12/2/88

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Phone: 412/733-9500 440 College Park Dr., Monroeville, PA 15146 Fax: 412/325-3103

November 28, 1988

Wis. Dept. of Natural Resources
DEC 2 1988
Wausau DNR Office
Wausau, Wisconsin

State of Wisconsin
Department of Natural Resources
5301 Rib Mountain Drive
Wausau, WI 54401

Attention: Mark Johnson

Dear Mark:

Re: Monthly Status Report

I have attached a summary of the soil analytical data from samples taken in the WAULECO courtyard in late September of this year. Also attached are the samples taken prior to start-up. These samples were collected a year ago. The results indicate in situ degradation of PCP in the soil.

WAULECO is continuing to operate the above-ground treatment system, the leach filed (in situ system) and the groundwater recovery system. To date, approximately 7 gallons of floating product have been removed from the recovery wells and observation wells in the court yard area. This recovery program is being expanded so that floating product will be removed from any well that has more than one foot of floating product. Additional product that has become emulsified in the pumping wells is also removed by the above-ground treatment system.

As of November 18, 1988, approximately 2 million gallons of groundwater have been treated and approximately 92 pounds of PCP have been removed by the treatment system.

Upon completion of the six month operating period, the monitoring program for the treatment system has been revised. The new sampling program is presented below:

Parameter	Test Method	Frequency
Phenolics	EPA 604	Quarterly
Nitrate (as N)	EPA 353.2	Quarterly
Ortho-Phosphorous	EPA 365.2	Quarterly
Pentachlorophenol	Keystone	Monthly
Alkalinity	EPA 310.1	Monthly
Chloride	EPA 325.3	Monthly

Currently, a cost analysis is being performed on several treatment processes. Upon completion of the cost analysis, a remedial action plan will be prepared for presentation to the WDNR.

If you have any questions or comments, please give me a call.

Sincerely,

Ron O'Toole

Ron O'Toole

ROT/da
cc: P. Peschek
J. Noonan

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WAULECO IN-SITU BIOREMEDIATION SOIL BORING RESULTS
(AFTER 6 MONTHS OPERATION)

BORING NUMBER: B-200

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	92.8					88.4	90.9	89.4		
OIL & GREASE, mg/Kg	233					< 50.0	695	442		
PENTACHLOROPHENOL, ug/Kg	232					497	926	675		

BORING NUMBER: B-201

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	93.0					90.2	91.6	93.1		
OIL & GREASE, mg/Kg	1480					200	689	169		
PENTACHLOROPHENOL, ug/Kg	11800					3200	1920	2880		

BORING NUMBER: B-202

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	94.6					92.0	87.6	90.8		
OIL & GREASE, mg/Kg	209					240	901	319		
PENTACHLOROPHENOL, ug/Kg	160					3170	2250	6250		

BORING NUMBER: B-203

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	96.2					90.1		89.4		
OIL & GREASE, mg/Kg	962					129		600		
PENTACHLOROPHENOL, ug/Kg	257					867		11400		

BORING NUMBER: B-204

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	94.1					90.4	90.2	90.9		
OIL & GREASE, mg/Kg	54.9					< 50.0	968	433		
PENTACHLOROPHENOL, ug/Kg	601					1280	433	289		

BORING NUMBER: B-205

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	93.7					88.9	89.9	87.2		
OIL & GREASE, mg/Kg	259					124	1360	443		
PENTACHLOROPHENOL, ug/Kg	1290					800	634	1090		
1,2-DICHLOROBENZENE, ug/Kg							< 1600			
1,3-DICHLOROBENZENE, ug/Kg							< 1600			
1,4-DICHLOROBENZENE, ug/Kg							< 1600			
BENZENE, ug/Kg							< 800			
CHLOROBENZENE, ug/Kg							< 800			
ETHYL BENZENE, ug/Kg							< 800			
STYRENE, ug/Kg							< 1200			
TOLUENE, ug/Kg							< 800			
TOTAL XYLENES, ug/Kg							45600			

BORING NUMBER: B-206

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	96.0					91.7	92.5	91.2		
OIL & GREASE, mg/Kg	180					< 50.0	733	150		
PENTACHLOROPHENOL, ug/Kg	583					375	533	422		

BORING NUMBER: B-207

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	95.8					93.2	84.1	90.5		
OIL & GREASE, mg/Kg	618					515	2410	460		
PENTACHLOROPHENOL, ug/Kg	1420					4000	13700	5670		

BORING NUMBER: B-208

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C		95.4				91.2	86.9	91.7		
OIL & GREASE, mg/Kg		64.8				< 50.0	1390	509		
PENTACHLOROPHENOL, ug/Kg		124				1320	837	615		

BORING NUMBER: B-209

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	88.8					91.9	90.8	91.0		
OIL & GREASE, mg/Kg	274					< 50.0	245	1170		
PENTACHLOROPHENOL, ug/Kg	331					1830	1500	873		

BORING NUMBER: B-210

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	94.6					92.3	88.7	91.5		
OIL & GREASE, mg/Kg	334					140	702	213		
PENTACHLOROPHENOL, ug/Kg	247					1750	617	1350		

BORING NUMBER: B-211

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	95.2					92.5	89.9		93.9	
OIL & GREASE, mg/Kg	378					129	1060		173	
PENTACHLOROPHENOL, ug/Kg	1120					1670	1330		351	

BORING NUMBER: B-213

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	91.6					89.4	90.1	91.7		
OIL & GREASE, mg/Kg	94.9					124	827	704		
PENTACHLOROPHENOL, ug/Kg	307					6630	587	557		

BORING NUMBER: B-214

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	95.7					90.8	91.3	90.0		
OIL & GREASE, mg/Kg	340					54.7	415	700		
PENTACHLOROPHENOL, ug/Kg	240					617	833	717		

BORING NUMBER: B-215

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	94.6					88.5	91.7	89.8		
OIL & GREASE, mg/Kg	195					64.1	589	225		
PENTACHLOROPHENOL, ug/Kg	184					2350	655	928		

BORING NUMBER: B-216

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C		95.6					89.9	93.0		91.0
OIL & GREASE, mg/Kg		174					500	220		299
PENTACHLOROPHENOL, ug/Kg										

BORING NUMBER: B-217

DEPTH:	5-6.5′	7.5-9′	20-21.5′	25-26.5′	27.5-29′	30-31.5′	32.5-34′	35-36.5′	35-37.5′	37.5-39′
% SOLIDS @ 103 C	93.0					89.6	87.9	90.9		
OIL & GREASE, mg/Kg	220					< 50.0	453	405		
PENTACHLOROPHENOL, ug/Kg						293	1030	650		
1,2-DICHLOROBENZENE, ug/Kg							< 1600			
1,3-DICHLOROBENZENE, ug/Kg							< 1600			
1,4-DICHLOROBENZENE, ug/Kg							< 1600			
BENZENE, ug/Kg							< 800			
CHLOROBENZENE, ug/Kg							< 800			
ETHYL BENZENE, ug/Kg							< 800			
STYRENE, ug/Kg							< 1200			
TOLUENE, ug/Kg							< 800			
TOTAL XYLENES, ug/Kg							< 23700			
RANS										
TCDFs, ug/Kg							ND			
PeCDFs, ug/Kg							0.85			
HxCDFs, ug/Kg							17			
HpCDFs, ug/Kg							78			
OCDF, ug/Kg							99			
DIOXINS										
TCDDs, ug/Kg							ND			
PeCDDs, ug/Kg							ND			
HxCDDs, ug/Kg							6.8			
HpCDDs, ug/Kg							120			
OCDD, ug/Kg							390			

BORING NUMBER: B-218

DEPTH:	5-6.5′	7.5-9′	20-21.5′	25-26.5′	27.5-29′	30-31.5′	32.5-34′	35-36.5′	35-37.5′	37.5-39′
% SOLIDS @ 103 C	95.8					91.0	90.2	91.1		
OIL & GREASE, mg/Kg	628					< 50.0	588	924		
PENTACHLOROPHENOL, ug/Kg						2500	535	585		

BORING NUMBER: B-219

DEPTH:	5-6.5′	7.5-9′	20-21.5′	25-26.5′	27.5-29′	30-31.5′	32.5-34′	35-36.5′	35-37.5′	37.5-39′
% SOLIDS @ 103 C	89.0					92.4	90.5	89.9		
OIL & GREASE, mg/Kg	2970					863	79.6	757		
PENTACHLOROPHENOL, ug/Kg	173					4930	26000	6750		

BORING NUMBER: B-220

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	95.6					88.1	92.3	91.7		
OIL & GREASE, mg/Kg	1070					110	411	144		
PENTACHLOROPHENOL, ug/Kg	85.0					2150	683	1550		
1,2-DICHLOROBENZENE, ug/Kg							< 4000			
1,3-DICHLOROBENZENE, ug/Kg							< 4000			
1,4-DICHLOROBENZENE, ug/Kg							< 4000			
BENZENE, ug/Kg							< 2000			
CHLOROBENZENE, ug/Kg							< 2000			
ETHYL BENZENE, ug/Kg							< 2000			
STYRENE, ug/Kg							< 3000			
TOLUENE, ug/Kg							< 2000			
TOTAL XYLENES, ug/Kg							124000			

ORING NUMBER: B-221

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C			95.0	93.1		88.8				
OIL & GREASE, mg/Kg	1170		< 50.0	< 50.0		< 50.0				
PENTACHLOROPHENOL, ug/Kg										

BORING NUMBER: B-222

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5-34'	35-36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C	92.6				94.6	91.5	88.7			
OIL & GREASE, mg/Kg	364				< 50.0	99.9	1640			
PENTACHLOROPHENOL, ug/Kg										

BORING NUMBER: B-223

DEPTH:	5-6.5'	7.5-9'	20-21.5'	25-26.5'	27.5-29'	30-31.5'	32.5 - 34'	35 - 36.5'	35-37.5'	37.5-39'
% SOLIDS @ 103 C		97.0				94.1	91.9	92.3		
OIL & GREASE, mg/Kg		< 50.0				162	459	528		
PENTACHLOROPHENOL, ug/Kg		< 10.0				7000	1970	4830		

BACKGROUND SOIL CHARACTERIZATION (AS RECEIVED BASIS)

Sample I.D.	Units	B-100	B-100	B-100	B-100	B-100	B-100	B-103	B-103	B-103	B-103	B-103	B-103	B-104	B-104	B-104	B-104
Depth	(ft.)	4-6	12-14	14-16	24-26	30-32	34-36	4-6	8-10	14-16	20-22	24-26	26-28	4-6	10-12	14-16	20-22
Solids	(%)	94.1	97.2	85.9	81.5	92.4	89.5	95.9	96.6	97.4	93.6	94.0	92.5	95.7	95.7	95.4	93.6
TOC	(%)	0.390	0.060	0.046	0.032	0.043	0.075	0.238	0.133	0.039	0.047	0.041	0.040	0.572	0.120	0.010	0.020
Oil & Grease	(mg/kg)	1070	<50.0	100	99.3	140	473	3690	793	293	<50.0	<50.0	<50.0	35800	440	253	100
Chloride	(mg/kg)	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
PCP	(ug/kg)	85.3	<10.0	<10.0	<10.0	1280	25100	25.8	34.2	<10.0	<10.0	<10.0	12.6	15600	370	<10.0	17.1
Phenol	(mg/kg)	<0.125	<0.125	<0.125	<0.125	<0.125	0.150	<0.125	<0.125	<0.125	<0.125	<0.125	*	<0.125	<0.125	<0.125	0.175
Purgeable Aromatics:																	
1,2-Dichlorobenzene	(ug/kg)	<8.00	<4.00	<4.00	<4.00	<4.00	<3000	<80.0	<80.0	<80.0	<80.0	<80.0	<4.00	<4.00	<8.00	<20.0	<4.00
1,3-Dichlorobenzene	(ug/kg)	<8.00	<4.00	<4.00	<4.00	<4.00	<3000	<80.0	<80.0	<80.0	<80.0	<80.0	<4.00	<4.00	<8.00	<20.0	<4.00
1,4-Dichlorobenzene	(ug/kg)	<8.00	<4.00	<4.00	<4.00	<4.00	<3000	<80.0	<80.0	<80.0	<80.0	<80.0	<4.00	<4.00	<8.00	<20.0	<4.00
Benzene	(ug/kg)	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT
Chlorobenzene	(ug/kg)	<4.00	<2.00	<2.00	<2.00	<2.00	<1000	<40.0	<40.0	<40.0	<40.0	<4.00	<2.00	<2.00	<4.00	10.0	<2.00
Ethyl Benzene	(ug/kg)	2.20	1.00	<2.00	<2.00	7.45	<1000	<40.0	<40.0	<40.0	<40.0	1.3	<2.00	24.8	<4.00	10.0	<2.00
Styrene	(ug/kg)	<6.00	<3.00	<3.00	<3.00	<3.00	<1500	<60.0	<60.0	<60.0	<60.0	<6.00	<3.00	<3.00	<6.00	<15.0	<3.00
Toluene	(ug/kg)	7.30	2.15	1.90	2.85	2.35	<1000	<40.0	<40.0	<40.0	<40.0	1.66	<2.00	14.0	4.05	13.5	<2.00
Total Xylenes	(ug/kg)	4.60	3.90	<3.00	3.50	11.4	13000	<60.0	<60.0	<60.0	<60.0	<6.00	<3.00	225	4.36	190	2.00
Dioxins:																	
Tetra (total)	(ug/kg)						ND										
Penta	(ug/kg)						ND										
Hexa	(ug/kg)						0.99										
Hepta	(ug/kg)						19.4										
Octa	(ug/kg)						54.0										
Furans:																	
Tetra (total)	(ug/kg)						ND										
Penta	(ug/kg)						ND										
Hexa	(ug/kg)						2.6										
Hepta	(ug/kg)						30.3										
Octa	(ug/kg)						29.5										

*Insufficient sample

BACKGROUND SOIL CHARACTERIZATION (AS RECEIVED BASIS)

Sample I.D.	Units	B-104	B-104	B-104	B-105	B-105	B-105	B-105	B-105	B-105	B-105	B-106	B-106	B-106	B-106	B-106	B-106	B-106
Depth	(ft.)	24-26	30-32	34-36	4-6	10-12	15-17	20-22	24-26	30-32	34-36	4-6	10-12	17-19	20-22	24-26	30-32	34-36
Solids	(%)	91.6	92.8	91.2	96.6	97.7	97.5	95.5	84.4	83.9	91.1	92.8	97.0	95.5	97.8	95.1	95.2	89.4
TOC	(%)	0.036	0.039	0.061	0.102	0.040	0.026	0.016	0.026	0.065	0.072	0.064	0.020	0.023	0.019	0.025	0.033	0.037
Oil & Grease	(mg/kg)	173	700	2110	1500	<50.0	53.3	<50.0	<50.0	1030	<50.0	287	<50.0	80.0	<50.0	113	220	207
Chloride	(mg/kg)	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
PCP	(ug/kg)	2640	54600	23500	46.8	3870	93.8	20.8	1070	429	675	2090	49.5	10.3	432	55.5	887	722
Phenol	(mg/kg)	<0.125	<0.125	0.225	<0.125	<0.125	<0.125	<0.125	<0.125	0.175	<0.125	<0.125	<0.125	<0.125	<0.125	<0.125	<0.125	<0.125
Purgeable Aromatics:																		
1,2-Dichlorobenzene	(ug/kg)	<4.00	<200	<200	<8.00	<8.00	<8.00	<80.0	<80.0	<400	<400	<400	<4.00	<4.00	<4.00	<4.00	<4.00	<400
1,3-Dichlorobenzene	(ug/kg)	<4.00	<200	<200	<8.00	<8.00	<8.00	<80.0	<80.0	<400	<400	<400	<4.00	<4.00	<4.00	<4.00	<4.00	<400
1,4-Dichlorobenzene	(ug/kg)	<4.00	<200	<200	<8.00	<8.00	<8.00	<80.0	<80.0	<400	<400	<400	<4.00	<4.00	<4.00	<4.00	<4.00	<400
Benzene	(ug/kg)	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT	INT
Chlorobenzene	(ug/kg)	<2.00	<100	<100	<4.00	<4.00	<4.00	<40.0	<40.0	<200	<200	<200	INT	<2.00	<2.00	<2.00	<2.00	<200
Ethyl Benzene	(ug/kg)	<2.00	<100	<100	1.80	<4.00	<4.00	<40.0	<40.0	<200	1300	<200	<4.00	<2.00	<2.00	<2.00	<2.00	<200
Styrene	(ug/kg)	<3.00	<150	<150	<6.00	<6.00	<6.00	<60.0	<60.0	<300	<300	<300	<3.00	<3.00	<3.00	<3.00	<3.00	<300
Toluene	(ug/kg)	<2.00	<100	<100	2.80	6.00	3.95	16.5	<40.0	150	<200	<200	INT	<2.00	1.52	1.45	<2.00	<200
Total Xylenes	(ug/kg)	<3.00	17800	15400	28.0	<6.00	17.5	<60.0	<60.0	68000	65500	5250	7.47	14.5	<3.00	25.0	<3.00	46500
Dioxins:																		
Tetra (total)	(ug/kg)			ND														ND
Penta	(ug/kg)			ND														ND
Hexa	(ug/kg)			6.0														1.12
Hepta	(ug/kg)			97.9														19.0
Octa	(ug/kg)			290														57.8
Furans:																		
Tetra (total)	(ug/kg)			ND														ND
Penta	(ug/kg)			0.92														0.20
Hexa	(ug/kg)			10.8														3.5
Hepta	(ug/kg)			54.5														32.4
Octa	(ug/kg)			43.0														27.8

*Insufficient sample

INITIAL SOIL CHARACTERIZATION (AS RECEIVED BASIS)

