Supplemental Site Investigation

Neillsville Foundry
1200 E. 15th Street
Neillsville, Wisconsin
BRRTS No. 02-10-000048
FID No. 610031400

Prepared for:

Wisconsin Department of Natural Resources
Madison, Wisconsin

September 2002

Supplemental Site Investigation

Neillsville Foundry
1200 E. 15th Street
Neillsville, Wisconsin
BRRTS No. 02-10-000048
FID No. 610031400

This report prepared by:

Marcia R. Sivek 9/4/02
Marcia R. Sivek
Environmental Engineer

Frank W. Maenner 9-4-02
Frank W. Maenner, P.G.
Hydrogeologist

Reviewed by:

Dennis L. Johnson 9/4/02
Dennis L. Johnson, P.E.
Manager—Environmental Services

AYRES ASSOCIATES
Engineers/Architects/Scientists/Surveyors
3433 Oakwood Hills Parkway
P.O. Box 1590
Eau Claire, WI 54702-1590
(715) 834-3161, FAX (715) 831-7500

Ayres Associates Project No. 10-1231.00
\\ec5031\secr-wm\mrs\020325a.doc

Contents

List of Tables

List of Figures

List of Appendices

Executive Summary

The Wisconsin Department of Natural Resources (WDNR) retained Ayres Associates in July 2000 to complete a supplemental investigation of the Neillsville Foundry. The foundry is located in the NE ¼ of the NE ¼ of Section 14, Township 24 North, Range 2 West, City of Neillsville, Clark County, Wisconsin. The current property owner is O'Neill Industries, Inc. The on-site building has been used as a foundry since 1969. Former operators of the Neillsville Foundry historically disposed of iron casting manufacturing waste in an area south of and to the east of the existing building. In 1998, a new operator, Century Castings Corporation, began leasing the property from O'Neill Industries, Inc. The facility continues to be an active foundry.

Concerned about improper disposal of foundry waste on the property, the WDNR ordered an investigation by the current owner in 1990. Exploration Technology Incorporated conducted the initial site investigation in 1990. They installed ten backhoe test pits, nine soil borings, three monitoring wells (MW-1A, 2A, and 3A), and one piezometer (MW-2B) and conducted laboratory analyses of soil and ground water samples.

In 1997, Dames & Moore was hired to do a clay borrow site investigation for the Neillsville Foundry. They determined that approximately 15,500 cubic yards of fine-grained soil would be needed to construct a final cover layer for the waste disposal area, which spans approximately 4 acres. The borrow site with the greatest potential was the Bruce Vandenberg property adjacent and to the east of the Neillsville Foundry.

Ayres Associates' additional investigation began on July 21, 2000, by inspecting and redeveloping the existing monitoring wells on site. Nineteen soil samples were collected from a 0- to 4-foot depth at various locations within the waste disposal area and the wetland area south of the building. A hydraulic conductivity test for monitoring wells MW-1, 2A, 2B, and 3A was conducted on July 24, 2000. Ground water samples were collected from monitoring wells MW-1A, 2A, 2B, and 3A on July 24 and September 25, 2000.

Arsenic concentrations ranging from 1.2 to 19.1 mg/kg were detected in most of the soil samples from the 0- to 4-foot depth range. These concentrations exceed the NR 720 Soil Cleanup Industrial Standards. One soil sample had a NR 720 exceedance for chromium and another sample exceeded the industrial soil cleanup levels for the polycyclic aromatic hydrocarbon (PAH) dibenzo(a,h)anthracene. Polychlorinated biphenyls (PCBs) were not detected in the soil samples.

Based on review of these findings, the WDNR requested installation of four piezometers and two water table monitoring wells, collection of one round of ground water samples from the existing wells and two from new wells and piezometers, and collection of background soil samples for metals content. New monitoring wells were installed on June 5, 2001, and a background soil sample was also collected from the foundry sand used by the current site operator. The new wells and piezometers were developed and surveyed, and ground water samples were collected on July 17 and September 12, 2001.

PAH and dissolved metals were not detected at concentrations exceeding NR 140 standards at any of the monitoring wells. Ground water sample analysis showed Wisconsin Administrative Code NR 140 Enforcement Standard (ES) and Preventive Action Limit (PAL) exceedances for tetrachloroethane (PCE) and a PCE breakdown byproduct, trichloroethene, in MW-2A and MW-2B. In addition, low levels of MTBE, chloroethane, and chloroform near or below the limit

of quantitation were detected at MW-1A and MW-1B. The source of chloroethane and chloroform detects may be from the laboratory.

