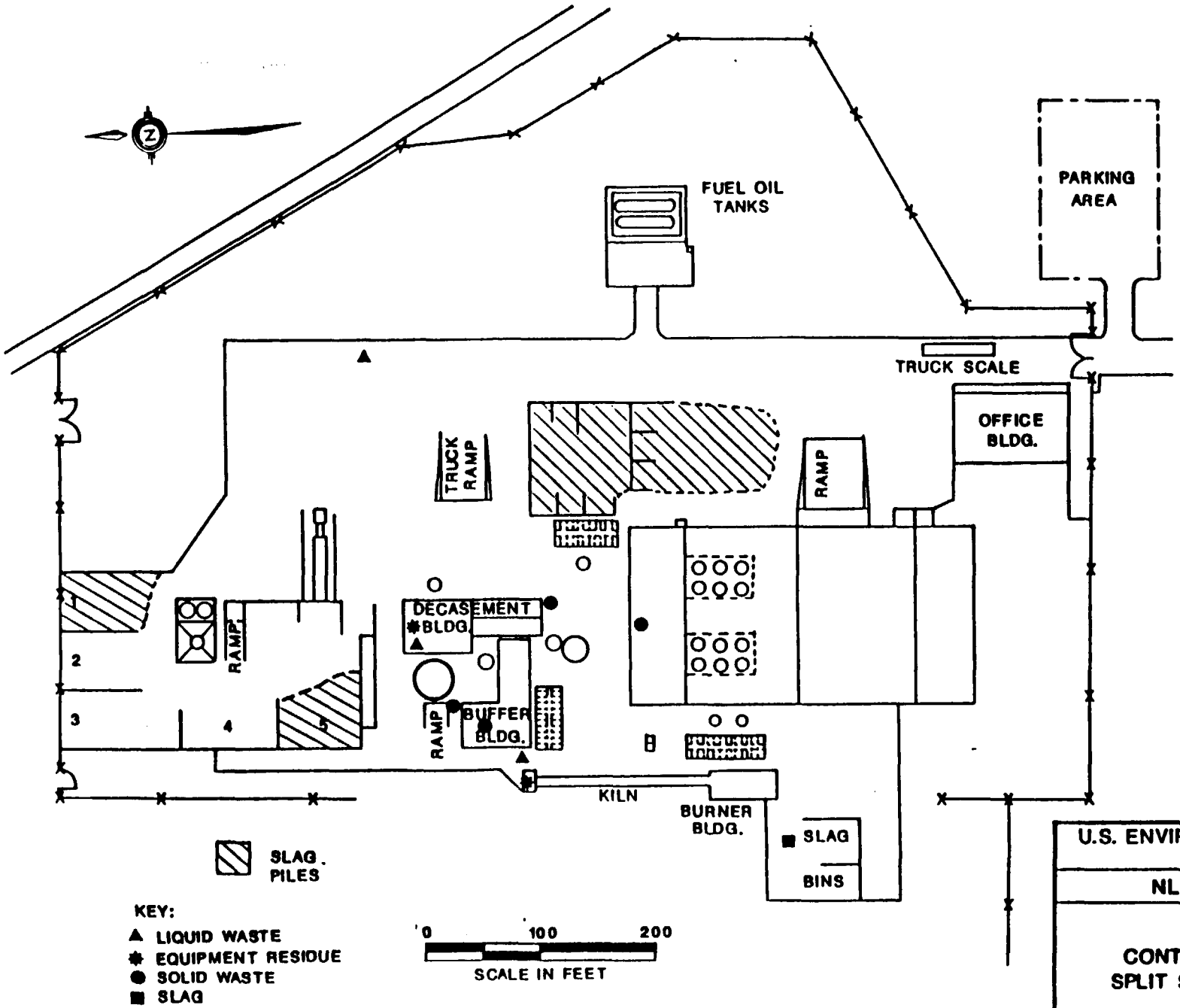

U.S. ENVIRONMENTAL PROTECTION AGENCY

NL INDUSTRIES INC.

FIGURE 2-10
CONTAINERIZED WASTE
SPLIT SAMPLE LOCATIONS

EBASCO SERVICES INCORPORATED

LIST OF REFERENCES

EBASCO SERVICES INCORPORATED, Final Public Information Meeting Summary for the NL Industries, Inc. Site, January 1989.

EBASCO SERVICES INCORPORATED, Draft Work Plan RI/FS Oversight, NL Industries Site, Pedricktown, New Jersey, September 11, 1986.

EBASCO SERVICES INCORPORATED, Field Sampling and Analysis Plan, RI/FS Oversight, April 1988.

EBASCO SERVICES INCORPORATED, Phase II Split Sampling Program, July 27, 1989.

EBASCO SERVICES INCORPORATED, Field Log Books 1 & 2 - NL Industries Oversight, 1988-1989.

EBASCO SERVICES INCORPORATED, Field Change Request Log Book, NL Industries Oversight, 1988-1989.

O'BRIEN & GERE, Work Plan, Remedial Investigation/Feasibility Study - National Smelting of New Jersey Site, Pedricktown, New Jersey, May 1987. NL Industries, Hightstown, New Jersey.

O'BRIEN & GERE, Site Operations Plan, Remedial Investigation/ Feasibility Study - National Smelting of New Jersey Site, Pedricktown, New Jersey, May 1988. NL Industries, Hightstown, New Jersey.

O'BRIEN & GERE, RI/FS Interim Report - National Smelting of New Jersey Site, Pedricktown, New Jersey, January 1989. NL Industries, Highstown, New Jersey.

O'BRIEN & GERE, Phase II Sampling Plan, National Smelting of New Jersey Site, Pedricktown, New Jersey, June 1989.