Sample I.D.	Units		B-1	B-2	B-3	B-4	B-5	B-6	B-7	B-8	B-10
Depth	(ft.)		8-10	8-10	6-8	6-8	2-4	6-8	4-6	6-8	6-8
Solids	(%)		93.6	94.7	85.8	89.3	96.8	94.0	93.8	93.7	94.6
Arsenic	(ug/kg)	<	1000	1310	1050	4650	2620	1040	1560	4560	1270
Chromium	(ug/kg)		5630	37900	6910	8130	9670	44700	9400	6030	15600
Copper	(ug/kg)		7850	12200	8390	9720	7880	11300	8060	8330	15300
Acid Extractable Phenolics:											
2,3,5,6-Tetrachlorophenol	(ug/kg)		290	490	160 <	100	1530 <	10000	250	396000	650
2,4,6-Trichlorophenol	(ug/kg)	<	100 <	100 <	100 <	100 <	1000 <	10000	400	105000	1270
2,4-Dichlorophenol	(ug/kg)	<	50.0 <	50.0 <	50.0 <	50.0	3780	9360 <	50.0	43700 <	50.0
2,4-Dimethylphenol	(ug/kg)	<	50.0	165 <	50.0 <	50.0 <	500	5770	61.0	20700	131
2,4-Dinitrophenol	(ug/kg)	<	100	19500	1580 <	100	3560 <	10000	310	251000 <	100
2-Chlorophenol	(ug/kg)	<	50.0 <	50.0 <	50.0 <	50.0 <	500	96600 <	50.0	139000 <	50.0
2-Nitrophenol	(ug/kg)	<	50.0 <	50.0 <	50.0 <	50.0 <	500	7450 <	50.0	17000 <	50.0
2-Methyl-4,6-dinitrophenol	(ug/kg)	<	100	205 <	100 <	100 <	1000 <	10000 <	100	167000 <	100
4-Nitrophenol	(ug/kg)	<	100 <	100 <	100 <	100 <	1000 <	10000 <	100	241000 <	100
4-Chloro-3-methylphenol	(ug/kg)	<	50.0	347	67.4	59.4 <	500	7840	76.4	205000	137
Pentachlorophenol	(ug/kg)	<	100 <	100 <	100 <	100	1380 <	10000 <	100	343000	2760
Phenol	(ug/kg)	<	50.0 <	50.0 <	50.0 <	50.0 <	500	490000 <	50.0	529000 <	50.0
Polynuclear Aromatic Hydrocarbons:											
Acenaphthene	(ug/kg)	<	50.0 <	50.0 <	50.0 <	50.0 <	50.0 <	50.0 <	50.0	2880 <	50.0
Acenaphthylene	(ug/kg)	<	50.0	192 <	50.0 <	50.0 <	50.0 <	50.0 <	50.0	1490 <	50.0
Anthracene	(ug/kg)	<	25.0 <	25.0 <	25.0 <	25.0 <	25.0 <	25.0 <	25.0	2580 <	<25.0
Benzo(a)anthracene	(ug/kg)		3.17	5.61	3.17	2.68	2.68	INT	3.17	INT	4.39
Benzo(a)pyrene	(ug/kg)	<	1.00	3.79 <	1.00	1.01 <	1.00 <	1.00 <	1.00 <	10.0 <	1.00
Benzo(b)fluoranthene	(ug/kg)		1.27	4.76	1.03	1.19 <	1.00 <	1.00 <	1.00 <	10.0 <	1.00
Benzo(g,h,i)perylene	(ug/kg)		5.52	15.3	4.90	5.51 <	2.50	4.90 <	2.50 <	2.50 <	2.50
Benzo(k)fluoranthene	(ug/kg)	<	1.00	4.00 <	1.00 <	1.00 <	1.00 <	1.00 <	1.00	18.8 <	1.00
Chrysene	(ug/kg)	<	7.50	12.3 <	7.50 <	7.50 <	7.50	INT	7.95	INT	7.95
Dibenz(ah)anthracene	(ug/kg)	<	1.50	6.25 <	1.50 <	1.50 <	1.50 <	1.50 <	1.50 <	1.50 <	1.50
Fluoranthene	(ug/kg)		17.7	37.6	21.4	24.5 <	10.0	15.8 <	10.0	INT	20.5
Fluorene	(ug/kg)		29.5	47.0	35.0	42.2	23.0	25.3	22.7	5200	32.6
Indeno(123-cd)pyrene	(ug/kg)		3.87	12.0	4.23	4.23 <	2.50	3.17 <	2.50 <	2.50 <	2.50
Phenanthrene	(ug/kg)		108	37.0	122	134	48.6	46.8	49.2	12500	86.6
Pyrene	(ug/kg)		21.7	25.4	21.7	21.7	12.7	27.2	10.9	INT	18.1
Carbazole	(ug/kg)	<	50.0 <	50.0 <	50.0 <	50.0 <	50.0 <	50.0 <	50.0 <	50.0 <	50.0
Naphthalene	(ug/kg)	<	50.0 <	50.0 <	50.0 <	50.0 <	50.0 <	50.0 <	50.0	323 <	50.0

03/UV EFF

Sample Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88
Chloride	(mg/l)				27.3			31.6					29.1	34.6	42.5	45.1	43.8
Ammonia	(mg/l)				< 1.00			< 1.00					< 1	< 1.00	< 1.00	1.00	< 1.00
Nitrate	(mg/l)				11.1			39.9					4.56	6.56	7.64	4.34	2.95
Oil & Grease	(mg/l)				21.3			79.9					< 6			< 6	
Phenol	(mg/l)				0.014			0.022					< 0.005	< 0.005	< 0.005	< 0.005	< 0.005
Alkalinity	(mg/l)																
Total Phosphate	(mg/l)				< 0.100			< 0.500					0.190	0.100	< 0.100	0.08	< 0.1
Ferrous Iron	(mg/l)				0.459								< 0.1				
Pentachlorophenol	(ug/l)	12.8	14.6	20.3	13.9	214	NA	7.82	NA	NA	NA	NA	< 1	9.40	< 1.00	< 1	1.17
Pet. Hydrocarbons	(mg/l)				99.0			99.0					< 10			< 10	
TOC	(mg/l)															2.8	6.92
Purgeable Halocarbons:																	
1,1,1-Trichloroethane	(ug/l)				0.194								< 0.03				
1,1,2,2-Tetrachloroethane	(ug/l)				< 0.030								< 0.03				
1,1,2-Trichloroethane	(ug/l)				< <0.050								< 0.02				
1,1-Dichloroethane	(ug/l)				< <0.050								< 0.05				
1,1-Dichloroethene	(ug/l)				< <0.050								< 0.05				
1,2-Dichlorobenzene	(ug/l)				<0.150								< 0.15				
1,2-Dichloroethane	(ug/l)				<0.030								< 0.03				
1,2-Dichloropropane	(ug/l)				<0.030								< 0.03				
1,3-Dichlorobenzene	(ug/l)				0.579								< 0.03				
1,4-Dichlorobenzene	(ug/l)				<0.250								< 0.25				
2-Chloroethylivinyl ether	(ug/l)				<0.130								< 0.13				
Bromodichloromethane	(ug/l)				<0.100								< 0.1				
Bromoform	(ug/l)				<0.200								< 0.2				
Carbon Tetrachloride	(ug/l)				<0.100								< 0.1				
Chlorobenzene	(ug/l)				<0.250								< 0.25				
Chloroethane	(ug/l)				<0.250								< 0.25				
Chloroform	(ug/l)				20.9								1.77				
Dibromochloromethane	(ug/l)				<0.100								< 0.1				
Methyl Bromide	(ug/l)				<2.00								< 0.5				
Methyl Chloride	(ug/l)				<0.250								< 0.25				
Methylene Chloride	(ug/l)				2.77								< 0.05				
Tetrachloroethene	(ug/l)				1.01								< 0.03				
Trichlorofluoromethane	(ug/l)				0.454								0.127				
Trichloroethene	(ug/l)				0.508								< 0.1				
Vinyl Chloride	(ug/l)				<0.250								< 0.25				
cis-1,3-Dichloropropene	(ug/l)				<0.300								< 0.3				
trans-1,2-Dichloroethene	(ug/l)				<0.050								< 0.05				
trans-1,3-Dichloropropene	(ug/l)				<0.200								< 0.2				

03/UV EFF

Sample Date	Units	5/3/88	5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88	6/28/88	7/5/88	7/12/88	7/20/88	7/27/88	8/2/88	8/16/88	8/23/88	8/31/88	9/7/88
Chloride	(mg/l)	46.6	47.6	56.2	56.0	56.8	56.2	62.2	65.7	61.6	58.1	56.2	48.6	48.0	45.9	49.3	51.7	47.2	40.7
Ammonia	(mg/l)	< 1.00	< 1.00	< 1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Nitrate	(mg/l)	3.36	3.14	5.11	7.22	9.18	7.93	12.7	5.74	3.63	9.36	9.22	5.64	5.70	4.9	3.25	2.84	5.11	7.16
Oil & Grease	(mg/l)		< 6.00		7.00			<6.00		<6.00		<6.00		<6.00			<6.00		<5.00
Phenol	(mg/l)	< 0.005	< 0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Alkalinity	(mg/l)				81.6	95.3	86.0	106	97.0	120	109	113	125	113		117	122	128	131
Total Phosphate	(mg/l)			< 0.005	81.6	29.7	18.2	29.9	22.2	17.4	22.7	20.0	16.4	17.4		1.95	14.0	12.2	12.0
Ferrous Iron	(mg/l)	< 0.100																	
Pentachlorophenol	(ug/l)	6.66	4.87	2.00	<1.00	<1.00	1.35	1.20	4.42	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	1.24	2.95	<1.00	<1.00
Pet. Hydrocarbons	(mg/l)		123		15.0			<10.0		<10.0		<10.0		<10.0			<10.0		10.0
TOC	(mg/l)	10.9	10.9	10.5	7.82	6.18	8.89	3.76	10.1	6.39	6.61	4.83	2.82	3.70	6.18	6.74	6.54	1.35	2.82

Purgeable Halocarbons:

1,1,1-Trichloroethane	(ug/l)	< 0.030	<0.030
1,1,2,2-Tetrachloroethane	(ug/l)	< 0.030	<0.030
1,1,2-Trichloroethane	(ug/l)	< 0.020	<0.020
1,1-Dichloroethane	(ug/l)	< 0.050	<0.050
1,1-Dichloroethene	(ug/l)	< 0.050	<0.050
1,2-Dichlorobenzene	(ug/l)	< 0.150	<0.150
1,2-Dichloroethane	(ug/l)	< 0.030	<0.030
1,2-Dichloropropane	(ug/l)	< 0.030	<0.030
1,3-Dichlorobenzene	(ug/l)	< 0.030	<0.300
1,4-Dichlorobenzene	(ug/l)	< 0.250	<0.250
2-Chloroethylivinyl ether	(ug/l)	< 0.130	<0.130
Bromodichloromethane	(ug/l)	< 0.100	<0.100
Bromoform	(ug/l)	< 0.200	<0.200
Carbon Tetrachloride	(ug/l)	< 0.100	<0.100
Chlorobenzene	(ug/l)	< 0.250	<0.250
Chloroethane	(ug/l)	< 0.250	<0.250
Chloroform	(ug/l)	0.822	0.261
Dibromochloromethane	(ug/l)	< 0.100	<0.100
Methyl Bromide	(ug/l)	< 0.500	<0.500
Methyl Chloride	(ug/l)	< 0.250	<0.250
Methylene Chloride	(ug/l)	0.244	<0.050
Tetrachloroethene	(ug/l)	< 0.030	<0.030
Trichlorofluoromethane	(ug/l)	< 0.050	<0.050
Trichloroethene	(ug/l)	< 0.100	<0.100
Vinyl Chloride	(ug/l)	< 0.250	<0.250
cis-1,3-Dichloropropene	(ug/l)	< 0.300	<0.300
trans-1,2-Dichloroethene	(ug/l)	< 0.050	<0.050
trans-1,3-Dichloropropene	(ug/l)	< 0.200	<0.200

03/UV EFF

Sample Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88
Purgeable Aromatics:																	
Benzene	(ug/l)				<0.200								<0.200				
Ethyl Benzene	(ug/l)				<0.200								<0.200				
Styrene	(ug/l)				<0.300								<0.300				
Toluene	(ug/l)				<0.200								0.200				
Total Xylenes	(ug/l)				50.9								<0.300				
Dioxins:																	
Tetra (total)	(ng/l)				54.5								22		ND		
Penta	(ng/l)				232								39		ND		
Hexa	(ng/l)				589								78		ND		
Hepta	(ng/l)				1180								120		ND		
Octa	(ng/l)				577								47		ND		
Furans:																	
Tetra (total)	(ng/l)				19.1								6.3		ND		
Penta	(ng/l)				159								28		ND		
Hexa	(ng/l)				459								59		ND		
Hepta	(ng/l)				228								14		ND		
Octa	(ng/l)				48.0								2.6		ND		
Metals:																	
Arsenic	(ug/l)					<10.0							<10.0				
Barium	(ug/l)					<200							<200				
Cadmium	(ug/l)					15.0							<5.00				
Chromium	(ug/l)					<10.0							<10.0				
Iron	(ug/l)					1520							<100				
Lead	(ug/l)					<5.00							<5.00				
Manganese	(ug/l)					4270							751				
Mercury	(ug/l)					5.65							<5.00				
Selenium	(ug/l)					<5.00							<10.0				
Silver	(ug/l)					17.6											

03/UV EFF

Sample Date	Units	5/3/88	5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88	7/5/88	7/28/88
Purgeable Aromatics:											
Benzene	(ug/l)	<0.200									<0.200
Ethyl Benzene	(ug/l)	<0.200									<0.200
Styrene	(ug/l)	<0.300									<0.300
Toluene	(ug/l)	<0.200									<0.200
Total Xylenes	(ug/l)	<0.300									1.87
Dioxins:											
Tetra (total)	(ng/l)		ND							1.6	
Penta	(ng/l)		2.5							2.8	
Hexa	(ng/l)		9.0							3.7	
Hepta	(ng/l)		20							5.1	
Octa	(ng/l)		19							5.1	
Furans:											
Tetra (total)	(ng/l)		ND							0.89	
Penta	(ng/l)		4.9							10	
Hexa	(ng/l)		24							10	
Hepta	(ng/l)		13							ND	
Octa	(ng/l)		8.1							ND	
Metals:											
Arsenic	(ug/l)	<10.0									<10.0
Barium	(ug/l)	<200									<200
Cadmium	(ug/l)	<5.00									<5.00
Chromium	(ug/l)	<10.0									<10.0
Iron	(ug/l)	<100									<100
Lead	(ug/l)	<5.00									<5.00
Manganese	(ug/l)	562									282
Mercury	(ug/l)	0.931									0.363
Selenium	(ug/l)	<5.00									<5.00
Silver	(ug/l)	<10.0									<10.0

03/UV EFF

Sample Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88
Acid Extractable Phenolics:																	
2,3,5,6-Tetrachlorophenol	(ug/l)					43.8							<1.00				
2,4,6-Trichlorophenol	(ug/l)					108							<1.00				
2,4-Dichlorophenol	(ug/l)					47.0							<0.500				
2,4-Dimethylphenol	(ug/l)					22.1							<0.500				
2,4-Dinitrophenol	(ug/l)					47.2							<1.00				
2-Chlorophenol	(ug/l)					70.1							1.4				
2-Nitrophenol	(ug/l)					35.2							0.552				
2-Methyl-4,6-dinitrophenol	(ug/l)					49.2							<1.00				
4-Nitrophenol	(ug/l)					33.0							<1.00				
4-Chloro-3-methylphenol	(ug/l)					18.1							<0.500				
Pentachlorophenol	(ug/l)					39.0							<1.00				
Phenol	(ug/l)					21.2							2.04				

03/UV EFF

Sample Date	Units	5/3/88	5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88	6/28/88	8/23/88
Acid Extractable Phenolics:											
2,3,5,6-Tetrachlorophenol	(ug/l)		<1.00							<1.00	<1.00
2,4,6-Trichlorophenol	(ug/l)		<1.00							16.2	1.05
2,4-Dichlorophenol	(ug/l)		<0.500							<0.500	2.57
2,4-Dimethylphenol	(ug/l)		<0.500							<0.500	4.18
2,4-Dinitrophenol	(ug/l)		2.67							<1.00	<1.00
2-Chlorophenol	(ug/l)		1.03							14.6	7.73
2-Nitrophenol	(ug/l)		<0.500							<0.500	1.85
2-Methyl-4,6-dinitrophenol	(ug/l)		<1.00							<1.00	<1.00
4-Nitrophenol	(ug/l)		<1.00							<1.00	4.05
4-Chloro-3-methylphenol	(ug/l)		1.48							2.66	<0.500
Pentachlorophenol	(ug/l)		28.4							<1.00	11.1
Phenol	(ug/l)		10.5							3.03	<0.500

INFLUENT

Sample Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88
Chloride	(mg/l)				20.5			24.0				27.3	28.1	32.5	36.2	38.8	38.6
Ammonia	(mg/l)				<1.00			<1.00				<1.00	<1.00	<1.00	<1.00	< 1	< 1
Nitrate	(mg/l)				12.9			37.8				79.9	3.11	3.03	4.00	1.48	0.771
Oil & Grease	(mg/l)				18.2			14.9				<6.00	17.1			< 6	
Phenol	(mg/l)				0.007			0.013				<0.005	0.006	0.007	0.008	< 0.005	< 0.005
Alkalinity	(mg/l)																
Total Phosphate	(mg/l)				0.200			<0.500				<0.500	0.12	0.18	<0.100	< 0.1	3.15
Ferrous Iron	(mg/l)				1.09							<0.10	0.256				
Pentachlorophenol	(ug/l)	10800	11800	13300	9500	15700	8800	8230	2800	5470	6020	2770	7880	8300	6100	13100	14500
Pet. Hydrocarbons	(mg/l)				101			84.0				68.0	25.0			21	
TOC	(mg/l)															6.04	13
Purgeable Halocarbons:																	
1,1,1-Trichloroethane	(ug/l)				<0.600							3.32	<3.00				
1,1,2,2-Tetrachloroethane	(ug/l)				<0.600							<0.600	<3.00				
1,1,2-Trichloroethane	(ug/l)				<0.400							<0.400	<2.00				
1,1-Dichloroethane	(ug/l)				<1.00							<1.00	<5.00				
1,1-Dichloroethene	(ug/l)				<1.00							<1.00	<5.00				
1,2-Dichlorobenzene	(ug/l)				<3.00							<3.00	<15.0				
1,2-Dichloroethane	(ug/l)				<0.600							<0.600	<3.00				
1,2-Dichloropropane	(ug/l)				<0.600							<0.600	<3.00				
1,3-Dichlorobenzene	(ug/l)				<6.00							<6.00	<30.0				
1,4-Dichlorobenzene	(ug/l)				<5.00							<5.00	<25.0				
2-Chloroethylvinyl ether	(ug/l)				<2.60							<2.60	<13.0				
Bromodichloromethane	(ug/l)				<2.00							<2.00	<10.0				
Bromoform	(ug/l)				<4.00							<4.00	<20.0				
Carbon Tetrachloride	(ug/l)				<2.00							<2.00	<10.0				
Chlorobenzene	(ug/l)				<5.00							<5.00	<25.0				
Chloroethane	(ug/l)				<5.00							<5.00	<25.0				
Chloroform	(ug/l)				39.0							26.2	29.6				
Dibromochloromethane	(ug/l)				<2.00							<2.00	<10.0				
Methyl Bromide	(ug/l)				<10.0							<10.0	<50.0				
Methyl Chloride	(ug/l)				<5.00							<5.00	<25.0				
Methylene Chloride	(ug/l)				4.14							1.04	<5.00				
Tetrachloroethene	(ug/l)				<0.600							<0.600	<3.00				
Trichlorofluoromethane	(ug/l)				<1.00							<1.00	<5.00				
Trichloroethene	(ug/l)				3.90							2.16	<10.0				
Vinyl Chloride	(ug/l)				<5.00							<5.00	<25.0				
cis-1,3-Dichloropropene	(ug/l)				<6.00							<6.00	<30.0				
trans-1,2-Dichloroethene	(ug/l)				<1.00							<1.00	<5.00				
trans-1,3-Dichloropropene	(ug/l)				<4.00							<4.00	<20.0				

INFLUENT

Sample Date	Units	5/3/88	5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88	6/28/88	7/5/88	7/12/88	7/20/88	7/28/88	8/2/88	8/16/88	8/23/88	8/31/88	9/7/88
Chloride	(mg/l)	40.4	43.6	45.9	51.9	53.7	48.0	50.9	59.4	53.8	53.6	53.3	44.5	49.0	41.8	47.3	43.5	46.3	37.7
Ammonia	(mg/l)	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Nitrate	(mg/l)	0.765	0.725	3.02	2.82	3.99	4.06	4.73	2.38	0.572	4.53	1.94	1.50	2.46	1.25	1.03	0.81	0.514	2.34
Oil & Grease	(mg/l)		12.0		12.7			19.2		16.2		8.05		6.19	1.25		6.98		<5.00
Phenol	(mg/l)	0.008	0.010	0.007	0.005	0.007	0.013	0.008	0.012	0.012	0.008		0.005	<0.005	<0.005	<0.005	0.012	0.015	0.01
Alkalinity	(mg/l)				110	121	135	11.8	136	143	143	150	146	136		140	148	151	151
Total Phosphate	(mg/l)				24.5	27.0	25.6	33.9	23.2	17.6	24.1	18.5	16.8	16.5		15.0	13.7	13.9	8.96
Ferrous Iron	(mg/l)	0.527																	
Pentachlorophenol	(ug/l)	4800	7400	8500	15400	14000	13500	12700	11800	7600	12400	9400	4000	3500	6810	6800	7720	2630	2860
Pet. Hydrocarbons	(mg/l)		592		88.0			<10.0		169		58.00		27.0			78.0		36.0
TOC	(mg/l)	16.1		16.4	17.2	15.8	13.3	11.8	12.9	16.8	19.2	13.1	11.0	10.9	12.6	10.8	12.0	8.02	10.5