Because PCE was not detected in the other wells, PCE contamination appears to be caused by a point source near MW-2A/2B or originated in the disposal area up gradient from MW-2A/2B. Water quality down gradient of MW-2A/2B is not known because there are no down gradient monitoring wells and the area is a wetland. O'Neill Creek, located approximately 950 feet down gradient from MW-2A/2B, is the likely receptor of any ground water contamination migrating from this site.

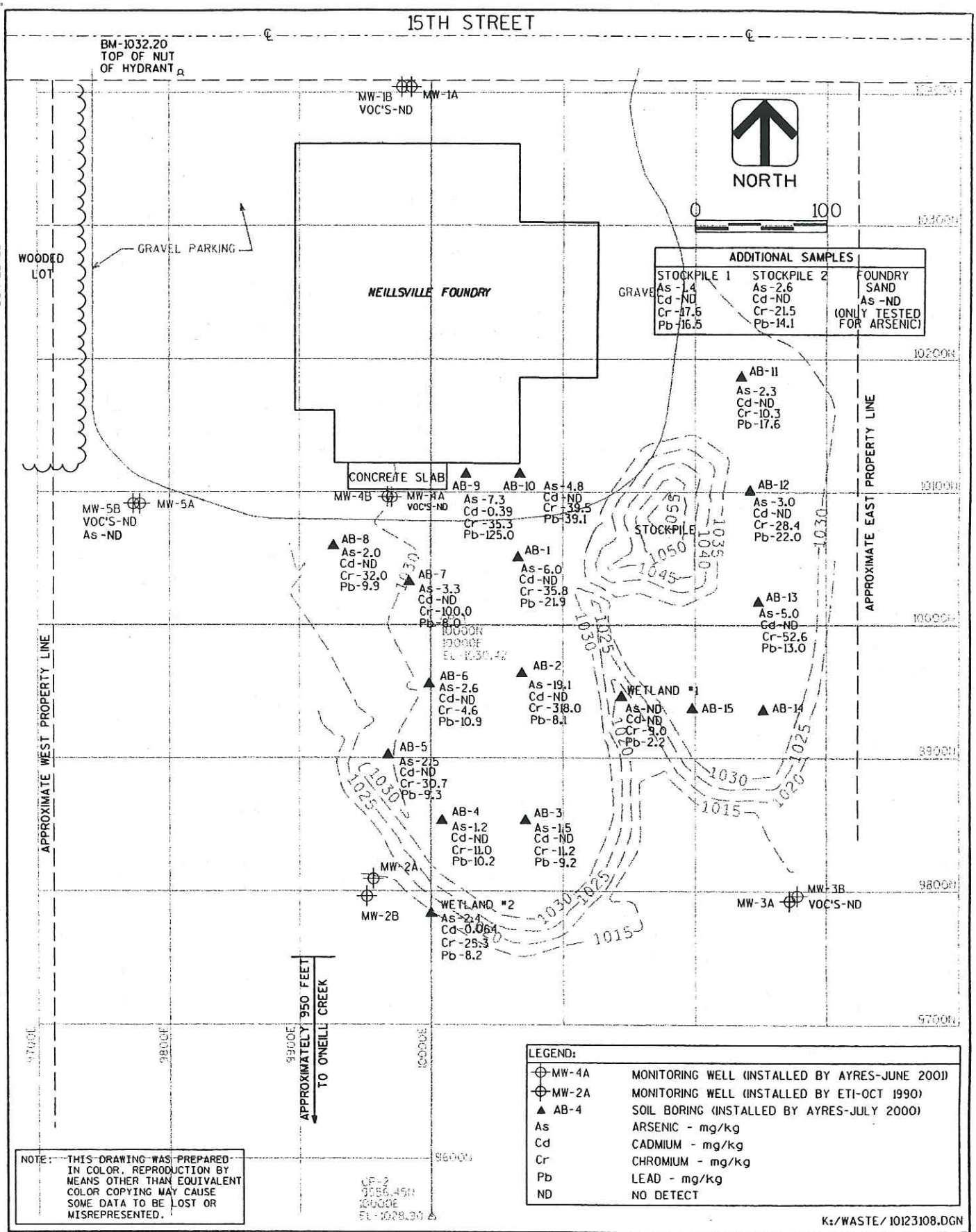
NR 140 PAL exceedances for benzene concentrations were also detected in MW-4A and up gradient well MW-1B. The benzene and MTBE contamination source in the up gradient piezometer, MW-1B, is unknown. MW-1B is located near the road (15th Street) and it is possible that an undocumented petroleum spill or release from the bus garage up gradient from this well occurred at one time. The benzene contamination source at MW-4A may be from vandalism. In 1999, approximately 90 gallons of diesel fuel was released to the ground from an aboveground storage tank (AST) located near MW-4A. Benzene contamination has not been detected in wells side or down gradient from MW-4A but was detected at a low concentration in down gradient well MW-2A.