Purgeable Halocarbons:

1,1,1-Trichloroethane	(ug/l)	<0.030	<0.030
1,1,2,2-Tetrachloroethane	(ug/l)	<0.030	<0.030
1,1,2-Trichloroethane	(ug/l)	<0.020	<0.020
1,1-Dichloroethane	(ug/l)	<0.050	<0.050
1,1-Dichloroethene	(ug/l)	<0.050	<0.050
1,2-Dichlorobenzene	(ug/l)	<0.150	<0.150
1,2-Dichloroethane	(ug/l)	<0.030	<0.030
1,2-Dichloropropane	(ug/l)	<0.030	<0.030
1,3-Dichlorobenzene	(ug/l)	<0.300	<0.030
1,4-Dichlorobenzene	(ug/l)	<0.250	<0.250
2-Chloroethylvinyl ether	(ug/l)	<0.130	<0.130
Bromodichloromethane	(ug/l)	<0.100	<0.100
Bromoform	(ug/l)	<0.200	<0.200
Carbon Tetrachloride	(ug/l)	<0.100	<0.100
Chlorobenzene	(ug/l)	<0.250	<0.250
Chloroethane	(ug/l)	<0.250	<0.250
Chloroform	(ug/l)	18.3	19.3
Dibromochloromethane	(ug/l)	<0.100	<0.100
Methyl Bromide	(ug/l)	<0.500	<0.500
Methyl Chloride	(ug/l)	<0.250	<0.250
Methylene Chloride	(ug/l)	1.13	2.57
Tetrachloroethene	(ug/l)	0.364	0.438
Trichlorofluoromethane	(ug/l)	<0.050	<0.050
Trichloroethene	(ug/l)	8.93	4.32
Vinyl Chloride	(ug/l)	<0.250	<0.250
cis-1,3-Dichloropropene	(ug/l)	<0.300	<0.300
trans-1,2-Dichloroethene	(ug/l)	<0.050	<0.050
trans-1,3-Dichloropropene	(ug/l)	<0.200	<0.200

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0.00

INFLUENT

Sample Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88
Purgeable Aromatics:																	
Benzene	(ug/l)				<4.00							<4.00	<20.0				
Ethyl Benzene	(ug/l)				9.52							52.4	<20.0				
Styrene	(ug/l)				<6.00							<6.00	<30.0				
Toluene	(ug/l)				5.56							6.94	<20.0				
Total Xylenes	(ug/l)				986							1040	<30.0				
Dioxins:																	
Tetra (total)	(ng/l)				ND								ND		ND		
Penta	(ng/l)				ND								ND		ND		
Hexa	(ng/l)				40.2								ND		ND		
Hepta	(ng/l)				651								6.3		6.0		
Octa	(ng/l)				2090								22		24		
Furans:																	
Tetra (total)	(ng/l)				ND								ND		ND		
Penta	(ng/l)				4.6								ND		ND		
Hexa	(ng/l)				77.5								ND		ND		
Hepta	(ng/l)				347								3.8		ND		
Octa	(ng/l)				429								5.6		ND		
Metals:																	
Arsenic	(ug/l)					<10.0						<10.0	<10.0				
Barium	(ug/l)					<200						<200	<200				
Cadmium	(ug/l)					14.6						<5.00	<5.00				
Chromium	(ug/l)					<10.0						<10.0	<10.0				
Iron	(ug/l)					1690						2590	364				
Lead	(ug/l)					<5.00						<5.00	<5.00				
Manganese	(ug/l)					4860						10400	1950				
Mercury	(ug/l)					3.71						2.00	3.44				
Selenium	(ug/l)					<5.00						<5.00	<5.00				
Silver	(ug/l)					<10.0						<10.0	<10.0				

INFLUENT

Sample Date	Units	5/3/88	5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88	7/5/88	7/28/88
Purgeable Aromatics:											
Benzene	(ug/l)	<20.0						<4.00			<20.0
Ethyl Benzene	(ug/l)	<20.0						52.4			<20.0
Styrene	(ug/l)	<30.0						<6.00			<30.0
Toluene	(ug/l)	<20.0						6.94			<20.0
Total Xylenes	(ug/l)	414						1040			91.7
Dioxins:											
Tetra (total)	(ng/l)		ND							ND	
Penta	(ng/l)		ND							ND	
Hexa	(ng/l)		100							140	
Hepta	(ng/l)		1600							2100	
Octa	(ng/l)		5900							8600	
Furans:											
Tetra (total)	(ng/l)		0.5							38	
Penta	(ng/l)		16							100	
Hexa	(ng/l)		190							440	
Hepta	(ng/l)		670							890	
Octa	(ng/l)		980							1400	
Metals:											
Arsenic	(ug/l)	<10.0						<10.0		<10.0	
Barium	(ug/l)	<200						<200		<200	
Cadmium	(ug/l)	<5.00						<5.00		<5.00	
Chromium	(ug/l)	<10.0						<10.0		<10.0	
Iron	(ug/l)	186						2590		227	
Lead	(ug/l)	<5.00						<5.00		5.70	
Manganese	(ug/l)	1910						10400		927	
Mercury	(ug/l)	2.6						2.00		2.38	
Selenium	(ug/l)	<5.00						<5.00		<5.00	
Silver	(ug/l)	<10.0						<10.0		<10.0	

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INFLUENT

Sample Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88
Acid Extractable Phenolics:																	
2,3,5,6-Tetrachlorophenol	(ug/l)					<100						242	254				
2,4,6-Trichlorophenol	(ug/l)					<100						151	<40.0				
2,4-Dichlorophenol	(ug/l)					<50.0						<50.0	<20.0				
2,4-Dimethylphenol	(ug/l)					<50.0						<50.0	<20.0				
2,4-Dinitrophenol	(ug/l)					<100						<100	166				
2-Chlorophenol	(ug/l)					283						194	148				
2-Nitrophenol	(ug/l)					<50.0						195	<20.0				
2-Methyl-4,6-dinitrophenol	(ug/l)					<100						120	<40.0				
4-Nitrophenol	(ug/l)					<100						<100	<40.0				
4-Chloro-3-methylphenol	(ug/l)					<50.0						96.3	<20.0				
Pentachlorophenol	(ug/l)					8500						3090	4220				
Phenol	(ug/l)					<50.0						<50.0	20.5				

INFLUENT

Sample Date	Units	5/3/88	5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88	6/28/88	7/28/88	8/23/88
Acid Extractable Phenolics:												
2,3,5,6-Tetrachlorophenol	(ug/l)		<100								<10.0	<40.0
2,4,6-Trichlorophenol	(ug/l)		<100								27.4	106
2,4-Dichlorophenol	(ug/l)		<50.0								<5.00	<20.0
2,4-Dimethylphenol	(ug/l)		413								<5.00	<20.0
2,4-Dinitrophenol	(ug/l)		<100								<10.0	<40.0
2-Chlorophenol	(ug/l)		1250								<5.00	<20.0
2-Nitrophenol	(ug/l)		<50.0								<5.00	<20.0
2-Methyl-4,6-dinitrophenol	(ug/l)		<100								<10.0	<40.0
4-Nitrophenol	(ug/l)		<100								<10.0	<40.0
4-Chloro-3-methylphenol	(ug/l)		<50.0								<5.00	<20.0
Pentachlorophenol	(ug/l)		6580								1350	6760
Phenol	(ug/l)		365								<5.00	67.6

SYSTEM EFF

Sample Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88
Chloride	(mg/l)				30.4			36.8				29.4	28.1	34.6	41.5	44.1	40.6
Ammonia	(mg/l)				<1.00			<1.00				<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Nitrate	(mg/l)				3.78			56.8				63.0	2.13	6.15	15.4	16.4	21
Oil & Grease	(mg/l)				<6.00			47.4				<6.00	9.15			< 6	
Alkalinity	(mg/l)																
Phenol	(mg/l)				<0.005			0.074				<0.005	<0.005	<0.005	<0.005	0.006	<0.005
Total Phosphate	(mg/l)				2.81			7.65				0.690	1.17	0.123	0.470	220	235
Ferrous Iron	(mg/l)				0.105							0.252	<0.100				
Pentachlorophenol	(ug/l)	<1.00	<1.00	<1.00	<1.00	2.30	1.91	<1.00	12.5	3.85	<1.00	<1.00	1.97	<1.00	<1.00	<1.00	<1.00
Pet. Hydrocarbons	(mg/l)				27.0			13.0				<10.0	<10.0			< 10	
TOC	(mg/l)															< 1	1.13
Purgeable Halocarbons:																	
1,1,1-Trichloroethane	(ug/l)				0.089							0.052	<0.030				
1,1,2,2-Tetrachloroethane	(ug/l)				<0.030							<0.030	<0.030				
1,1,2-Trichloroethane	(ug/l)				<0.020							<0.020	<0.020				
1,1-Dichloroethane	(ug/l)				<0.050							<0.050	<0.050				
1,1-Dichloroethene	(ug/l)				<0.050							<0.050	<0.050				
1,2-Dichlorobenzene	(ug/l)				<0.150							<0.150	<0.150				
1,2-Dichloroethane	(ug/l)				<0.030							<0.030	<0.030				
1,2-Dichloropropane	(ug/l)				<0.030							<0.030	<0.030				
1,3-Dichlorobenzene	(ug/l)				0.737							<0.300	<0.300				
1,4-Dichlorobenzene	(ug/l)				<0.250							<0.250	<0.250				
2-Chloroethylvinyl ether	(ug/l)				<0.130							<0.130	<0.130				
Bromodichloromethane	(ug/l)				<0.100							<0.100	<0.100				
Bromoform	(ug/l)				<0.200							<0.200	<0.200				
Carbon Tetrachloride	(ug/l)				<0.100							<0.100	<0.100				
Chlorobenzene	(ug/l)				<0.250							<0.250	<0.250				
Chloroethane	(ug/l)				<0.250							<0.250	<0.250				
Chloroform	(ug/l)				<0.050							<0.050	<0.050				
Dibromochloromethane	(ug/l)				<0.100							<0.100	<0.100				
Methyl Bromide	(ug/l)				<0.500							<0.500	<0.500				
Methyl Chloride	(ug/l)				<0.250							<0.250	<0.250				
Methylene Chloride	(ug/l)				<0.050							<0.050	<0.050				
Tetrachloroethene	(ug/l)				0.225							<0.030	<0.030				
Trichlorofluoromethane	(ug/l)				0.600							0.196	0.190				
Trichloroethene	(ug/l)				<0.100							<0.100	<0.100				
Vinyl Chloride	(ug/l)				<0.250							<0.250	<0.250				
cis-1,3-Dichloropropene	(ug/l)				<0.300							<0.300	<0.300				
trans-1,2-Dichloroethene	(ug/l)				<0.050							<0.050	<0.050				
trans-1,3-Dichloropropene	(ug/l)				<0.200							<0.200	<0.200				

SYSTEM EFF

Sample Date	Units	5/3/88	5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88	6/28/88	7/5/88	7/12/88	7/20/88	7/28/88	8/2/88	8/16/88	8/23/88	8/31/88	9/7/88
Chloride	(mg/l)	46.6	52.7	55.1	54.0	61.8	53.1	68.7	61.2	62.2	59.8	58.0	49.7	47.0	54.1	47.3	49.7	48.3	39.7
Ammonia	(mg/l)	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Nitrate	(mg/l)	15.8	19.1	50.2	56.5	33.1	30.8	51.5	38.3	40.4	58.7	55.2	34.6	2.46	40.0	25.9	23.8	58.6	93.0
Oil & Grease	(mg/l)		<6.00		<6.00			5.99		<5.00		<6.00		<6.00			<6.00		<5.00
Alkalinity	(mg/l)				161	154	116	<1.00	133	173	175	144	177	118		138	145	161	141
Phenol	(mg/l)	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Phosphate	(mg/l)				161	58.6	26.4	19.8	35.7	44.2	48.1	38.4	39.4	24.1		3.52	33.2	36.5	59.9
Ferrous Iron	(mg/l)	0.156																	
Pentachlorophenol	(ug/l)	<1.00	<1.00	<1.00	<1.00	3.60	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Pet. Hydrocarbons	(mg/l)		36.0					<10.0		<10.0		<10.0		<10.0			33.2		14.0
TOC	(mg/l)	<1.00	<1.00	<1.00	1.02	<1.00	<1.00	<1.00	1.28	<1.00	1.29	1.61	1.33	<1.00	1.05	<1.00	<1.00	<1.00	1.23
Purgeable Halocarbons:																			
1,1,1-Trichloroethane	(ug/l)	<0.030												<0.030					
1,1,2,2-Tetrachloroethane	(ug/l)	<0.030												<0.030					
1,1,2-Trichloroethane	(ug/l)	<0.020												<0.020					
1,1-Dichloroethane	(ug/l)	<0.050												<0.050					
1,1-Dichloroethene	(ug/l)	<0.050												<0.050					
1,2-Dichlorobenzene	(ug/l)	<0.150												<0.150					
1,2-Dichloroethane	(ug/l)	<0.030												<0.030					
1,2-Dichloropropane	(ug/l)	<0.030												<0.030					
1,3-Dichlorobenzene	(ug/l)	<0.300												<0.300					
1,4-Dichlorobenzene	(ug/l)	<0.250												<0.250					
2-Chloroethylvinyl ether	(ug/l)	<0.130												<0.130					
Bromodichloromethane	(ug/l)	<0.100												<0.100					
Bromoform	(ug/l)	<0.200												<0.200					
Carbon Tetrachloride	(ug/l)	<0.100												<0.100					
Chlorobenzene	(ug/l)	<0.250												<0.250					
Chloroethane	(ug/l)	<0.250												<0.250					
Chloroform	(ug/l)	0.149												0.224					
Dibromochloromethane	(ug/l)	<0.100												<0.100					
Methyl Bromide	(ug/l)	<0.500												<0.500					
Methyl Chloride	(ug/l)	<0.250												<0.250					
Methylene Chloride	(ug/l)	1.88												<0.050					
Tetrachloroethene	(ug/l)	<0.030												<0.030					
Trichlorofluoromethane	(ug/l)	<0.050												<0.050					
Trichloroethene	(ug/l)	<0.100												<0.100					
Vinyl Chloride	(ug/l)	<0.250												<0.250					
cis-1,3-Dichloropropene	(ug/l)	<0.300												<0.300					
trans-1,2-Dichloroethene	(ug/l)	<0.050												<0.050					
trans-1,3-Dichloropropene	(ug/l)	<0.200												<0.200					

0.00

SYSTEM EFF

Sample Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88
Purgeable Aromatics:																	
Benzene	(ug/l)				<0.200							0.200					
Ethyl Benzene	(ug/l)				<0.200							<0.200					
Styrene	(ug/l)				<0.300							<0.300					
Toluene	(ug/l)				<0.200							<0.200					
Total Xylenes	(ug/l)				<0.300							<0.300					
Dioxins:																	
Tetra (total)	(ng/l)				ND								ND		ND		
Penta	(ng/l)				ND								ND		ND		
Hexa	(ng/l)				ND								ND		ND		
Hepta	(ng/l)				ND								1.9		ND		
Octa	(ng/l)				ND								4.5		ND		
Furans:																	
Tetra (total)	(ng/l)				ND								ND		ND		
Penta	(ng/l)				ND								ND		ND		
Hexa	(ng/l)				ND								ND		ND		
Hepta	(ng/l)				ND								ND		ND		
Octa	(ng/l)				ND								ND		ND		
Metals:																	
Arsenic	(ug/l)					<10.0						<10.0	<10.0				
Barium	(ug/l)					<200						<200	<200				
Cadmium	(ug/l)					34.9						<5.00	<5.00				
Chromium	(ug/l)					<10.0						<10.0	<10.0				
Iron	(ug/l)					<100						<100	<100				
Lead	(ug/l)					<5.00						<5.00	<5.00				
Manganese	(ug/l)					1580						6970	1560				
Mercury	(ug/l)					1.95						1.60	0.492				
Selenium	(ug/l)					<5.00						<5.00	<5.00				
Silver	(ug/l)					<10.0						<10.0	<10.0				

SYSTEM EFF

Sample Date	Units	5/3/88	5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88	7/5/88	7/28/88
Purgeable Aromatics:											
Benzene	(ug/l)	<0.200									<0.200
Ethyl Benzene	(ug/l)	<0.200									<0.200
Styrene	(ug/l)	<0.300									<0.300
Toluene	(ug/l)	<0.200									<0.200
Total Xylenes	(ug/l)	<0.300									<0.300
Dioxins:											
Tetra (total)	(ng/l)		ND							ND	
Penta	(ng/l)		ND							ND	
Hexa	(ng/l)		ND							ND	
Hepta	(ng/l)		0.68							ND	
Octa	(ng/l)		3.9							1.9	
Furans:											
Tetra (total)	(ng/l)		ND							ND	
Penta	(ng/l)		ND							ND	
Hexa	(ng/l)		ND							ND	
Hepta	(ng/l)		ND							ND	
Octa	(ng/l)		ND							ND	
Metals:											
Arsenic	(ug/l)	<10.0									10.9
Barium	(ug/l)	<200									<200
Cadmium	(ug/l)	<5.00									<5.00
Chromium	(ug/l)	<10.0									<10.0
Iron	(ug/l)	<100									<100
Lead	(ug/l)	<5.00									<5.00
Manganese	(ug/l)	336									73.2
Mercury	(ug/l)	<0.200									<0.200
Selenium	(ug/l)	<5.00									<5.00
Silver	(ug/l)	<10.0									<10.0

SYSTEM EFF

Sample Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88
Acid Extractable Phenolics:																	
2,3,5,6-Tetrachlorophenol	(ug/l)					<1.00						<1.00	<1.00				
2,4,6-Trichlorophenol	(ug/l)					<1.00						<1.00	<1.00				
2,4-Dichlorophenol	(ug/l)					<0.500						0.595	<0.500				
2,4-Dimethylphenol	(ug/l)					2.59						16.1	1.96				
2,4-Dinitrophenol	(ug/l)					<1.00						<1.00	<1.00				
2-Chlorophenol	(ug/l)					<0.500						4.48	<0.500				
2-Nitrophenol	(ug/l)					<0.500						1.69	<0.500				
2-Methyl-4,6-dinitrophenol	(ug/l)					<1.00						<1.00	<1.00				
4-Nitrophenol	(ug/l)					<1.00						<1.00	<1.00				
4-Chloro-3-methylphenol	(ug/l)					<0.500						<0.500	<0.500				
Pentachlorophenol	(ug/l)					<1.00						<1.00	<1.00				
Phenol	(ug/l)					0.684						1.33	1.00				

SYSTEM EFF

Sample Date	Units	5/3/88	5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88	6/28/88	7/28/88	8/23/88
Acid Extractable Phenolics:												
2,3,5,6-Tetrachlorophenol	(ug/l)		<1.00							<1.00	<1.00	<1.00
2,4,6-Trichlorophenol	(ug/l)		<1.00							<1.00	<1.00	1.87
2,4-Dichlorophenol	(ug/l)		<0.500							<0.500	3.59	<0.500
2,4-Dimethylphenol	(ug/l)		<0.500							<0.500	<0.500	0.595
2,4-Dinitrophenol	(ug/l)		<1.00							<1.00	<1.00	<1.00
2-Chlorophenol	(ug/l)		<0.500							<0.500	<0.500	3.77
2-Nitrophenol	(ug/l)		<0.500							4.77	<0.500	<0.500
2-Methyl-4,6-dinitrophenol	(ug/l)		<1.00							<1.00	<1.00	<1.00
4-Nitrophenol	(ug/l)		<1.00							<1.00	13.1	<1.00
4-Chloro-3-methylphenol	(ug/l)		1.46							<0.500	2.41	<0.500
Pentachlorophenol	(ug/l)		<1.00							<1.00	<1.00	2.18
Phenol	(ug/l)		2.57							1.81	<0.500	<0.500

11/21/88

State of Wisconsin

CORRESPONDENCE/MEMORANDUM

→ Wausau File

Date: November 21, 1988 File Ref.: 4400

To: The Wauleco File

From: Mark Johnson, Wausau MJ

Subject: Contact with Ron O'Toole

Mr. Ron O'Toole of Keystone Environmental Resources, Inc., was contacted on November 16, 1988, at 13:52. Mr. O'Toole was contacted in the absence of Mr. Jim Noonin, Attorney for Wauleco, who was out of the country. The purpose of the contact was to get an update of the floating product recovery at the Wausau site and to detail material handling concerns.

Mr. O'Toole briefly explained the delays in getting floating product recovered, in particular the equipment problems. The pump they had originally sent to Wausau initially did not have enough head pressure. The first bailer they had sent was too large of a diameter, but they were finally able to recover floating product with a smaller bailer. They had recovered five gallons from one well, one gallon from a second well and there was no floating product in the third well, according to Mr. O'Toole. He also said the site operator measures water elevation and floating product thickness every week, and would remove anything over one foot of depth.

Mr. O'Toole was advised about the F027 classification of recovered floating product in Wisconsin as an acute hazardous waste. A brief summary was also provided of the hazardous waste variance from storage for the facility which appeared to have expired. Mr. O'Toole was advised to be sure all recovered floating product and other wastes from the water treatment process are properly contained, labeled and managed as hazardous waste. Their facility status as large quantity generator was also identified. Mr. O'Toole stated they were looking for off-site disposal of the iron sludge from the water treatment process. He was advised that a variance would be needed if no off-site disposal of hazardous wastes could be found within the 90 days allowed as a generator for on-site accumulation.

Mr. O'Toole stated a monthly summary report, which would include the floating product removal information, could now be prepared since he received the soil analysis results yesterday. He expected the summary report to be completed within about one week.

MJ:da
cc: G. Kulibert, Rhinelander
M. Giesfeldt, ER-SW/3

10/3/88

Department of Natural Resources

SOLID WASTE MANAGEMENT FACILITY CONTACT FORM
Form 4400-106 6-86

NOTE: DO NOT USE THIS FORM WHEN DOCUMENTING INSPECTIONS AT HAZARDOUS WASTE AND SOLID WASTE FACILITIES. SEE BACK SIDE OF THIS FORM FOR MORE INFORMATION.

1 of 2

ATTN: WAULECO File (SNE Corp.)

License Number: —

☐ Residuals Management SW/3
☒ District G. Kulibert, NCD
☐ Hazardous Waste Management SW/3 Unit
☐ Environmental Enforcement EE/5
☒ G. Hill, WW/2
☐ Systems Management SW/3
☒ M. Giesfeldt, ER-SW/3

EPA ID Number: WID006125835

Facility ID Number: 737063800

Facility/Company Name	Location (Address or ¼¼)	City, State, Zip Code
WAULECO Inc.	910 Cleveland Ave.	Wausau, WI 54401

Facility Type	District	County	Contact Method	Date (M M D D Y Y)	Time (24-Hour Clock)
Spill	NCD	Marathon	☒ Telephone ☐ In-Person	09/28/88	1115

Facility Representative Contacted	Title or Position of Representative	Telephone Number (include area code)
Jim Noonan	Attorney	(715) 346-6000

Called Noonan regarding Forest Service experiment and the Department's concerns about the floating product. Noonan said it would be O.K. to collect soil samples for the experiment and to work with Ron O'Toole. The 3 feet of floating product described by Bill Andrae, Site Operator during our visit on 9/14/88 was relayed to Noonan, along with the request for immediate removal with regular monitoring and possible removal in the future. Noonan got O'Toole on the line. O'Toole said they would begin working on it right away. He also said they were temporarily shut-down working on an ozone generator since the day before (he had left message to call). O'Toole also said they would be adding ozone before precip. iron (when asked about the TCDD creation in the current system, O'Toole said putting O_3 up front should help), and putting a biological treatment system in-line before the carbon. When asked about the high N and P conc. described by Andrae (sp?) on the 14th – if that was what they expected to be pumping through the system, O'Toole said no.

Check if additional sheets attached ☐

By: [signature] 10/3/88

1 of 2

10/3/88

Department of Natural Resources

SOLID WASTE MANAGEMENT FACILITY CONTACT FORM
Form 4400-106 6-86

NOTE: DO NOT USE THIS FORM WHEN DOCUMENTING INSPECTIONS AT HAZARDOUS WASTE AND SOLID WASTE FACILITIES. SEE BACK SIDE OF THIS FORM FOR MORE INFORMATION.

ATTN: WAULECO File (SNE Corp.)

License Number: 11/11/88

☐ Residuals Management SW/3 ☐ District

☐ Hazardous Waste Management SW/3 Unit ☐ Environmental Enforcement EE/5

☐ Systems Management SW/3 ☐

2 of 2

EPA ID Number: WI-D006125835

Facility ID Number

Facility/Company Name	Location (Address or ¼¼)	City, State, Zip Code

Facility Type	District	County	Contact Method	Date (M M D D Y Y)	Time (24-Hour Clock)
			☐ Telephone ☐ In-Person	09/28/88	1115

Facility Representative Contacted	Title or Position of Representative	Telephone Number (include area code)
		( )

(Andrae thought 15 and 12 ppm P + N was being pumped out of the ground and causing the observed biological growth in the first carbon unit, creating a physical flow problem). O'Toole was also asked for a copy of the soil sampling results as soon as they are completed, and he said he would provide them in about 3 weeks. O'Toole was also asked to describe all modifications to the original system in the pilot assessment and to describe the range of alternative treatments being explored, which he also agreed to.

Regarding Gary Kuliberts letter, Noonan said they were working on a respone.

Check if additional sheets attached ☐

2 of 2

By [signature] 10/3/88

9/21/88 SNE Enterprises
courtyard, view NW 05
of drilling rig

Roll #88 0916

9/21/88 SNE Enterprises
courtyard, view W, 06
well in corner

Roll #88 0916

9/21/88 SNE Enterprises
courtyard, view E 07
from wall in photo #6

Roll #88 0916

9/21/88 SNE Enterprises
courtyard, view NE 08
across courtyard

Roll #88 0916

9/21/88 SNE Enterprises
courtyard, view N. 09
along W. edge of courtyard

Roll #88 0916

FORD

9/21/88

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Phone: 412/733-9500 440 College Park Dr., Monroeville, PA 15146 Fax: 412/325-3103

September 20, 1988

Wis. Dept. of Natural Resources
SEP 21 1988
Wausau DNR Office
Wausau, Wisconsin

State of Wisconsin
Department of Natural Resources
5301 Rib Mountain Drive
Wausau, Wisconsin 54401

Attention: Mark Johnson

Re: WAULECO Treatment System Status Report

Dear Mark:

Attached you will find an update for the monitoring data received from the treatment system at the WAULECO facility located in Wausau, WI. Activities for collecting soil borings began the week of September 6, 1988, and should conclude on September 22, 1988. Some equipment failures and inclement weather have delayed this portion of the project approximately one week, however, it should not impact the rest of the schedule. Upon conclusion of the six-month operating program, Keystone feels that the monitoring program can be modified. The modifications still require that samples be collected to monitor the parameters specified in the operating permit. The proposed frequency and analytical program are provided below:

PARAMETER	METHOD	FREQUENCY	LOCATION
Acid Extractable Phenolics*	EPA 604	Monthly	Influent/Effluent
Nitrate (NO_3 as N)*	EPA 353.2	Monthly	Influent/Effluent
Ortho-Phosphate (O-PO_4)	EPA 365.2	Monthly	Influent/Effluent
Pentachlorophenol	Keystone A2056	Monthly	Influent/Effluent
Alkalinity	EPA 310.1	Monthly	Influent/Effluent
Chloride	EPA 325.3	Monthly	Influent/Effluent

Keystone also recommends that after December 1988, the monitoring program have a sampling frequency of once per quarter. Unless notified otherwise, this proposed program will be implemented beginning October 1, 1988.

*Monitoring parameters required in permit.

If you have any comments or questions regarding this matter or any aspects of the project, please give me a call.

Sincerely,

Ron O'Toole/ss

Ron O'Toole

RO:ss

Attachment

cc: C. Fribance
M. Griesfeldt
G. Kulibert
J. Noonan
P. Peshek

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Mark Johnson

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES

North Central District Headquarters
Box 818
Rhinelander, Wisconsin 54501
(715)362-7616

Carroll D. Besadny
Secretary

September 6, 1988

File Ref: 4400

Mr. Jim Noonan
WAULECO
Sentry Insurance
1800 North Point Drive
Stevens Point, Wisconsin 54481

Wis. Dept. of Natural Resources
SEP 7 1988
Wausau DNR Office
Wausau, Wisconsin

Dear Mr. Noonan:

This is to confirm our July 27, 1988 meeting concerning WAULECO and the pentachlorophenol problem and the receipt of an August 11, 1988 letter from Ron O'Toole. I must apologize for the delay in getting this letter to you; however, I felt it was important that we are sure of our replies to each of your areas of concern.

The first concern is the levels of detection for the metals in your groundwater monitoring program. In consultation with the hydrogeologist in Madison, it was agreed that we would require one additional round of metals with a detection level equal to those for the preventive action levels found in NR 140, Wisconsin Administrative Code. I have enclosed copies of applicable criteria with this letter. If, after that round, no metals are detected at those levels, the Department has no objection to dropping the metals from any future groundwater sampling unless other information needs arise which would warrant their inclusion.

The second area of concern was the company options related to both the Department and US EPA. In regard to the Department of Natural Resources, we have several possible courses of action:

1) A gentlemens' agreement on what work activities would be conducted to satisfy State requirements confirmed by a letter between the Department and your company.

2) The issuance of a Consent Order confirming agreed upon criteria.

3) The issuance of an Administrative Order.

4. Referral to the Department of Justice.

The options for WAULECO with the State relative to potential Superfund activities consist of:

1) Doing nothing.

2) Enter into a contractual agreement with the State to conduct a remedial investigation/feasibility study (RI/FS) as required by the National Contingency Plan. Should the site be nominated for the National Priority List, 1) the Department would request the site receive a deferred listing if that policy is developed by US EPA and the work is progressing in accordance with the agreement, 2) we could request a delisting of the site should the site be nominated and placed on the list.

3) Enter into a Consent Order between the State, US EPA, and the interested party when the site is nominated and placed on the National Priority List.

The options as far as the federal government is concerned, should the site be placed on the National Priority List and be designated as a federal lead site, would be:

1) Sue the company to take corrective actions in accordance with the National Contingency Plan.

2) Enter into a two or three-party order agreeing to conduct the work activities in accordance with the National Contingency Plan.

3) Do an EPA fund lead, RI/FS, and sue the entity for cost recovery.

It is my understanding that presently the US EPA, by direction of Congress, could sue a company rather than using federal dollars if they could not get a Consent Order signed.

These are the options that, as I understand, would be open to the company in dealing with the State, the federal government, or a combination of both.

The third area of concern we discussed dealt with interim actions that the Department would like implemented to stop the discharge of pentachlorophenol and dioxin or furan compounds to the Wisconsin River. We totally agree with the company that substantial progress has been made in dealing with the long-term actions. In fact, with the present status of the on-site treatment plant, it now appears that you have a way of treating water from any of the collection systems related to both short-term and long-term cleanups.

As we indicated at the meeting, the Department cannot condone, under State Statutes, Section 144.76, the ongoing discharge of pentachlorophenol and/or dioxin or furan compounds to the Wisconsin River while a long-term solution is being found. State Statutes require that actions be taken to minimize the harmful effects on air, land, or waters of the state. Our concern cannot only be with human populations but also with the fish, wildlife, and other environmental aspects. For this reason, the Department wanted WAULECO to begin implementing interim measures to stop the discharge of these compounds to the Wisconsin River.

These interim measures would reduce the flow of contaminants until the groundwater entering the river could reach acceptable levels for pentachlorophenol and dioxins or furans. Acceptable levels would be between 20 and 40 parts per billion of pentachlorophenol and any dioxins or furans yielding a 2,3,7,8 TCDD equivalent concentration down to the parts per quadrillion. If the company can show that those levels are being reached in the groundwater that is being discharged to the river at this time, then no action may be necessary. However, if it is found that the groundwater entering the river does contain higher concentrations, then interim action would be necessary to minimize or stop this flow. This would be done to minimize the impacts on the river until long-term remediation can be implemented and the site is brought to acceptable standards.

We are asking that a commitment be made for this interim action and a projected date for implementation within six months of the date of this letter.

During our conversation, and at other times, we have discussed implementation questions like how to run the piping off-site, what permits would be necessary, standards, etc. I would like to point out that these questions must be addressed. Regardless of whether interim procedures are implemented, you want to implement the long-term solution. It is important that the company understands that even though the activities they are undertaking on their property are commendable, the total cleanup must include not only contaminants on plant property but also off-site migration and its impacts on groundwater, surface waters, and soils.

If I can be of help in supplying any additional information or clarifying any of the points listed in this letter, please do not hesitate to contact me at our District Office in Rhinelander or Mark Johnson, project lead worker, at our Wausau Office. Again, I would like to commend the company on the work completed to date relating to long-term problems; however, it's imperative that dialogue be started to address interim corrective actions. I will be looking forward to your comments and, hopefully, a commitment on this interim action.

Sincerely,

TSJ/for GFK

Gary F. Kulibert
District Solid Waste Coordinator

GFK:ck
cc: Mark Johnson, Wausau
Linda Wymore, LC/5
Mark Giesfeldt, ER-SW/3
Peter Peshek, DeWitt, Porter, S.C., P.O. Box 2509,
Madison, WI 53701

8/11/88

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Phone: 412/733-9500 440 College Park Dr., Monroeville, PA 15146 Fax: 412/325-3103

August 11, 1988

State of Wisconsin
Department of Natural Resources
5301 Rib Mountain Drive
Wausau, WI 54401
Attention: Mr. Mark Johnson

RE: Wauleco Project

Dear Mark:

This letter serves to summarize our meeting on July 27, 1988. The meeting opened with Gary Kulibert (WDNR District Solid Waste Coordinator) stating the WDNR's position regarding the status of the WAULECO site and the WDNR's options as to how to proceed with the project. Gary had stated that the department is considering two positions; those being, referral of the matter to U.S. EPA Region V for scoring and listing on the NPL, and referral of the matter to the Wisconsin Department of Justice. Gary also expressed concern over the speed at which the project was moving. Counsel for WAULECO took immediate issue with Gary's concerns. Counsel for Sentry then summarized its position on the progress of the project.

Following Gary's opening remarks, Peter Peshek (WAULECO's outside counsel), suggested that we proceed with an agenda that WAULECO and its consultants had developed. A copy of the agenda is attached to this letter. After Peter's remarks, I proceeded to supplement the data package which I sent to you and Mark Geisfelt last Friday. A brief historical description of the Immediate Remedial Action project and an up-to-date status report followed. A summary of the status report is presented below:

Description of Process History - Upon start-up, an iron and manganese precipitate was formed that was not encountered in the laboratory work. This created some operational difficulties which needed to be addressed. The system was shut down for approximately 6 weeks so that equipment for removing the metal hydroxide precipitate could be selected, procured, and installed.

Implementation of the IRA System - The original treatment process involved two separate systems: an above ground treatment system for the water phase, and an in situ treatment system to address potential sources of PCP in the soil. The above ground treatment system consisted of an oil water separator, a chemical oxidation unit, and a carbon unit. The in situ system included recharge trenches and nutrient feed systems. The IRA treatment system was started on January 20, 1988, (one day after the General Discharge Permit was issued) an iron and manganese precipitate formed unexpectedly and created plugging in the carbon filters. This created a need for backwashing of the carbon filters several times per day. The system was not

equipped for that frequent of backwashing. After two weeks of operation the system was shut down until an iron and manganese removal system could be installed. The WDNR was notified of the problem and it was estimated that the system would be restarted in 6 to 8 weeks. The equipment selected provided a flow restraint which required the system to be operated at 50% of its original design capacity. At this reduced pumping rate, the affected area is still contained and the system acts as a closed system. Several constraints were considered in selecting the equipment used for removal of the metal hydroxide precipitate; those being, availability, time for procurement, and available space at the treatment area. A vacuum drum filter was selected over more conventional technologies, such as green sand filters and lamella separators, because of the constraints listed above.The necessary equipment was procured and installed in 6 weeks. The start-up was completed within one week and the system has been operated continuously 24 hours per day, seven days per week, since the beginning of March. Keystone is providing one full-time and two part-time operators to provide weekend and holiday coverage. Keystone also provides technical support from our Monroeville and Verona offices, with 24-hour emergency numbers for off-hour support. In addition, technical staff visit the site on average once per month to check first hand the systems operating performance.

Water Treatment Evaluation - Examination of the data provided in the data summary submitted to the WDNR on July 22 indicates that the above-ground treatment system is consistently meeting the permit limits. As of July 11, approximately 1.43 million gallons of groundwater had been pumped and treated at the site. Floating material recovered by this process has been minimal as was expected. Oil was removed from the surface of the oil water separator only once. It was intended that any floating material accumulated in any of the observation or pumping wells would be removed when 1 foot of product was present in the well. To date, this has not occurred. The quality of the groundwater being extracted by the pumping wells is representative of that expected with one exception, that being the PCP concentration was slightly lower than anticipated. However, during pump tests and treatability sampling, it became apparent that as more water was removed from the wells, the PCP concentration became lower until an equilibrium point was reached. Approximately one month after start-up was completed, technical personnel from Keystone made adjustments to the chemical oxidation system to enhance the effectiveness and efficiency of the chemical oxidation process. The analytical work performed to date exceeds that proposed in the IRA work plan. A preliminary examination of the groundwater contours indicates that the pump and recharge system is a closed operation. Additional water level points have been added to the monitoring program to further clarify this situation (wells W1a, W-2, W-6, W-19, W-20, W-25).

Soil Treatment Evaluation - The evaluation of the in situ soil treatment is restricted to indicator data only at this time. Soil sampling is scheduled for the first of September and will necessitate a temporary shutdown of the system. It is WAULECO's intent to continue operation of the system after the soil samples have been obtained. Based on the preliminary data, it is reasonable to infer that the in situ process is working, i.e. nutrients are being utilized and a slight increase of PCP in the

pumping wells. The PCP indicates some washing of the soil which was also present in the laboratory study. Laboratory data suggests that 85 to 95 percent of the PCP degradation in the soil is attributable to in situ biodegradation while 5 to 15 percent is a result of the washing effects of the in situ process. The inference cannot be confirmed until after the soil samples are taken.

Timetable - The soil samples will be collected the first of September, analytical results should be available in 4-6 weeks. A report summarizing the IRA will be completed within one month of receipt of analytical results. After review by WAULECO (approximately 2 weeks), the report will be submitted to the WDNR.