Based on the findings of this supplemental site investigation, we recommend the following:

- Meeting with the WDNR and current landowner to discuss future land use options and a range of remedial action options.

- Based on the outcome of this meeting, evaluate appropriate remedial action alternatives and prepare a remedial action options report. Potential alternatives include capping of the waste disposal area, removal of waste materials for a beneficial use, fencing the area and recording a soil deed restriction, and no action.

- Continue ground water quality monitoring to determine the trend of PCE and benzene contamination in the ground water. Installing a down gradient well to determine the limits of ground water contamination may not be feasible or practical given the proximity to wetlands and the location of O'Neill Creek as a down gradient receptor.



PEN
03/22/02
D:±WASTE±10123108.dgn
DGN LEVEL

SUPPLEMENTAL SITE INVESTIGATION
E 15 TH STREET
NEILLSVILLE FOUNDRY
NEILLSVILLE , WISCONSIN

DRN. BY: JGS
CHK. BY: MRS
DATE: MAR 2002

AYRES

SOIL SAMPLE RESULTS
(0-4 FOOT DEPTH)

FIGURE
3

TABLE 1
AYRES ASSOCIATES' SOIL BORING ANALYTICAL RESULTS FOR METALS AND VOCs
NEILLSVILLE FOUNDRY

Sample Location	Depth (Feet)	Sample Date	METALS				Percent Solids	VOCs						
			Arsenic (mg/kg)	Cadmium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	%	B (mg/kg)	E (mg/kg)	T (mg/kg)	Total X (mg/kg)	MTBE (mg/kg)	1,2,4-TM (mg/kg)	1,3,5-TMB (mg/kg)
AB-1	0 - 4	7/21/00	6	<0.053	35.8	21.9	NM	NM	NM	NM	NM	NM	NM	NM
AB-2	0 - 4	7/21/00	19.1	<0.359	318	8.1	NM	NM	NM	NM	NM	NM	NM	NM
AB-3	0 - 4	7/21/00	1.5	<0.038	11.2	9.2	NM	NM	NM	NM	NM	NM	NM	NM
AB-4	0 - 4	7/21/00	1.2	<0.032	11.0	10.2	NM	NM	NM	NM	NM	NM	NM	NM
AB-5	0 - 4	7/21/00	2.5	<0.049	30.7	9.3	NM	NM	NM	NM	NM	NM	NM	NM
AB-6	0 -3.5	7/21/00	2.6	<0.043	4.6	10.9	NM	NM	NM	NM	NM	NM	NM	NM
AB-7	0 - 4	7/21/00	3.3	<0.040	100	8.0	NM	NM	NM	NM	NM	NM	NM	NM
AB-8	0 - 4	7/21/00	2.0	<0.050	32	9.9	NM	NM	NM	NM	NM	NM	NM	NM
AB-9	0 - 2	7/21/00	7.3	0.39	35.3	125	NM	NM	NM	NM	NM	NM	NM	NM
AB-10	0 - 4	7/21/00	4.8	<0.069	39.5	39.1	NM	NM	NM	NM	NM	NM	NM	NM
AB-11	0 - 2	7/24/00	2.3	<0.038	10.3	17.6	NM	NM	NM	NM	NM	NM	NM	NM
AB-12	0 - 3	7/24/00	3.0	<0.038	28.4	22.0	NM	NM	NM	NM	NM	NM	NM	NM
AB-13	0 - 4	7/24/00	5.0	<0.053	52.6	13.0	NM	NM	NM	NM	NM	NM	NM	NM
AB-14	0 - 4	7/24/00	3.1	<0.041	41.2	12.9	NM	NM	NM	NM	NM	NM	NM	NM
AB-15	0 - 4	7/24/00	2.3	<0.043	18.3	11.2	NM	NM	NM	NM	NM	NM	NM	NM
WETLAND #1	near surface	7/21/00	<0.95	<0.043	9.0	2.2	NM	NM	NM	NM	NM	NM	NM	NM
WETLAND #2	near surface	7/21/00	2.4	0.064	25.3	8.2	NM	NM	NM	NM	NM	NM	NM	NM
STOCKPILE #1	near surface	7/21/00	1.4	<0.036	17.6	16.5	NM	NM	NM	NM	NM	NM	NM	NM
STOCKPILE #2	near surface	7/21/00	2.6	<0.052	21.5	14.1	NM	NM	NM	NM	NM	NM	NM	NM
MW-1B	7.5 - 9.5	6/5/01	NM	NM	NM	NM	87.4	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
	12.5 - 14.5	6/5/01	NM	NM	NM	NM	86.7	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
MW-3B	5 - 7	6/5/01	NM	NM	NM	NM	79.5	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
	12.5 - 14.5	6/5/01	NM	NM	NM	NM	85.4	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
MW-4A	12.5 - 14.5	6/5/01	NM	NM	NM	NM	85.9	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
	17.5 - 19.5	6/5/01	NM	NM	NM	NM	83.9	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
MW-5B*	0 - 2 (Background)	6/5/01	<2.03	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
	7.5 - 9.5	6/5/01	NM	NM	NM	NM	88.5	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
	20 - 22	6/5/01	NM	NM	NM	NM	83.3	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025	<0.025
Foundry Sand	From Facility	6/5/01	<1.64	NM	NM	NM	99.8	NM	NM	NM	NM	NM	NM	NM
NR 720 Soil Cleanup Industrial Standard			**1.6**	**510**	**200**	**500**	**NS**	**0.0055**	**2.9**	**1.5**	**4.1**	**NS**	**NS**	**NS**