Upon completion of the project status report there was some discussion as to how and where the project should proceed. This discussion resulted in the following written documents to be submitted by either the WDNR or WAULECO:

1) The WDNR is to provide the detection limits required for metals analysis in the quarterly monitoring program that if nondetectable concentrations are found will allow metals to be removed from the analytical suite. The metals in question are arsenic, barium, and chromium. The detection limits currently being used are 10 ppb for arsenic and chromium, and 200 ppb for barium.

2) WAULECO would provide a written summary of the project status report presented at the meeting and monthly status reports in each succeeding month.

3) Wauleco will provide a revised monitoring program for the operation of water treatment system to take effect after the soil sampling in September.

4) The WDNR is to provide WAULECO with a letter listing the regulatory options regarding the Wausau site, i.e. superfund, state or federal lead, delisting ,etc., since WDNR views the selection of regulatory options to be one in which WAULECO has primary interest.

5) The WDNR will provide WAULECO with its perspective on how the river and off-site soluble plume are to be handled on an interim basis.

We appreciate the opportunity to meet and discuss the project status with you, and we hope that in the future some of the communication problems that were evident can be prevented. The submittal of monthly status reports should alleviate most communication problems; however, should it appear to you that the project is taking a course divergent from that perceived by the WDNR staff, please call someone from the WAULECO project team immediately so that any differences can be worked out as soon as possible. WAULECO's interest in this project is self-evident.

The company is proceeding with both its Immediate Remedial Action project and the subsequent analytical report independent of any administrative or judicial orders.

Sincerely,

Ron O'Toole

Ron O'Toole

RO/dc

cc: M. Griesfeldt
G. Kulibert
J. Noonan
C. Fribance
P. Peshek
H. Hardzel

7/22/88

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Phone: 412/733-9500 440 College Park Dr., Monroeville, PA 15146 Fax: 412/325-3103

RECEIVED
WAUSAU
JUL 25 1988

July 22, 1988

State of Wisconsin
Department of Natural Resources
5301 Rib Mountain Drive
Wausau, WI 54401

Attention: Mark Johnson

RE: WAULECO Status Report

Dear Mark:

Attached you will find a data summary for the WAULECO pilot treatment system. Also attached are some rough drawings depicting the area influenced by the reduced pumping rate. The overall project status can be discussed at our meeting on Wednesday, July 27, 1988. I must apologize for any inconvenience the delay in providing analytical data has caused. If you have any questions, please give me a call at 412/733-9446.

Sincerely,

Ron O'Toole

Ron O'Toole

Attachment

cc: M. Giesfeldt
H. Handzel
C. Fribance

DATE	Uncorrected Water level (ft)	Corrected Water level (ft)	Groundwater Elevation (ft)
4/25/88	8.70	35.87	1161.22
4/26/88	8.50	36.07	1161.02
4/27/88	8.70	35.87	1161.22
4/28/88	8.50	36.07	1161.02
4/29/88	8.60	35.97	1161.12
4/30/88	8.70	35.87	1161.22
5/1/88	8.67	35.90	1161.19
5/2/88	8.70	35.87	1161.22
5/3/88	8.70	35.87	1161.22
5/4/88	8.70	35.87	1161.22
5/5/88	8.70	35.87	1161.22
5/6/88	8.70	35.87	1161.22
5/7/88	8.67	35.90	1161.19
5/8/88	8.67	35.90	1161.19
5/9/88	8.70	35.87	1161.22
5/10/88	8.70	35.87	1161.22
5/11/88	8.70	35.87	1161.22
5/12/88	8.70	35.87	1161.22
5/13/88	8.70	35.87	1161.22
5/14/88	8.67	35.90	1161.19
5/15/88	8.83	35.74	1161.35
5/16/88	8.70	35.87	1161.22
5/17/88	8.70	35.87	1161.22
5/18/88	8.70	35.87	1161.22
5/19/88	8.70	35.87	1161.22
5/20/88	8.80	35.77	1161.32
5/21/88	8.70	35.87	1161.22
5/22/88	9.20	35.37	1161.72
5/23/88	8.70	35.87	1161.22
5/24/88	8.40	36.17	1160.92
5/25/88	8.60	35.97	1161.12
5/26/88	8.50	36.07	1161.02
5/31/88	8.70	35.87	1161.22
6/1/88	8.60	35.97	1161.12
6/2/88	8.70	35.87	1161.22
6/3/88	8.70	35.87	1161.22
6/4/88	8.70	35.87	1161.22
6/5/88	8.50	36.07	1161.02
6/6/88	8.70	35.87	1161.22
6/7/88	8.70	35.87	1161.22
6/8/88	8.60	35.97	1161.12
6/9/88	8.60	35.97	1161.12
6/10/88	8.70	35.87	1161.22
6/11/88	8.60	35.97	1161.12
6/12/88	8.67	35.90	1161.19
6/13/88	8.70	35.87	1161.22
6/14/88	8.80	35.77	1161.32
6/15/88	8.60	35.97	1161.12
6/16/88	8.70	35.87	1161.22
6/17/88	8.70	35.87	1161.22
6/18/88	8.67	35.90	1161.19
6/19/88	8.67	35.90	1161.19
6/20/88	8.70	35.87	1161.22
6/21/88	8.60	35.97	1161.12
6/22/88	8.70	35.87	1161.22
6/23/88	8.70	35.87	1161.22
6/24/88	8.70	35.87	1161.22
6/25/88	-	-	-
6/26/88	-	-	-
6/27/88	-	-	-
6/28/88	-	-	-
6/29/88	8.30	36.27	1160.82
6/30/88	8.40	36.17	1160.92

DATE	Uncorrected Water level (ft)	Corrected Water level (ft)	Groundwater Elevation (ft)
4/25/88	9.50	35.70	1161.86
4/26/88	8.80	36.40	1161.16
4/27/88	9.30	35.90	1161.66
4/28/88	9.00	36.20	1161.36
4/29/88	9.00	36.20	1161.36
4/30/88	9.00	36.20	1161.36
5/1/88	9.00	36.20	1161.36
5/2/88	9.00	36.20	1161.36
5/3/88	9.00	36.20	1161.36
5/4/88	9.10	36.10	1161.46
5/5/88	9.10	36.10	1161.46
5/6/88	8.80	36.40	1161.16
5/7/88	8.92	36.28	1161.28
5/8/88	9.00	36.20	1161.36
5/9/88	9.00	36.20	1161.36
5/10/88	9.00	36.20	1161.36
5/11/88	9.00	36.20	1161.36
5/12/88	9.00	36.20	1161.36
5/13/88	8.90	36.30	1161.26
5/14/88	9.00	36.20	1161.36
5/15/88	9.00	36.20	1161.36
5/16/88	8.90	36.30	1161.26
5/17/88	8.90	36.30	1161.26
5/18/88	9.20	36.00	1161.56
5/19/88	8.90	36.30	1161.26
5/20/88	9.30	35.90	1161.66
5/21/88	9.00	36.20	1161.36
5/22/88	10.20	35.00	1162.56
5/23/88	9.00	36.20	1161.36
5/24/88	8.80	36.40	1161.16
5/25/88	9.30	35.90	1161.66
5/26/88	8.80	36.40	1161.16
5/31/88	8.80	36.40	1161.16
6/1/88	8.70	36.50	1161.06
6/2/88	8.80	36.40	1161.16
6/3/88	8.90	36.30	1161.26
6/4/88	8.80	36.40	1161.16
6/5/88	8.70	36.50	1161.06
6/6/88	8.90	36.30	1161.26
6/7/88	9.30	35.90	1161.66
6/8/88	8.80	36.40	1161.16
6/9/88	8.60	36.60	1160.96
6/10/88	9.10	36.10	1161.46
6/11/88	8.60	36.60	1160.96
6/12/88	8.83	36.37	1161.19
6/13/88	8.70	36.50	1161.06
6/14/88	9.30	35.90	1161.66
6/15/88	8.70	36.50	1161.06
6/16/88	8.90	36.30	1161.26
6/17/88	8.70	36.50	1161.06
6/18/88	8.83	36.37	1161.19
6/19/88	8.83	36.37	1161.19
6/20/88	8.80	36.40	1161.16
6/21/88	8.60	36.60	1160.96
6/22/88	8.90	36.30	1161.26
6/23/88	8.70	36.50	1161.06
6/24/88	8.70	36.50	1161.06
6/25/88	-	-	-
6/26/88	-	-	-
6/27/88	-	-	-
6/28/88	-	-	-
6/29/88	8.70	36.50	1161.06
6/30/88	8.70	36.50	1161.06

SNE CORP.
WAUSAU, WISCONSIN
GW ELEVATIONS

WELL #	OW-1		OW-7	
	TOC ELEVATION=1197.68 FT		TOC ELEVATION=1197.26 FT	
DATE	DEPTH TO WATER (FT)	GROUNDWATER ELEVATION (FT)	DEPTH TO WATER (FT)	GROUNDWATER ELEVATION (FT)
4/20/88	34.58	1163.10	33.58	1163.68
4/21/88	34.50	1163.18	33.83	1163.43
4/22/88	34.58	1163.10	34.00	1163.26
4/25/88	34.50	1163.18	33.67	1163.59
4/25/88pm	34.50	1163.18	33.83	1163.43
4/26/88am	34.50	1163.18	33.67	1163.59
4/26/88pm	34.50	1163.18	33.67	1163.59
4/28/88	34.50	1163.18	33.92	1163.34
4/29/88	34.50	1163.18	33.92	1163.34
5/5/88	34.58	1163.10	33.92	1163.34
5/6/88	34.58	1163.10	33.92	1163.34
5/9/88	34.58	1163.10	33.75	1163.51
5/10/88	34.58	1163.10	33.75	1163.51
5/11/88	34.58	1163.10	33.75	1163.51
5/13/88	34.58	1163.10	33.75	1163.51
5/16/88	34.58	1163.10	33.75	1163.51
5/19/88	34.42	1163.26	33.75	1163.51
5/26/88	34.42	1163.26	33.58	1163.68
6/3/88	34.50	1163.18	33.67	1163.59
6/9/88	34.58	1163.10	33.75	1163.51
6/15/88	35.58	1162.10	36.17	1161.09
6/22/88	41.67	1156.01	37.25	1160.01
6/29/88	35.75	1161.93	37.33	1159.93

SNE CORP.
WAUSAU,WISCONSIN
GW ELEVATIONS

WELL # PW-2

Bubbler Depth=44.57 ft
TOC Elevation=1197.09 ft

DATE	Uncorrected Water level (ft)	Corrected Water level (ft)	Groundwater Elevation (ft)
3/9/88	8.20	36.37	1160.72
3/10/88	8.00	36.57	1160.52
3/11/88	-	-	-
3/12/88	8.10	36.47	1160.62
3/13/88	-	-	-
3/14/88	-	-	-
3/15/88	7.50	37.07	1160.02
3/16/88	8.20	36.37	1160.72
3/17/88	8.00	36.57	1160.52
3/18/88	8.00	36.57	1160.52
3/19/88	8.00	36.57	1160.52
3/20/88	8.20	36.37	1160.72
3/21/88	7.80	36.77	1160.32
3/22/88	7.80	36.77	1160.32
3/23/88	7.80	36.77	1160.32
3/24/88	7.80	36.77	1160.32
3/25/88	7.80	36.77	1160.32
3/26/88	8.20	36.37	1160.72
3/27/88	8.20	36.37	1160.72
3/28/88	8.20	36.37	1160.72
3/29/88	8.20	36.37	1160.72
3/30/88	8.20	36.37	1160.72
3/31/88	8.00	36.57	1160.52
4/1/88	8.20	36.37	1160.72
4/2/88	8.20	36.37	1160.72
4/3/88	8.30	36.27	1160.82
4/4/88	8.30	36.27	1160.82
4/5/88	8.30	36.27	1160.82
4/6/88	8.30	36.27	1160.82
4/7/88	8.30	36.27	1160.82
4/8/88	8.50	36.07	1161.02
4/9/88	8.50	36.07	1161.02
4/10/88	8.50	36.07	1161.02
4/11/88	8.60	35.97	1161.12
4/12/88	8.50	36.07	1161.02
4/13/88	8.50	36.07	1161.02
4/14/88	8.50	36.07	1161.02
4/15/88	8.60	35.97	1161.12
4/16/88	8.67	35.90	1161.19
4/17/88	8.67	35.90	1161.19
4/18/88	8.70	35.87	1161.22
4/19/88	8.50	36.07	1161.02
4/20/88	8.60	35.97	1161.12
4/21/88	8.70	35.87	1161.22
4/22/88	8.60	35.97	1161.12
4/23/88	8.50	36.07	1161.02
4/24/88	8.67	35.90	1161.19

SNE CORP.
WAUSAU,WISCONSIN
GW ELEVATIONS

WELL # PW-3

Bubbler Depth=45.20 ft
TOC Elevation=1197.56 ft

DATE	Uncorrected Water level (ft)	Corrected Water level (ft)	Groundwater Elevation (ft)
3/9/88	9.80	35.40	1162.16
3/10/88	9.20	36.00	1161.56
3/11/88	-	-	-
3/12/88	9.30	35.90	1161.66
3/13/88	-	-	-
3/14/88	-	-	-
3/15/88	8.80	36.40	1161.16
3/16/88	9.20	36.00	1161.56
3/17/88	9.20	36.00	1161.56
3/18/88	9.20	36.00	1161.56
3/19/88	9.20	36.00	1161.56
3/20/88	9.10	36.10	1161.46
3/21/88	8.80	36.40	1161.16
3/22/88	8.80	36.40	1161.16
3/23/88	9.10	36.10	1161.46
3/24/88	9.00	36.20	1161.36
3/25/88	9.00	36.20	1161.36
3/26/88	9.40	35.80	1161.76
3/27/88	9.20	36.00	1161.56
3/28/88	9.30	35.90	1161.66
3/29/88	9.30	35.90	1161.66
3/30/88	9.20	36.00	1161.56
3/31/88	9.20	36.00	1161.56
4/1/88	9.30	35.90	1161.66
4/2/88	9.30	35.90	1161.66
4/3/88	9.20	36.00	1161.56
4/4/88	9.30	35.90	1161.66
4/5/88	9.30	35.90	1161.66
4/6/88	9.30	35.90	1161.66
4/7/88	9.30	35.90	1161.66
4/8/88	9.30	35.90	1161.66
4/9/88	9.50	35.70	1161.86
4/10/88	9.30	35.90	1161.66
4/11/88	9.40	35.80	1161.76
4/12/88	9.40	35.80	1161.76
4/13/88	9.40	35.80	1161.76
4/14/88	9.30	35.90	1161.66
4/15/88	9.30	35.90	1161.66
4/16/88	9.50	35.70	1161.86
4/17/88	9.33	35.87	1161.69
4/18/88	9.30	35.90	1161.66
4/19/88	9.30	35.90	1161.66
4/20/88	9.50	35.70	1161.86
4/21/88	9.70	35.50	1162.06
4/22/88	9.40	35.80	1161.76
4/23/88	9.33	35.87	1161.69
4/24/88	9.33	35.87	1161.69

INFLUENT

Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88	5/3/88
de	(mg/l)				20.5			24.0				27.3	28.1	32.5	36.2	38.8	38.6	40.4
Ammonia	(mg/l)				<1.00			<1.00				<1.00	<1.00	<1.00	<1.00	< 1	< 1	<1.00
Nitrate	(mg/l)				12.9			37.8				79.9	3.11	3.03	4.00	1.48	0.771	0.765
Oil & Grease	(mg/l)				18.2			14.9				<6.00	17.1			< 6		
Phenol	(mg/l)				0.007			0.013				<0.005	0.006	0.007	0.008	< 0.005	< 0.005	0.008
Total Phosphate	(mg/l)				0.200			<0.500				<0.500	0.12	0.18	<0.100	< 0.1	3.15	
Ferrous Iron	(mg/l)				1.09							<0.10	0.256					0.527
Pentachlorophenol	(ug/l)	10800	11800	13300	9500	15700	8800	8230	2800	5470	6020	2770	7880	8300	6100	13100	14500	4800
Pet. Hydrocarbons	(mg/l)				101			84.0				68.0	25.0			21		
TOC	(mg/l)															6.04	13	16.1
Purgeable Halocarbons:																		
1,1,1-Trichloroethane	(ug/l)				<0.600							3.32	<3.00					<0.030
1,1,2,2-Tetrachloroethane	(ug/l)				<0.600							<0.600	<3.00					<0.030
1,1,2-Trichloroethane	(ug/l)				<0.400							<0.400	<2.00					<0.020
1,1-Dichloroethane	(ug/l)				<1.00							<1.00	<5.00					<0.050
1,1-Dichloroethene	(ug/l)				<1.00							<1.00	<5.00					<0.050
1,2-Dichlorobenzene	(ug/l)				<3.00							<3.00	<15.0					<0.150
1,2-Dichloroethane	(ug/l)				<0.600							<0.600	<3.00					<0.030
1,2-Dichloropropane	(ug/l)				<0.600							<0.600	<3.00					<0.030
1,3-Dichlorobenzene	(ug/l)				<6.00							<6.00	<30.0					<0.300
chlorobenzene	(ug/l)				<5.00							<5.00	<25.0					<0.250
roethylvinyl ether	(ug/l)				<2.60							<2.60	<13.0					<0.130
Bromodichloromethane	(ug/l)				<2.00							<2.00	<10.0					<0.100
Bromoform	(ug/l)				<4.00							<4.00	<20.0					<0.200
Carbon Tetrachloride	(ug/l)				<2.00							<2.00	<10.0					<0.100
Chlorobenzene	(ug/l)				<5.00							<5.00	<25.0					<0.250
Chloroethane	(ug/l)				<5.00							<5.00	<25.0					<0.250
Chloroform	(ug/l)				39.0							26.2	29.6					18.3
Dibromochloromethane	(ug/l)				<2.00							<2.00	<10.0					<0.100
Methyl Bromide	(ug/l)				<10.0							<10.0	<50.0					<0.500
Methyl Chloride	(ug/l)				<5.00							<5.00	<25.0					<0.250
Methylene Chloride	(ug/l)				4.14							1.04	<5.00					1.13
Tetrachloroethene	(ug/l)				<0.600							<0.600	<3.00					0.364
Trichlorofluoromethane	(ug/l)				<1.00							<1.00	<5.00					<0.050
Trichloroethene	(ug/l)				3.90							2.16	<10.0					8.93
Vinyl Chloride	(ug/l)				<5.00							<5.00	<25.0					<0.250
cis-1,3-Dichloropropene	(ug/l)				<6.00							<6.00	<30.0					<0.300
trans-1,2-Dichloroethene	(ug/l)				<1.00							<1.00	<5.00					<0.050
trans-1,3-Dichloropropene	(ug/l)				<4.00							<4.00	<20.0					<0.200

Well Elevations (units in Feet)

Date	OW-1 (ft)	OW-7 (ft)	OW-5 (ft)	OW-30 (ft)	OW-3B (ft)	OW-22 (ft)
4-20-88	34.58	33.58	27.46	27.17	25.58	24.00
4-21-88	34.50	33.83				
4-22-88	34.58	34.00	27.83	27.08	25.83	24.17
4-25-88	34.50	33.67	27.67	27.00	25.92	24.08
4-25-88N	34.50	33.83				
4-26-88M	34.50	33.67				
4-[illegible]N	34.50	33.67				
4-[illegible]	34.50	33.92	27.83	27.08	25.83	24.00
4-29-88	34.50	33.92	27.83	27.00	25.83	24.00
5-5-88	34.58	33.92	27.92	27.25	26.00	24.25
5-6-88	34.58	33.92	27.92	27.08	26.00	24.25
5-9-88	34.58	33.75	27.83	27.08	26.00	24.17
5-10-88	34.58	33.75	27.92	27.25	25.92	24.25
5-11-88	34.58	33.75	27.92	27.08	25.92	24.17
5-13-88	34.58	33.75	27.75	27.08	25.92	24.08
5-16-88	34.58	33.75	27.75	27.08	25.92	24.08
5-19-88	34.42	33.75	27.75	27.08	26.00	24.08
5-26-88	34.42	33.58	27.83	27.17	26.00	24.17
6-3-88	34.50	33.67	27.83	27.17	26.00	24.25
6-9-88	34.58	33.75	27.92	27.25	26.00	24.25
6-15-88	35.58	36.17	18.33	33.83	29.92	29.67
6-22-88	41.67	37.25	36.67	32.75	29.25	25.50
6-29-88	35.75	37.33	37.17	29.42	27.25	25.50
AVERAGE	34.94	34.18	28.27	27.89	26.37	24.57

PUMPIMG WELL WATER FLOW RATE (WEEKLY)

Date MM-DD-YY	PW-1 (gpm)	PW-2 (gpm)
3/15/88	4.4	3.8
3/25/88	5.4	4.6
4/4/88	5.4	4.0
4/11/88	4.0	4.0
4/18/88	4.0	4.0
4/27/88	4.2	4.2
5/4/88	3.8	5.2
[illegible]88	3.6	7.4
[illegible]/88	3.8	7.0
5/23/88	2.8	8.0
6/1/88	2.0	8.2
6/6/88	2.8	7.2
6/13/88	2.4	7.0
6/22/88	1.2	7.0
6/29/88	1.6	7.0
7/8/88	4.0	3.8
7/11/88	5.0	5.7
AVERAGE	3.55	5.77

5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88
43.6	45.9	51.9	53.7	48.0	50.9	59.4
1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
725	3.02	2.82	3.99	4.06	4.73	2.38
12.0		12.7			19.2	
0.010	0.007	0.005	0.007	0.013	0.008	0.012
7400	8500	15400	14000	13500	12700	11800
592		88.0			<10.0	
	16.4	17.2	15.8	13.3	11.8	12.9

INFLUENT

Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88	5/3/88
Purgeable Aromatics:																		
Benzene	(ug/l)				<4.00							<4.00	<20.0					<20.0
Ethyl Benzene	(ug/l)				9.52							52.4	<20.0					<20.0
Styrene	(ug/l)				<6.00							<6.00	<30.0					<30.0
Toluene	(ug/l)				5.56							6.94	<20.0					<20.0
Total Xylenes	(ug/l)				986							1040	<30.0					414
Dioxins:																		
Tetra (total)	(ng/l)				ND								ND		ND			
Penta	(ng/l)				ND								ND		ND			
Hexa	(ng/l)				40.2								ND		ND			
Hepta	(ng/l)				651								6.3		6.0			
Octa	(ng/l)				2090								22		24			
Furans:																		
Tetra (total)	(ng/l)				ND								ND		ND			
Penta	(ng/l)				4.6								ND		ND			
Hexa	(ng/l)				77.5								ND		ND			
[illegible]	(ng/l)				347								3.8		ND			
	(ng/l)				429								5.6		ND			
Metals:																		
Arsenic	(ug/l)					<10.0						<10.0	<10.0					<10.0
Barium	(ug/l)					<200						<200	<200					<200
Cadmium	(ug/l)					14.6						<5.00	<5.00					<5.00
Chromium	(ug/l)					<10.0						<10.0	<10.0					<10.0
Iron	(ug/l)					1690						2590	364					186
Lead	(ug/l)					<5.00						<5.00	<5.00					<5.00
Manganese	(ug/l)					4860						10400	1950					1910
Mercury	(ug/l)					3.71						2.00	3.44					2.6
Selenium	(ug/l)					<5.00						<5.00	<5.00					<5.00
Silver	(ug/l)					<10.0						<10.0	<10.0					<10.0

5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88
					<4.00	
					52.4	
					<6.00	
					6.94	
					1040	
ND						
ND						
100						
1600						
5900						
0.5						
16						
190						
670						
980						
					<10.0	
					<200	
					<5.00	
					<10.0	
					2590	
					<5.00	
					10400	
					2.00	
					<5.00	
					<10.0	

INFLUENT

[redacted] Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88	5/3/88
Acid Extractable Phenolics:																		
2,3,5,6-Tetrachlorophenol	(ug/l)					<100						242	254					
2,4,6-Trichlorophenol	(ug/l)					<100						151	<40.0					
2,4-Dichlorophenol	(ug/l)					<50.0						<50.0	<20.0					
2,4-Dimethylphenol	(ug/l)					<50.0						<50.0	<20.0					
2,4-Dinitrophenol	(ug/l)					<100						<100	166					
2-Chlorophenol	(ug/l)					283						194	148					
2-Nitrophenol	(ug/l)					<50.0						195	<20.0					
2-Methyl-4,6-dinitrophenol	(ug/l)					<100						120	<40.0					
4-Nitrophenol	(ug/l)					<100						<100	<40.0					
4-Chloro-3-methylphenol	(ug/l)					<50.0						96.3	<20.0					
Pentachlorophenol	(ug/l)					8500						3090	4220					
Phenol	(ug/l)					<50.0						<50.0	20.5					

5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88
<100						
<100						
<50.0						
413						
<100						
1250						
<50.0						
<100						
<100						
<50.0						
6580						
365						

03/UV EFF

Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88	5/3/88
de	(mg/l)				27.3			31.6					29.1	34.6	42.5	45.1	43.8	46.6
Ammonia	(mg/l)				<1.00			<1.00					<1.00	<1.00	<1.00	1.00	<1.00	<1.00
Nitrate	(mg/l)				11.1			39.9					4.56	6.56	7.64	4.34	2.95	3.36
Oil & Grease	(mg/l)				21.3			79.9					< 6			< 6		
Phenol	(mg/l)				0.014			0.022					< 0.005	<0.005	<0.005	< 0.005	< 0.005	<0.005
Total Phosphate	(mg/l)				<0.100			<0.500					0.190	0.100	<0.100	0.08	< 0.1	
Ferrous Iron	(mg/l)				0.459								< 0.1					<0.100
Pentachlorophenol	(ug/l)	12.8	14.6	20.3	13.9	214	NA	7.82	NA	NA	NA	NA	< 1	9.40	<1.00	< 1	1.17	6.66
Pet. Hydrocarbons	(mg/l)				99.0			99.0					< 10			< 10		
TOC	(mg/l)															2.8	6.92	10.9
Purgeable Halocarbons:																		
1,1,1-Trichloroethane	(ug/l)				0.194								< 0.03					<0.030
1,1,2,2-Tetrachloroethane	(ug/l)				<0.030								< 0.03					<0.030
1,1,2-Trichloroethane	(ug/l)				<0.020								< 0.02					<0.020
1,1-Dichloroethane	(ug/l)				<0.050								< 0.05					<0.050
1,1-Dichloroethene	(ug/l)				<0.050								< 0.05					<0.050
1,2-Dichlorobenzene	(ug/l)				<0.150								< 0.15					<0.150
1,2-Dichloroethane	(ug/l)				<0.030								< 0.03					<0.030
1,2-Dichloropropane	(ug/l)				<0.030								< 0.03					<0.030
1,3-Dichlorobenzene	(ug/l)				0.579								< 0.03					<0.300
1,4-Dichlorobenzene	(ug/l)				<0.250								< 0.25					<0.250
Dichloroethylivinyl ether	(ug/l)				<0.130								< 0.13					<0.130
Bromodichloromethane	(ug/l)				<0.100								< 0.1					<0.100
Bromoform	(ug/l)				<0.200								< 0.2					<0.200
Carbon Tetrachloride	(ug/l)				<0.100								< 0.1					<0.100
Chlorobenzene	(ug/l)				<0.250								< 0.25					<0.250
Chloroethane	(ug/l)				<0.250								< 0.25					<0.250
Chloroform	(ug/l)				20.9								1.77					0.822
Dibromochloromethane	(ug/l)				<0.100								< 0.1					<0.100
Methyl Bromide	(ug/l)				<2.00								< 0.5					<0.500
Methyl Chloride	(ug/l)				<0.250								< 0.25					<0.250
Methylene Chloride	(ug/l)				2.77								< 0.05					0.244
Tetrachloroethene	(ug/l)				1.01								< 0.03					<0.030
Trichlorofluoromethane	(ug/l)				0.454								0.127					<0.050
Trichloroethene	(ug/l)				0.508								< 0.1					<0.100
Vinyl Chloride	(ug/l)				<0.250								< 0.25					<0.250
cis-1,3-Dichloropropene	(ug/l)				<0.300								< 0.3					<0.300
trans-1,2-Dichloroethene	(ug/l)				<0.050								< 0.05					<0.050
trans-1,3-Dichloropropene	(ug/l)				<0.200								< 0.2					<0.200

8	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88
1.6	56.2	56.0	56.8	56.2	62.2	65.7
<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
3.14	5.11	7.22	9.18	7.93	12.7	5.74
<6.00		7.00			<6.00	
<0.005		<0.005	<0.005	<0.005	<0.005	<0.005
	<0.005					
4.87	2.00	<1.00	<1.00	1.35	1.20	4.42
123		15.0			<10.0	
10.9	10.5	7.82	6.18	8.89	3.76	10.1

Sample Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88	5/3/88
ble Aromatics:																		
Benzene	(ug/l)				<0.200								<0.200					<0.200
Ethyl Benzene	(ug/l)				<0.200								<0.200					<0.200
Styrene	(ug/l)				<0.300								<0.300					<0.300
Toluene	(ug/l)				<0.200								0.200					<0.200
Total Xylenes	(ug/l)				50.9								<0.300					<0.300
Dioxins:																		
Tetra (total)	(ng/l)				54.5								22		ND			
Penta	(ng/l)				232								39		ND			
Hexa	(ng/l)				589								78		ND			
Hepta	(ng/l)				1180								120		ND			
Octa	(ng/l)				577								47		ND			
Furans:																		
Tetra (total)	(ng/l)				19.1								6.3		ND			
Penta	(ng/l)				159								28		ND			
Hexa	(ng/l)				459								59		ND			
Hepta	(ng/l)				228								14		ND			
	(ng/l)				48.0								2.6		ND			
Metals:																		
Arsenic	(ug/l)					<10.0							<10.0					<10.0
Barium	(ug/l)					<200							<200					<200
Cadmium	(ug/l)					15.0							<5.00					<5.00
Chromium	(ug/l)					<10.0							<10.0					<10.0
Iron	(ug/l)					1520							<100					<100
Lead	(ug/l)					<5.00							<5.00					<5.00
Manganese	(ug/l)					4270							751					562
Mercury	(ug/l)					5.65							<5.00					0.931
Selenium	(ug/l)					<5.00							<10.0					<5.00
Silver	(ug/l)					17.6												<10.0

5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88
ND						
2.5						
9.0						
20						
19						
ND						
4.9						
24						
13						
8.1						

03/UV EFF

S Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88	5/3/88
Acid Extractable Phenolics:																		
2,3,5,6-Tetrachlorophenol	(ug/l)					43.8							<1.00					
2,4,6-Trichlorophenol	(ug/l)					108							<1.00					
2,4-Dichlorophenol	(ug/l)					47.0							<0.500					
2,4-Dimethylphenol	(ug/l)					22.1							<0.500					
2,4-Dinitrophenol	(ug/l)					47.2							<1.00					
2-Chlorophenol	(ug/l)					70.1							1.4					
2-Nitrophenol	(ug/l)					35.2							0.552					
2-Methyl-4,6-dinitrophenol	(ug/l)					49.2							<1.00					
4-Nitrophenol	(ug/l)					33.0							<1.00					
4-Chloro-3-methylphenol	(ug/l)					18.1							<0.500					
Pentachlorophenol	(ug/l)					39.0							<1.00					
Phenol	(ug/l)					21.2							2.04					

5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88
<1.00						
<1.00						
<0.500						
<0.500						
2.67						
1.03						
<0.500						
<1.00						
<1.00						
1.48						
28.4						
10.5						

SYSTEM EFF

[redacted] Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88	5/3/88
[redacted]loride	(mg/l)				30.4			36.8				29.4	28.1	34.6	41.5	44.1	40.6	46.6
Ammonia	(mg/l)				<1.00			<1.00				<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
Nitrate	(mg/l)				3.78			56.8				63.0	2.13	6.15	15.4	16.4	21	15.8
Oil & Grease	(mg/l)				<6.00			47.4				<6.00	9.15			< 6		
Phenol	(mg/l)				<0.005			0.074				<0.005	<0.005	<0.005	<0.005	0.006	<0.005	<0.005
Total Phosphate	(mg/l)				2.81			7.65				0.690	1.17	0.123	0.470	220	235	
Ferrous Iron	(mg/l)				0.105							0.252	<0.100					0.156
Pentachlorophenol	(ug/l)	<1.00	<1.00	<1.00	<1.00	2.30	1.91	<1.00	12.5	3.85	<1.00	<1.00	1.97	<1.00	<1.00	<1.00	<1.00	<1.00
Pet. Hydrocarbons	(mg/l)				27.0			13.0				<10.0	<10.0			< 10		
TOC	(mg/l)															< 1	1.13	<1.00
Purgeable Halocarbons:																		
1,1,1-Trichloroethane	(ug/l)				0.089							0.052	<0.030					<0.030
1,1,2,2-Tetrachloroethane	(ug/l)				<0.030							<0.030	<0.030					<0.030
1,1,2-Trichloroethane	(ug/l)				<0.020							<0.020	<0.020					<0.020
1,1-Dichloroethane	(ug/l)				<0.050							<0.050	<0.050					<0.050
1,1-Dichloroethene	(ug/l)				<0.050							<0.050	<0.050					<0.050
1,2-Dichlorobenzene	(ug/l)				<0.150							<0.150	<0.150					<0.150
1,2-Dichloroethane	(ug/l)				<0.030							<0.030	<0.030					<0.030
1,2-Dichloropropane	(ug/l)				<0.030							<0.030	<0.030					<0.030
1,3-Dichlorobenzene	(ug/l)				0.737							<0.300	<0.300					<0.300
[redacted]ichlorobenzene	(ug/l)				<0.250							<0.250	<0.250					<0.250
[redacted]oroethylvinyl ether	(ug/l)				<0.130							<0.130	<0.130					<0.130
Bromodichloromethane	(ug/l)				<0.100							<0.100	<0.100					<0.100
Bromoform	(ug/l)				<0.200							<0.200	<0.200					<0.200
Carbon Tetrachloride	(ug/l)				<0.100							<0.100	<0.100					<0.100
Chlorobenzene	(ug/l)				<0.250							<0.250	<0.250					<0.250
Chloroethane	(ug/l)				<0.250							<0.250	<0.250					<0.250
Chloroform	(ug/l)				<0.050							<0.050	<0.050					0.149
Dibromochloromethane	(ug/l)				<0.100							<0.100	<0.100					<0.100
Methyl Bromide	(ug/l)				<0.500							<0.500	<0.500					<0.500
Methyl Chloride	(ug/l)				<0.250							<0.250	<0.250					<0.250
Methylene Chloride	(ug/l)				<0.050							<0.050	<0.050					1.88
Tetrachloroethene	(ug/l)				0.225							<0.030	<0.030					<0.030
Trichlorofluoromethane	(ug/l)				0.600							0.196	0.190					<0.050
Trichloroethene	(ug/l)				<0.100							<0.100	<0.100					<0.100
Vinyl Chloride	(ug/l)				<0.250							<0.250	<0.250					<0.250
cis-1,3-Dichloropropene	(ug/l)				<0.300							<0.300	<0.300					<0.300
trans-1,2-Dichloroethene	(ug/l)				<0.050							<0.050	<0.050					<0.050
trans-1,3-Dichloropropene	(ug/l)				<0.200							<0.200	<0.200					<0.200

5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88
52.7	55.1	54.0	61.8	53.1	68.7	61.2
00	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00
.1	50.2	56.5	33.1	30.8	51.5	38.3
<6.00		<6.00			5.99	
<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
<1.00	<1.00	<1.00	3.60	<1.00	<1.00	<1.00
36.0					<10.0	
<1.00	<1.00	1.02	<1.00	<1.00	<1.00	1.28

SYSTEM EFF

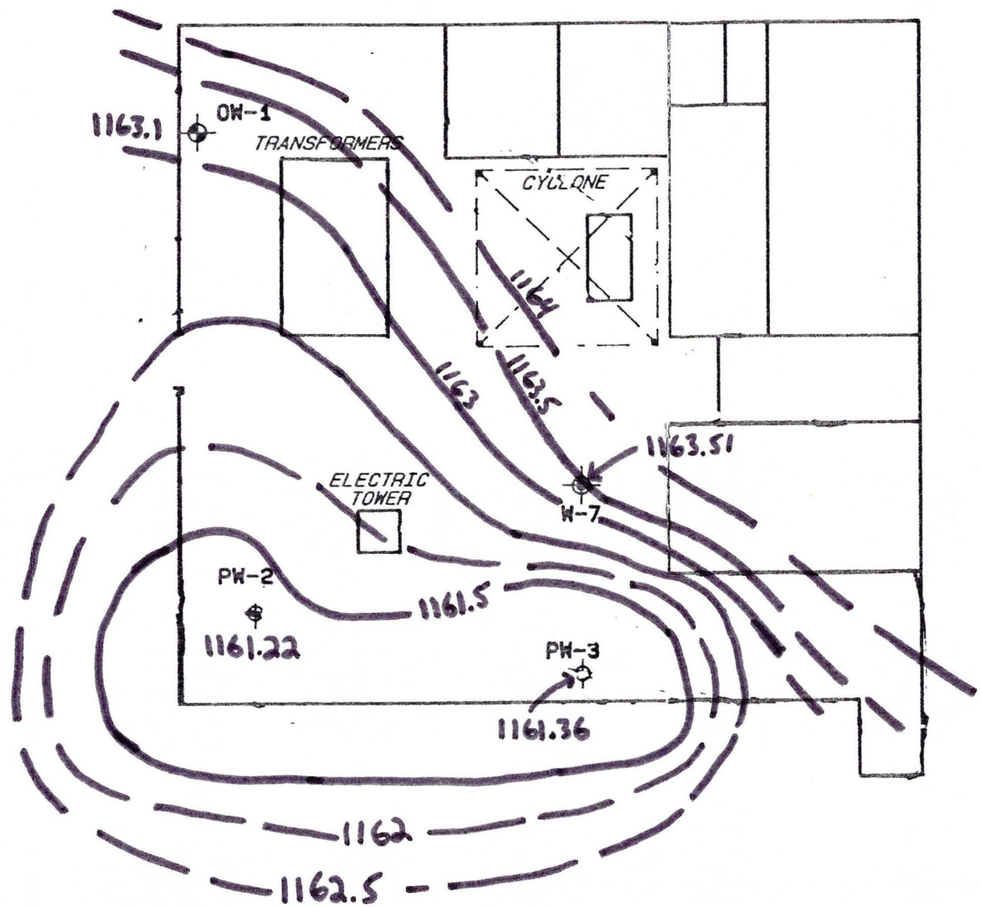
[redacted] Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88	5/3/88
Purgeable Aromatics:																		
Benzene	(ug/l)				<0.200							0.200						<0.200
Ethyl Benzene	(ug/l)				<0.200							<0.200						<0.200
Styrene	(ug/l)				<0.300							<0.300						<0.300
Toluene	(ug/l)				<0.200							<0.200						<0.200
Total Xylenes	(ug/l)				<0.300							<0.300						<0.300
Dioxins:																		
Tetra (total)	(ng/l)				ND								ND		ND			
Penta	(ng/l)				ND								ND		ND			
Hexa	(ng/l)				ND								ND		ND			
Hepta	(ng/l)				ND								1.9		ND			
Octa	(ng/l)				ND								4.5		ND			
Furans:																		
Tetra (total)	(ng/l)				ND								ND		ND			
Penta	(ng/l)				ND								ND		ND			
	(ng/l)				ND								ND		ND			
[redacted]	(ng/l)				ND								ND		ND			
	(ng/l)				ND								ND		ND			
Metals:																		
Arsenic	(ug/l)					<10.0						<10.0	<10.0					<10.0
Barium	(ug/l)					<200						<200	<200					<200
Cadmium	(ug/l)					34.9						<5.00	<5.00					<5.00
Chromium	(ug/l)					<10.0						<10.0	<10.0					<10.0
Iron	(ug/l)					<100						<100	<100					<100
Lead	(ug/l)					<5.00						<5.00	<5.00					<5.00
Manganese	(ug/l)					1580						6970	1560					336
Mercury	(ug/l)					1.95						1.60	0.492					<0.200
Selenium	(ug/l)					<5.00						<5.00	<5.00					<5.00
Silver	(ug/l)					<10.0						<10.0	<10.0					<10.0