NOTE: All locations were analyzed for PCBs and no detects were found. Therefore, PCBs are not included in this table.

ABBREVIATIONS AND ACRONYMS

DRO = Diesel range organics
B = Benzene
E = Ethylbenzene
T = Toluene
X = Total Xylenes

MTBE = Methyl tert-butyl ether
1,2,4-TMB = 1,2,4-Trimethylbenzene
1,3,5-TMB = 1,3,5-Trimethylbenzene
NR = No response
NS = No Standard
NM = Not Measured

DESIGNATIONS

Blank cells indicate not analyzed
< = Not detected at or above this value

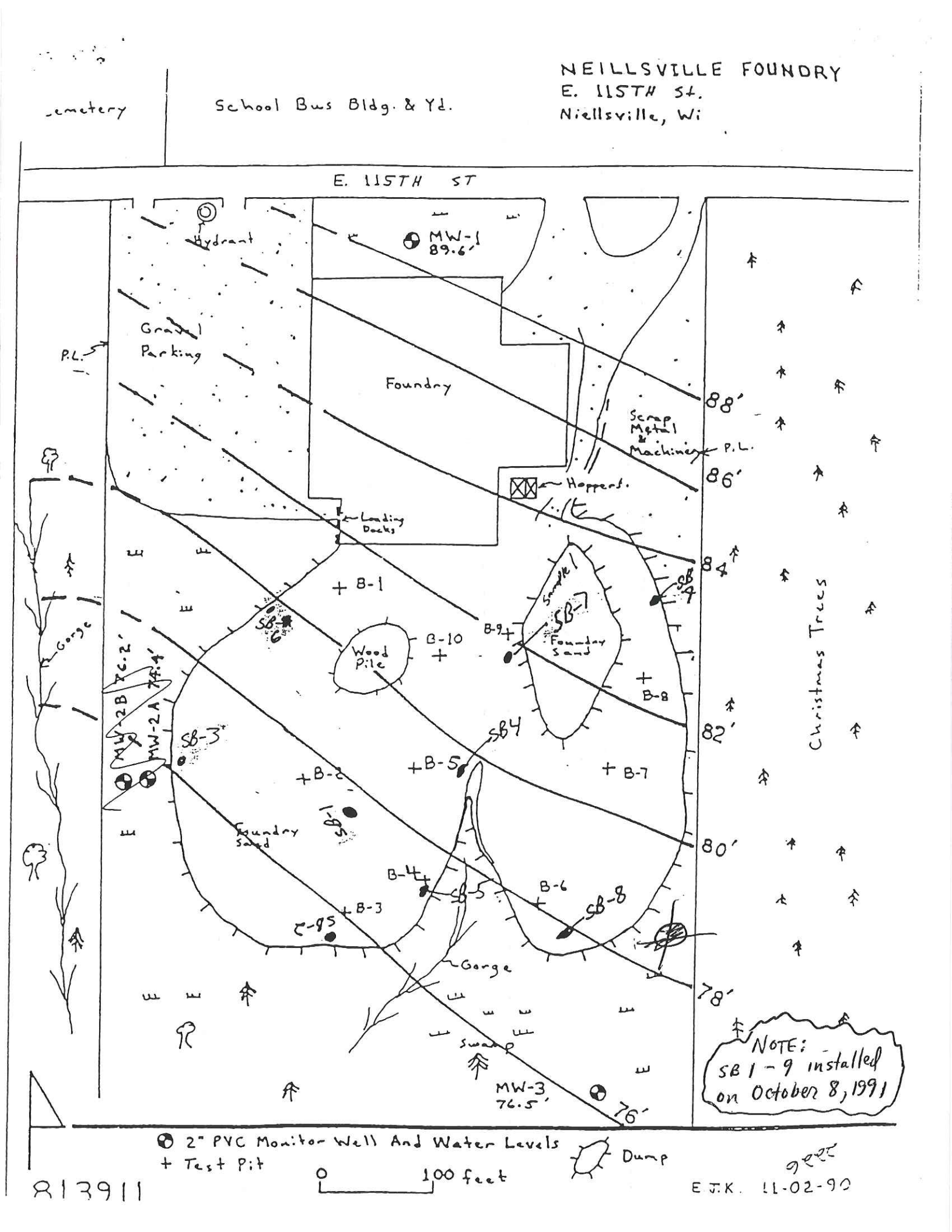
[ ] = Concentration exceeded NR 720 standard
* = MW-5B sample at 0-2 foot depth is considered to be a reprsentative sample for background concentrations in soil.

TABLE 2
AYRES ASSOCIATES SOIL BORING ANALYTICAL RESULTS FOR PAHs
NEILLSVILLE FOUNDRY

Sample Location/Depth	Sample Depth (feet)	Sample Date	POLYNUCLEAR AROMATIC HYDROCARBONS (PAH's)															
			1-Methylnapthalene	2-Methylnapthalene	Acenaphthylene	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno (1,2,3,-cd)pyrene	Naphthalene	Phenanthrene	Pyrene
			mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg	mg/Kg
AB-1	0 - 4	7/21/00	<0.18	<0.20	1.2	0.13	0.20	0.19	0.12	0.039	<0.033	<0.19	0.78	<0.089	<0.089	0.73	0.47	1.5
AB-2	0 - 4	7/21/00	0.29	0.67	<0.21	<0.018	<0.046	0.0080	<0.037	<0.0083	<0.034	<0.20	0.58	<0.092	<0.053	1.5	0.18	0.19
AB-3	0 - 4	7/21/00	<0.18	3.3	<0.20	0.048	<0.044	0.031	0.040	<0.0079	0.11	<0.019	1.0	<0.088	<0.051	2.8	0.21	0.42
AB-4	0 - 4	7/21/00	0.49	4.9	0.90	0.069	<0.043	0.056	0.049	<0.0077	0.83	<0.18	1.0	<0.085	<0.049	3.9	0.43	0.56
AB-5	0 - 4	7/21/00	0.28	2.9	0.68	0.051	<0.043	0.035	<0.034	<0.0077	<0.032	<0.18	0.88	0.14	<0.049	1.8	0.25	0.44
AB-6	0 - 3.5	7/21/00	0.28	1.7	<0.75	<0.029	0.022	<0.043	0.011	<0.034	<0.032	<0.18	0.67	<0.085	<0.049	1.5	0.28	0.31
AB-7	0 - 4	7/21/00	<0.18	3.0	1.1	0.13	<0.44	0.11	0.097	<0.0080	<0.033	<0.19	1.0	<0.089	<0.051	1.1	0.52	1.4
AB-8	0 - 4	7/21/00	0.87	3.6	<0.19	0.030	<0.042	0.019	<0.033	<0.0075	<0.031	0.46	0.73	<0.083	<0.048	3.3	0.26	0.41
AB-9	0 - 2	7/21/00	<0.18	<0.20	<0.20	0.17	0.30	0.40	0.43	0.13	<0.033	0.32	0.83	<0.089	0.32	0.46	0.49	0.97
AB-10	0 - 4	7/21/00	<0.18	1.2	0.59	0.15	0.23	0.31	0.32	0.11	0.038	0.32	0.65	<0.91	0.26	0.23	0.40	0.61
AB-11	0 - 2	7/24/00	<0.17	1.6	<0.19	<0.028	<0.043	0.029	<0.034	<0.0077	0.48	<0.18	0.50	<0.086	<0.049	1.9	0.25	0.35
AB-12	0 - 3	7/24/00	<0.17	<0.20	0.61	0.19	<0.044	0.21	<0.035	0.048	<0.033	<0.19	0.94	<0.087	0.023	0.37	0.37	1.7