5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88
ND						
ND						
ND						
0.68						
3.9						
ND						
ND						
ND						
ND						
ND						

SYSTEM EFF

[redacted] Date	Units	1/15/88	1/16/88	1/17/88	1/18/88	1/19/88	1/20/88	1/21/88	1/22/88	1/23/88	1/24/88	1/26/88	3/4/88	3/16/88	4/13/88	4/19/88	4/26/88	5/3/88
Acid Extractable Phenolics:																		
2,3,5,6-Tetrachlorophenol	(ug/l)					<1.00						<1.00	<1.00					
2,4,6-Trichlorophenol	(ug/l)					<1.00						<1.00	<1.00					
2,4-Dichlorophenol	(ug/l)					<0.500						0.595	<0.500					
2,4-Dimethylphenol	(ug/l)					2.59						16.1	1.96					
2,4-Dinitrophenol	(ug/l)					<1.00						<1.00	<1.00					
2-Chlorophenol	(ug/l)					<0.500						4.48	<0.500					
2-Nitrophenol	(ug/l)					<0.500						1.69	<0.500					
2-Methyl-4,6-dinitrophenol	(ug/l)					<1.00						<1.00	<1.00					
4-Nitrophenol	(ug/l)					<1.00						<1.00	<1.00					
4-Chloro-3-methylphenol	(ug/l)					<0.500						<0.500	<0.500					
Pentachlorophenol	(ug/l)					<1.00						<1.00	<1.00					
Phenol	(ug/l)					0.684						1.33	1.00					

5/10/88	5/18/88	5/24/88	5/31/88	6/7/88	6/14/88	6/21/88
<1.00						
<1.00						
<0.500						
<0.500						
<1.00						
<0.500						
<0.500						
<1.00						
<1.00						
1.46						
<1.00						
2.57						



KEY

- MONITORING WELL
- OBSERVATION WELL
- PUMPING WELL
- DRAWDOWN CONTOUR (FEET)

SCALE (FEET)
0 10 20

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

FIGURE 1
THEORETICAL DRAWDOWN
WAULECO
WAUSAU, WISCONSIN
5/11/88

A103766

7/8/88

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES
5301 Rib Mountain Drive
Wausau, WI 54401
(715) 359-4522

→ Wausau File

Carroll D. Besadny
Secretary

July 8, 1988

File Ref: 4430
EPA# WID006125835

Mr. David Stephenson
WAULECO Inc.
1800 North Point Drive
Stevens Point, WI 54481

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Subject: Spill Response at WAULECO, Inc.

Dear David:

The activities to-date by WAULECO, Inc. and your consultant, Keystone Environmental Resources, Inc. in implementing the "Immediate Remedial Action Work Plan" have been reviewed by the Department.

Our conversation on April 21, 1988, addressed concerns about the timeliness of the response to the spill. Mr. O'Toole gave a verbal update on April 27 and stated monthly data summaries would be sent to WAULECO. A request for copies of those summaries was to be relayed on to you.

The modified system was not operating at the proposed rate and laboratory analysis of samples was apparently delaying operation at the full rate. Evaluation of the system was also delayed with soil borings to be possibly collected in September, 1988. Any remedial action at the site is expected to be delayed since the proposed system was to be evaluated as a pilot study.

The March 8, 1988 correspondence from Ron O'Toole was the last detailed information received on the system. The Department has not received copies of the system operations data or details on system modifications or been informed about significant delays on the project. The current status of the system also remains undefined. It also appears that no significant amounts of the floating layer of mineral spirits and PCP at the site are being recovered.

Based on the information presented, the Department does not believe the responses to the spill by WAULECO, Inc. under section 144.76(3), Wisconsin Statutes have been timely. Therefore, within twenty-one (21) days of receiving this letter, you are requested to send a report on the status of the system and a schedule for completion of the project to: Wisconsin Department of Natural Resources, 5301 Rib Mountain Drive, Wausau, Wisconsin, 54401.

SENDER: Complete items 1 and 2 when additional services are desired, and complete items 3 and 4.

Put your address in the "RETURN TO" Space on the reverse side. Failure to do this will prevent this card from being returned to you. The return receipt fee will provide you the name of the person delivered to and the date of delivery. For additional fees the following services are available. Consult postmaster for fees and check box(es) for additional service(s) requested.

1. ☐ Show to whom delivered, date, and addressee's address. *(Extra charge)*
2. ☐ Restricted Delivery *(Extra charge)*

3. Article Addressed to:

Mr. David Stephenson
WAULECO Inc.
1800 N. Point Dr.
Stevens Point, WI 54481

RECEIVED WAUSAU JUL 12 1988

4. Article Number
P 725-762-092

Type of Service:
☐ Registered ☐ Insured
☒ Certified ☐ COD
☐ Express Mail

Always obtain signature of addressee or agent and DATE DELIVERED.

5. Signature – Addressee
X

6. Signature – Agent
X

7. Date of Delivery

8. Addressee's Address *(ONLY if requested and fee paid)*

STEVENS POINT WI 54481 JUL 11 1988 USPS

PS Form **3811**, Mar. 1987 ★ U.S.G.P.O. 1987-178-268 **DOMESTIC RETURN RECEIPT**

UNITED STATES POSTAL SERVICE

OFFICIAL BUSINESS

SENDER INSTRUCTIONS

Print your name, address, and ZIP Code in the space below.

- Complete items 1, 2, 3, and 4 on the reverse.
- Attach to front of article if space permits, otherwise affix to back of article.
- Endorse article "Return Receipt Requested" adjacent to number.

U.S.MAIL®

PENALTY FOR PRIVATE USE, $300

RETURN TO

Print Sender's name, address, and ZIP Code in the space below.

Dept. of Natural Resources

5301 Rib Mountain Drive

Wausau, WI 54401

The Department believes a formal commitment to a specific time schedule, such as a consent order, may be required to remedy the current situation. You are also reminded that the site is already in the Superfund process and there does not appear to be enough activity at this point to request State lead in a Superfund project.

If you have any questions regarding this letter, please contact me at (715) 359-4522.

Sincerely,
NORTH CENTRAL DISTRICT

Mark D. Johnson
Hazardous Waste Specialist

cc: G. Kulibert, NCD
M. Geisfeldt, ER-SW/3
G. Edelstein, HW-SW/3
L. Wymore, LC/5
G. Hill, WW/2
Mr. Ronald O'Toole, Keystone Environmental Resources, Inc., 4400 College Park Drive, Monroeville, PA 15146

mark

P 725 762 092

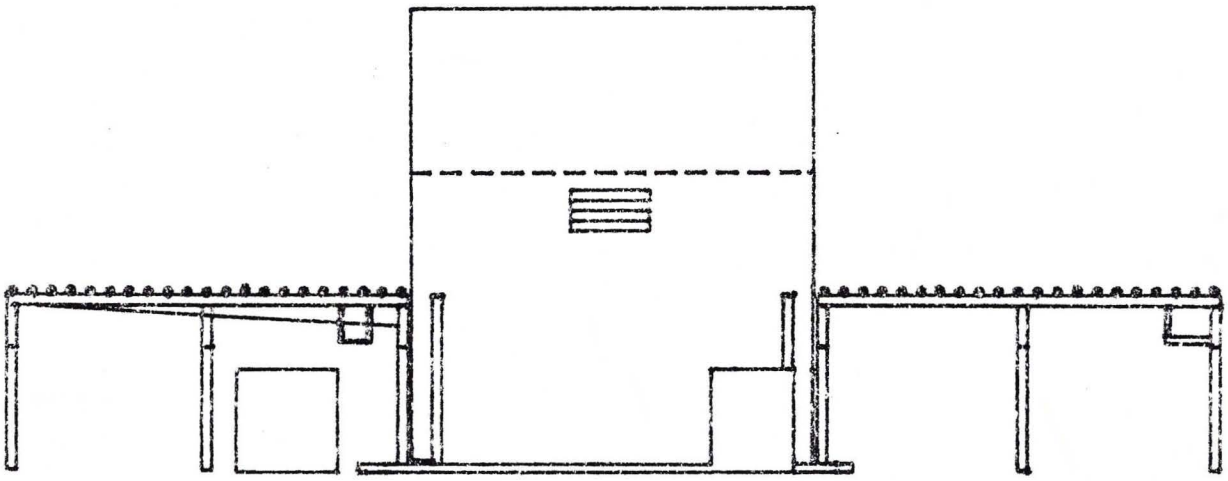
RECEIPT FOR CERTIFIED MAIL
NO INSURANCE COVERAGE PROVIDED
NOT FOR INTERNATIONAL MAIL
(See Reverse)

Sent to	David Stephenson WAUSEO
Street and No.	1800 N. Point Dr.
P.O., State and ZIP Code	Steven Point
Postage	$ .25
Certified Fee	.85
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt showing to whom and Date Delivered	.90
Return Receipt showing to whom, Date, and Address of Delivery	
TOTAL Postage and Fees	$2.00
Postmark or Date	

PS Form 3800, June 1985

SNE
6/30/88

DIP TANK OPERATORS MANUAL



JUNE 1988

PREFACE

The Batch Dip System was installed to provide a means of treating wood that meets the NWWDA Standards. The Dip System is capable of operating with either a solvent or water based preservative. Some of the features of the system has include a; CO2 fire protection system, a Det Tronics 2000 solvent detection unit, and automatic fluid level system. The batch dip system can be operated in Hand or in Automatic. The Dip System was designed to handle loads 42" wide x 62" high x the length of the infeed conveyor.

The Manual is organized with an outline which includes; an overview, the safety precautions, operating procedures, maintenance procedures, and trouble shooting guide.

OUTLINE

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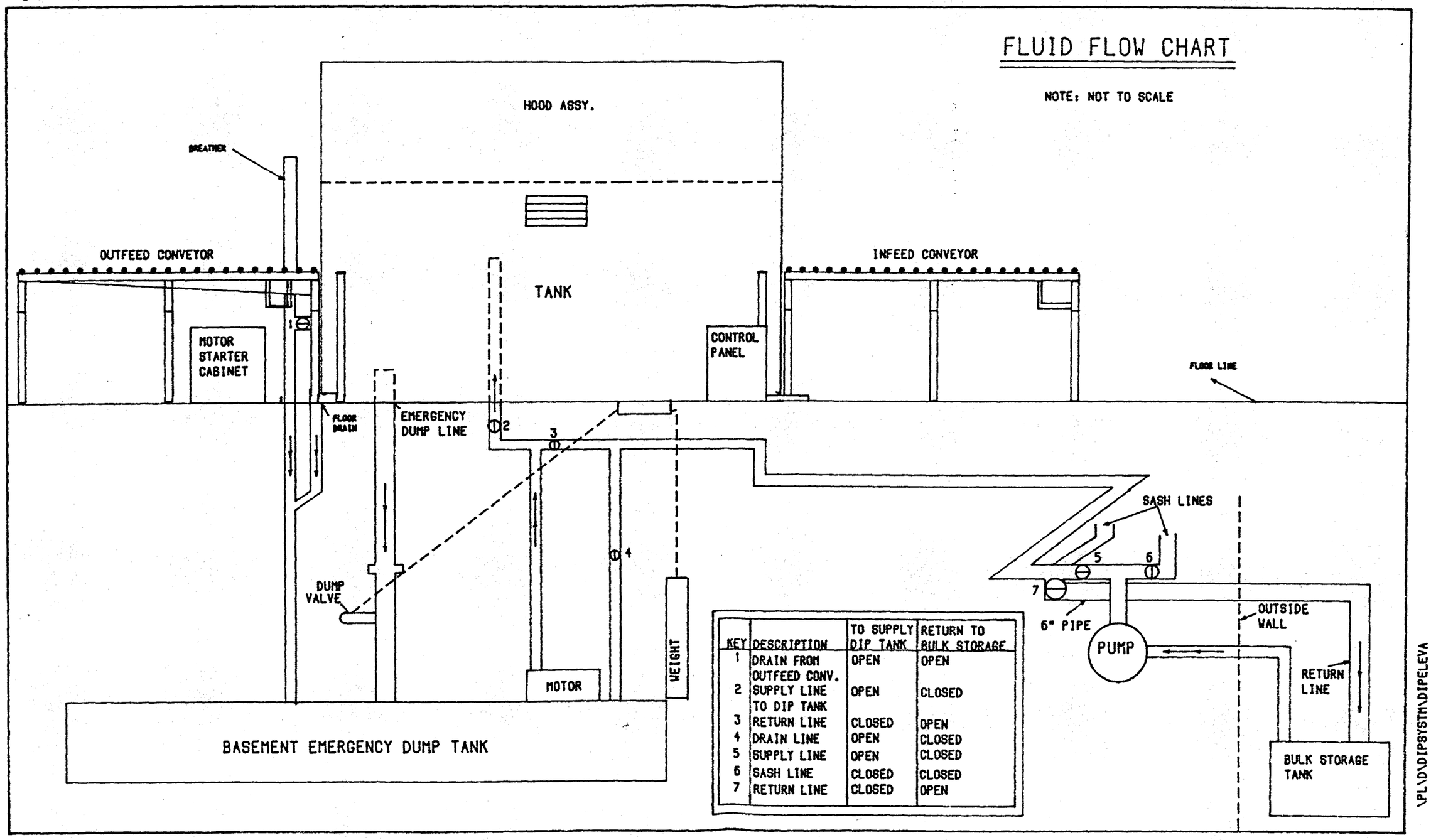
I. A) ELEVATION DRAWING



KEY	DESCRIPTION	TO SUPPLY DIP TANK	RETURN TO BULK STORAGE
1	DRAIN FROM OUTFEED CONV.	OPEN	OPEN
2	SUPPLY LINE TO DIP TANK	OPEN	CLOSED
3	RETURN LINE	CLOSED	OPEN
4	DRAIN LINE	OPEN	CLOSED
5	SUPPLY LINE	OPEN	CLOSED
6	SASH LINE	CLOSED	CLOSED
7	RETURN LINE	CLOSED	OPEN

\PL\D\DIPSYSTM\DIPELEVA

N W W D A Industry Standard For Water-Repellent Preservative Treatment For Millwork I.S.4-81

PUBLISHED AS A SERVICE TO THE INDUSTRY BY NATIONAL WOOD WINDOW AND DOOR ASSOCIATION

WATER-REPELLENT PRESERVATIVE
6
NWWDA
July, 1981

NWWDA I.S.4-81

NWWDA INDUSTRY STANDARD FOR WATER-REPELLENT PRESERVATIVE TREATMENT FOR MILLWORK

WATER

REPELLENT

PRESERVATIVE

TREATMENT

Contents

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Identification and Certification 6

National Wood Window and Door Association
1400 East Touhy Avenue • Des Plaines, Illinois 60018
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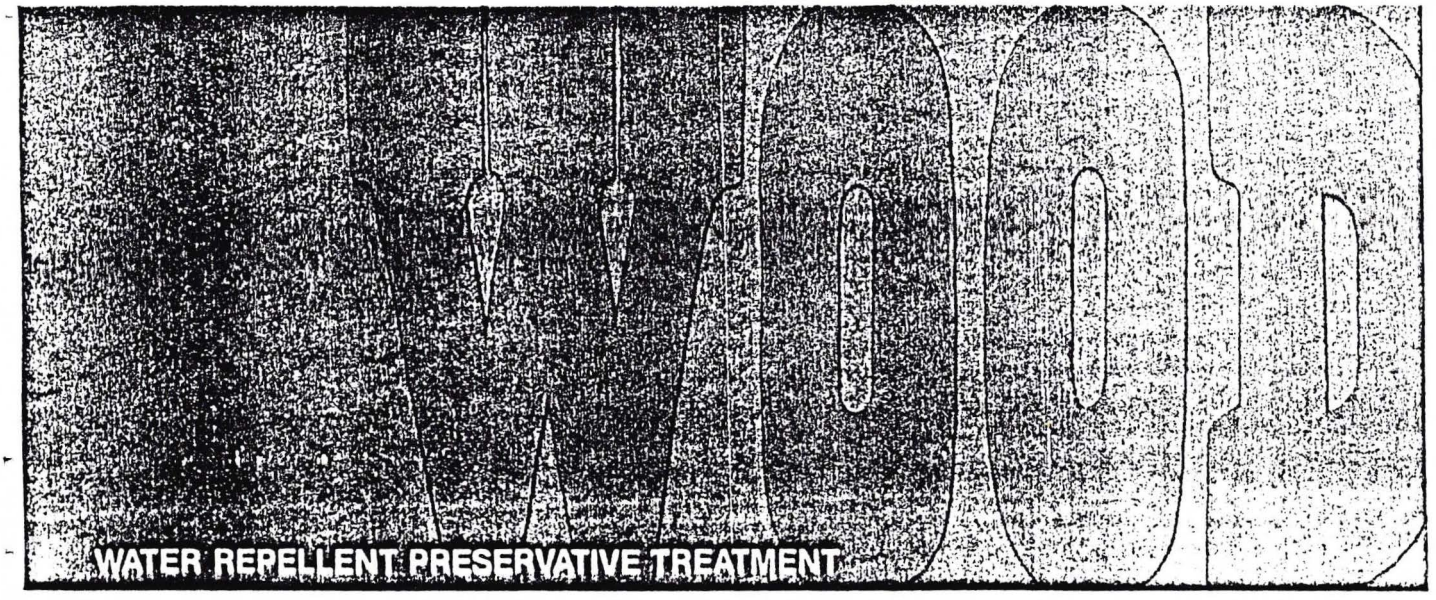
NWWDA
NATIONAL WOOD WINDOW & DOOR ASSOCIATION



NWWDA INDUSTRY STANDARD FOR WATER-REPELLENT PRESERVATIVE TREATMENT FOR MILLWORK
NATIONAL WOOD WINDOW AND DOOR ASSOCIATION

1. Purpose

1.1 The purpose of this standard is to provide a nationally recognized specification for the water-repellent preservative treatment of exterior wood millwork products and to serve as a basis of common understanding for producers, distributors and users. It is also intended to promote fair competition within the industry, and to aid purchasers and users in obtaining properly and adequately treated millwork.