AB-13	0 - 4	7/24/00	<0.18	<0.20	0.92	0.082	<0.044	0.076	<0.035	<0.0079	<0.033	<0.19	0.93	<0.088	<0.051	0.97	0.56	1.0
AB-14	0 - 4	7/24/00	<0.18	1.8	<0.20	0.022	<0.044	0.015	<0.035	<0.0079	<0.033	<0.19	0.58	<0.088	<0.050	2.1	0.23	0.36
AB-15	0 - 4	7/24/00	<0.17	1.5	0.51	0.034	<0.043	0.033	<0.035	<0.0078	<0.33	<0.18	0.63	<0.087	<0.050	0.71	0.29	0.58
WETLAND #1	near surface	7/21/00	<0.20	3.0	<0.22	<0.020	<0.050	0.0087	<0.040	<0.0089	<0.037	<0.21	0.37	0.11	<0.057	0.75	0.12	0.24
WETLAND #2	near surface	7/21/00	<0.17	1.7	<0.19	0.023	<0.043	0.0086	<0.034	<0.0077	<0.032	<0.18	0.37	<0.086	<0.049	0.76	0.093	0.21
STOCKPILE #1	near surface	7/21/00	0.31	5.4	0.66	0.065	0.043	0.024	0.061	<0.0076	<0.031	<0.18	0.67	<0.084	<0.048	0.90	0.30	0.43
STOCKPILE #2	near surface	7/21/00	0.35	3.3	0.57	0.048	<0.042	0.016	0.045	<0.0075	<0.031	<0.18	0.62	<0.084	<0.048	0.87	0.24	0.39
Industrial Soil Cleanup Levels-WDNR Interim Guidelines. Publication RR-519-97			**70000**	**40000**	**60000**	**3.9**	**0.39**	**3.9**	**39**	**39**	**390**	**0.39**	**40000**	**40000**	**3.9**	**110**	**390**	**30000**

Abbreviations and Acronymns
mg/kg = milligram per kilogram
[ ] =Exceeds WDNR Interim Soil Cleanup Standards for PAHs (Publication RR-519-97, April 1997 (corrected))

J:\mrs\020325a5.xls


NEILLSVILLE FOUNDRY
E. 11STH St.
Niellsville, Wi
Cemetery
School Bus Bldg. & Yd.
E. 11STH ST
Hydrant
MW-1
89.6'
Gravel
Parking
P.L.
Foundry
Scrap Metal & Machinery
P.L.
Hoppers
Loading Docks
88'
86'
84'
82'
80'
78'
76'
B-1
B-2
B-3
B-4
B-5
B-6
B-7
B-8
B-9
B-10
SB-1
SB-2
SB-3
SB-4
SB-5
SB-6
SB-7
SB-8
Wood Pile
Foundry Sand
Sand
Gorge
MW-2B
76.2'
MW-2A
76.4'
MW-3
76.5'
Swamp
Christmas Trees
Dump
NOTE:
SB 1 - 9 installed
on October 8, 1991
2" PVC Monitor Well And Water Levels
+ Test Pit
0
100 feet
813911
E.J.K. 11-02-90