2. Scope

2.1 This standard covers requirements for water-repellent preservative formulations for wood and requirements for methods of treating exterior wood millwork to retard swelling, shrinking, and warping due to changes in moisture conditions and to reduce attack by decay and stain organisms. It includes a voluntary method of identifying, for the consumer, millwork which has been treated in accordance with this standard. For the purposes of this standard, millwork includes exterior products such as prefit wood windows, sash, screens, window frames, blinds, shutters, wood doors (except flush doors), door jambs, cut-to-length trim, and machined knocked-down parts of those products. For the treating of flush doors, refer to NWWDA I.S.1, "Industry Standard for Wood Flush Doors."

3. Requirements for Water-Repellent Preservatives

3.1 **General Properties.** The water-repellent preservative formulation used on any millwork product designated as having been treated in accordance with this standard must contain a wood preservative registered for use by the Environmental Protection Agency under the latest revision of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA).

3.1.1 The treating formulation shall not discolor wood unfavorably, shall not cause objectionable surface residue, nor have an objectionable odor. Also, when properly applied, the treating formulation shall be compatible with other materials used in the fabrication of the treated product.

3.1.2 The treating formulation shall be stable at temperatures of 40 °F (5 °C) or higher, and shall not separate or precipitate components which will adversely affect the appearance or finishability of the treated product or the effectiveness of the treatment.

3.1.3 When the treating formulation is properly applied, it shall effectively retard the formation of molds, fungus stains and decay that would adversely affect the appearance and/or serviceability of the millwork.

3.2 Preservative Requirement. All water-repellent preservative formulations shall be tested for effectiveness against decay according to paragraph 5.2.1.

3.2.1 All preservatives used in water-repellent preservative formulations shall be tested for preservative concentration according to paragraph 5.2.2. For water-repellent preservative formulations containing technical grade pentachlorophenol conforming to Federal Specification "TT-W-570, Wood Preservative; Pentachlorophenol, Solid," the concentration analysis shall indicate a concentration of at least 154 grams of pentachlorophenol (C_6Cl_5OH) per U.S. gallon of formulation at 60 °F (40.7 g/l at 15.5 °C).

3.3 **Water-Repellency Requirement.** The effectiveness of the water-repellent preservative formulation, when tested in accordance with paragraph 5.3, shall not be less than 60%. However, any water-repellent preservative formulation which shows an effectiveness of less than 60% but not less than 50% shall not be rejected until it has been retested twice, a total of three tests in all. The results of all three tests shall be averaged. If the average effectiveness of the three tests is 60% or more, the formulation shall be considered to have passed the test. If the average effectiveness of the three tests is less than 60%, the formulation shall be considered to have failed the test.

3.4 **Penetrability Requirement.** The water-repellent preservative formulation shall meet or exceed the requirements of paragraph 5.4.

---

1. *Copies of NWWDA Test Methods may be obtained from the National Wood Window and Door Association, 1400 E. Touhy Ave., Des Plaines, Illinois 60018*

2. *Copies of AWPA Standards may be obtained from the American Wood Preserves Association, 7735 Old George Town Road, Bethesda, Maryland, 20014*

3. *Copies of Federal Specifications may be obtained from the U.S. Government Printing Office, Washington, D.C., 20402*

4. Requirements for Preservative Treatment

4.1 General. Millwork products complying with this standard shall be treated with a formulation conforming to Section 3, either by the open tank immersion method described in paragraph 4.3, by the vacuum process described in paragraph 4.4, or by any other effective method which will provide preservative efficacy and water-repellency performance at least equivalent to that obtained by treating in accordance with paragraph 4.3 or 4.4.

4.2 Treating of Millwork Products. Millwork products, other than exterior wood doors, may be treated either knocked-down (K.D.) or assembled, and may be treated individually or in bundles or batches. Exterior wood doors, except wood flush doors, shall be treated in accordance with paragraph 4.2.1 or 4.2.2 (For treating wood flush doors, refer to NWWDA I.S.1, "Industry Standard for Wood Flush Doors.") Exterior wood doors shall be treated after assembly.

4.2.1 Treating of Doors. Whether treated individually or in bundles, wood doors shall be treated on edge rather than flat, to avoid the possibility of an airlock between or underneath the door faces. Doors must be sufficiently loose in bundles to permit continuous contact between the treating formulation and all parts of each door to insure absorption throughout the treating cycle. When doors are treated by the open tank immersion process, they shall be allowed to drain on edge for at least 30 minutes at a temperature of 40 °F (5 °C) or higher before being flat piled.

4.2.2 Non-Prefit Wood Doors. As an exception to paragraph 2.1, non-prefit wood doors may be treated in accordance with this standard provided the manufacturer or distributor who treated them attaches a label or notice to each door to the following effect: "This non-prefit door has been treated in accordance with National Wood Window and Door Association Standard I.S.4. If it is trimmed or cut in fitting, all cut surfaces must be given a liberal brush treatment with a water-repellent preservative formulation which fully complies with this standard."

4.3 Immersion Method. This is an open tank dip method. The treating equipment includes a tank or vat containing the treating formulation large enough to permit the complete immersion of the millwork products by a single dip without turning. The depth of the treating formulation in the tank or vat must be sufficient to completely cover millwork products at a single dip without turning. The tank or vat shall be equipped with practical appliances for filling, emptying and cleaning the tank with reasonable ease and convenience.

4.3.1 Immersion Times.

4.3.1.1 Batch or Bundle Treating. (Three Minute Immersion). All millwork products to be treated in batches or bundles shall be completely immersed in the treating formulation for not less than three (3) minutes. This is to be interpreted to mean that when millwork products are immersed in bundles or piles, with several items in a single bundle or pile, the three-minute immersion period shall begin at the instant the last item in the bundle or pile becomes completely immersed, and shall terminate not sooner than the instant at which the same item begins to emerge from the treating formulation. A practical timing device shall be provided at or near the dipping tank to make certain the products are fully immersed for not less than three (3) minutes.

4.3.1.2 Treating Individual Parts or Units. (Fifteen Second Immersion). When treating individual parts or assembled units, the parts or units shall be completely immersed in the treating formulation for not less than fifteen (15) seconds. This is to be interpreted to mean that when the millwork product is immersed, the fifteen-second period shall begin at the instant the item becomes completely immersed, and shall terminate not sooner than the instant at which the item begins to emerge from the treating formulation. A practical timing device shall be provided at or near the dipping tank to make certain the products are fully immersed for not less than fifteen (15) seconds.

4.3.2 Weekly Check of Dipping Cycle. The dipping cycle shall be checked at least once each week to make certain that the timing device is operating properly and that the millwork products are actually immersed for the specified time period.

4.4 Vacuum Process. This process utilizes a vacuum to exhaust air from the cells of the wood, and the force of atmospheric pressure to expedite the absorption of the treating formulation. The equipment for the vacuum process includes the following (or other equipment or machinery capable of producing comparable results): (a) a vacuum pump for exhausting air from the tank or vat and the chamber above it; (b) a tank or vat which can be closed airtight in which the treating formulation is contained and in which the millwork products are immersed, large enough to permit the complete immersion of each load of millwork products by a single dip without turning and in which the depth of the treating formulation is sufficient to completely immerse each load; (c) a receiving chamber above the tank, which can be closed airtight, to receive and hold each load of millwork products during the periods of the initial and final vacuum; (d) a mechanical device for lowering and completely immersing the load of millwork products from the receiving chamber into the treating formulation in the tank below, and for

raising the load back into the receiving chamber after immersion; (e) a vacuum gauge; (f) a timing device which will accurately show the time required for each phase of the treating cycle; (g) practical devices for filling, emptying and cleaning the tank or vat with reasonable ease and convenience.

4.4.1 **Treating Cycle.** The cycle for treating by the vacuum process shall be optional, provided the vacuum process produces retention of the treating formulation in the wood at least equivalent to that provided by the open tank immersion process. The cycle includes four phases: (1) the initial vacuum, expressed in inches of mercury (kilopascals); (2) the breaking of the vacuum after the millwork products have become immersed in the formulation; (3) the duration of the immersion of the millwork products in the treating formulation after the initial vacuum has been broken, expressed in seconds; and (4) the final vacuum, expressed in inches of mercury (kilopascals).

4.4.2 **Weekly Check of Vacuum Treating Cycle.** The vacuum process shall be checked at least once each week to make certain that each phase of the treating cycle conforms to those described in paragraph 4.4.1.

4.5 **Monthly Check of Treating Formulation.** The treating formulation shall be checked at least once each month to make certain that its content of preservative and water-repellent materials conforms to paragraphs 3.2.1 and 3.3.

4.6 **Retreatment.** Millwork products which have been treated in conformance with this standard, but which have been subsequently refabricated in the plant by cutting, plowing, boring or trimming, shall be retreated by the manufacturer by giving all cut surfaces a liberal brush treatment with a water-repellent preservative which fully complies with this standard. (The purchaser should also be advised to treat all such cut surfaces refabricated in the field by giving them a brush treatment of water-repellent preservative before final assembly or installation.)

5. Methods of Testing

5.1 **General.** The tests of preservative efficacy, water-repellency, and penetrability of treating formulations shall conform to those described in paragraphs 5.2.1, 5.2.2, 5.3, and 5.4.

5.2. Preservative Test Methods

5.2.1 **Preservative Effectiveness.** The effectiveness of a preservative shall be determined in accordance with the latest edition of the National Wood Window and Door Association Test Method "NWWDA M-1, Soil Block Test—Standard Method for Testing the Preservative Property of Wood Preservatives by Using Wood Specimens Uniformly Impregnated," using Method B.

5.2.2 Preservative Concentration Analysis

a. *Technical Grade Pentachlorophenol:* For formulations containing technical grade pentachlorophenol as a preservative, the method used to determine the concentration of that preservative shall be American Wood-Preservers' Association Standard A5, Section 5.

b. *Other Preservatives:* For formulations containing a preservative other than technical grade pentachlorophenol, an appropriate test method approved by the American Wood-Preservers' Association and/or NWWDA shall be used to determine the concentration of that preservative.

5.3 **Water-Repellency Effectiveness Test.** The water-repellency effectiveness of the treating formulation shall be determined in accordance with the latest edition of the National Wood Window and Door Association Test Method "NWWDA M-2, Swellometer Test—Standard Method for Determining the Water-Repellent Effectiveness of Treating Formulations."

5.4 **Penetrability Test.** Prepare five specimens of Ponderosa Pine sapwood 1/2 x 1/2 x 5 inches in size (12 x 12 x 125 mm), each specimen from a different parent board, with the longitudinal grain of the wood running in the 5 inch direction. The wood shall be free from defects, and shall have a moisture content below 15 percent. Pour the treating formulation into a flat-bottom glass vessel, such as a petri-dish or beaker, to a depth of 1/4 inch (7 mm) or more. Both the formulation and the wood specimens shall be maintained at a temperature of 77 ± 3°F (25 ± 2°C). Within 15 minutes after the formulation is placed in the vessel, immerse the specimens vertically in the formulation to a depth of approximately 1/4 inch (7 mm) for 15 seconds (bottom of specimen 1/4 inch below surface of formulation). Remove the specimens from the formulation, remove suspended drops, then allow the specimens to stand for a week under ordinary room conditions. At the end of this period, remove and discard a 0.20 inch (5 mm) section (including saw kerf) from the treated end grain of each specimen. Analyze the center of the newly exposed end grain of the original test specimen for the presence of active ingredient, using a method appropriate to the ingredient being analyzed. Active ingredient shall be present in all five specimens.

6. Nomenclature and Definitions

6.1 The following definitions give the meaning of the trade terms used in this standard.

Wood Decay, Mold and Stain Fungi: A group of lower plants which can decay and/or discolor wood and thereby alter its mechanical or physical properties or appearance.

Wood Preservative: (Noun) A chemical which inhibits the growth of wood decaying and staining fungi and wood molds. (Adjective) Having the ability to inhibit the growth of wood molds and decay and stain fungi.

Use Concentration: The concentration of the preservative in a ready-to-use water-repellent preservative formulation as determined in accordance with paragraph 5.2.1.

Water-Repellent: (Noun) Materials used in or on wood to retard the absorption of liquid water. (Adjective) Having the quality of retarding the absorption of liquid water by wood.

K.D.: Unassembled component parts of a finished product.

7. Identification and Certification

7.1 In order that the purchaser may be assured that water-repellent preservative treated millwork has been treated in accordance with this standard, the treater may stamp treated products with the identification mark of any qualified testing and inspection agency based upon a certificate of inspection from such agency and a written declaration by such agency that the treated millwork complies with this standard.

7.2 Grade marks, stamps and certificates issued by a qualified testing and inspection agency shall show (1) identification of this standard, (2) identification of the agency issuing the mark, stamp or certificate, (3) the identity of the plant to which they are issued, and (4) a declaration of compliance by that plant.

7.3 Architects, builders and owners who desire assurance of standard water-repellent preservative treatment may include in their specifications a requirement that exterior wood millwork be treated in accordance with National Wood Window and Door Association Industry Standard I.S.4, and that it be certified or labeled as conforming thereto.

NWWDA
NATIONAL WOOD WINDOW & DOOR ASSOCIATION

NWWDA WATER-REPELLENT PRESERVATIVE TREATING CERTIFICATION PROGRAM

The National Wood Window and Door Association has created the NWWDA Water-Repellent Preservative Treating Certification Program to certify the quality of exterior millwork products treated under the rigid requirements of NWWDA I.S.4, "Industry Standard for Water-Repellent Preservative Treatment for Millwork." The program provides a quick and easy means of identifying exterior millwork products treated in conformance with this standard and verified through independent third party inspection and testing. A facsimile of the NWWDA Water-Repellent Preservative Treating Hallmark is shown below.

QUALITY NWWDA CERTIFIED

NWWDA I.S.4 is referenced by HUD/FHA in their Minimum Property Standards and by many other government and private agencies in their construction specifications. These agencies recognize the NWWDA Water-Repellent Preservative Treating Hallmark as proof of compliance with NWWDA I.S.4.

Any manufacturer or distributor who treats wood millwork products and who can demonstrate conformance to NWWDA I.S.4 is eligible to participate in the NWWDA Water-Repellent Preservative Treating Certification Program, regardless of any affiliation with the association. Conformance is determined by in-plant inspection of the treating facilities and by the testing of water-repellent preservative formulations. Frequent unannounced inspections and periodic laboratory tests are conducted throughout the year to insure continued compliance to the requirements of the program.

Architects, specifiers and other users of exterior millwork products may be assured that the products they use meet the rigid requirements of NWWDA I.S.4 by requiring that those products bear the NWWDA Water-Repellent Preservative Treating Hallmark.

II. A) Material Safety Data Sheets and Product Information

The Dip System was installed the first quarter of 1988. The preservative used during start up was a solvent product manufactured by; Beecham Home Improvement Product Inc. and Koppers Company. Unocal provides the solvents used to balance the preservative mixture. Both Beecham and Koppers products are substantially the same. There address and phone number are listed below for your convenience.

The following data sheets are provided:

1. MSDS for Beecham (p.10-13)
2. MSDS for Koppers (p.14-18)
3. MSDS for Unocal Mineral Spirits (p.19-23)
4. Product Data Information Sheets (p.24-26)

ADDRESSES:

Beecham Home Improvement Products Inc.
P.O. Box 277
Dayton, Ohio 45401 (513) 253-7154

Koppers Company, Inc.
436 Seventh Avenue
Pittsburgh, PA 15219 (800) 556-7737

Unocal Chemicals Division
Union Oil Company of California
1345 N. Meacham
Schaumburg, Ill 60196 (312) 490-2500

NOTE: The Material Safety Data Sheets and Product Information provided are for preservatives used during start up of Dip System. If Product is changed, SNE will make available applicable MSDS sheets. If there are ever any questions regarding the product you are working with, do not hesitate to contact your supervisor or personnel department.

BEECHAM HOME IMPROVEMENT PRODUCTS INC.

EMERGENCY PHONE NO.: (513) 253-7154

HMIS HAZARD RATINGS			
Minimal	0	Acute Health	2
Slight	1	Flammability	2
Moderate	2	Reactivity	0
Serious	3		
Severe	4		

p.10

SECTION I

PRODUCT NAME OR NUMBER: Polyphase Woodlife Type F RTU (Industrial)
EPA Reg. No. 1409-59

MANUFACTURERS NAME: Beecham Home Improvement Products Inc.
ADDRESS: P.O. Box 277
Dayton, Ohio 45401

PROPER SHIPPING NAME (49 CFR 172.101): Combustible liquid
D.O.T. HAZARD NAME (49 CFR 172.101): NA
D.O.T. ID NO. (49 CFR 172.101): NA
D.O.T. HAZARD CLASS (49 CFR 172.101): NA
RCRA HAZARD CLASS - if discarded (40 CFR 261): D001-Ignitable

E.P.A. PRIORITY POLLUTANTS (40 CFR 122.53): None

CAS NO.: Mixture
GENERIC DESCRIPTION: Wood preservative

SECTION II INGREDIENTS

HAZARDOUS	% RANGE	CAS#	TSCA INVENTORY (EPA)
Mineral Spirits	80-85	8030-30-6	Yes
Aromatic Naphtha	1-10	Mixture	Yes
3-Iodo-2-Propynyl Butyl Carbamate	0.5	55406-53-6	Yes

NON-HAZARDOUS
Inert binders &
water repellent solids

SECTION III PHYSICAL DATA

BOILING POINT: 310-395°F
SPECIFIC GRAVITY (H_2O = 1): 0.87
VAPOR PRESSURE (mmHg): 2 @ 20°C
VAPOR DENSITY (AIR = 1): 5.0
PERCENT VOLATILE BY VOLUME (%): 85-95
EVAPORATION RATE (Butyl Acetate = 1): 0.15
SOLUBILITY IN WATER: Negligible
MATERIAL IS: _X_LIQUID ___SOLID ___GAS ___PASTE ___POWDER
ODOR AND APPEARANCE: Clear, water-like liquid; petroleum distillate odor

NAME OR NUMBER: Polyphase Woodlife Type F RTU (Industrial)

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SECTION IV HEALTH HAZARD DATA

PRIMARY ROUTE OF ENTRY: Inhalation of solvent vapor

EFFECTS OF OVEREXPOSURE:

ACUTE: Liquid may be severely irritating to eyes if direct contact occurs. Vapor may irritate eyes, skin and respiratory tract. May cause central nervous system depression: headache, dizziness, nausea or unconsciousness. If ingested causes vomiting, diarrhea, depressed respiration.

CHRONIC: Prolonged or repeated contact with skin can cause drying or chapping of skin. A number of studies supplied by our trade association has indicated that continual overexposure to concentrated solvent vapor over a period of time may lead to permanent central nervous system damage. See sections VIII and IX for precautions.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing skin disorders and impaired pulmonary functions

EXPOSURE LIMITS (ppm):

	OSHA PEL	CEILING PEL	PEAK PEL	ACGIH TLV	ACGIH STEL
Mineral Spirits	500*	NE	NE	100	200
Aromatic Naphtha	100 recommended		NE	NE	NE

*As petroleum distillates

TOXICITY: LD_{50} 0.5-5g/kg Oral Rat (Mineral Spirits)
LC_{50} 3400 ppm/4 hr Ihl Rat (Aromatic Naphtha)

CARCINOGENICITY: This product contains no carcinogens as listed by NTP, IARC or OSHA.

EMERGENCY AND FIRST AID PROCEDURES:
Inhalation: Remove to fresh air; restore breathing if necessary. Contact a physician.
Eyes: Flush with large amounts of water for 15 minutes. Contact a physician.
Skin: Wash with soap and water. Consult a physician if irritation develops.
Ingestion: Do NOT induce vomiting. If victim is conscious, give water or milk. Contact a physician immediately.

SECTION V FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (C.C.): 105° F
FLAMMABLE LIMITS IN AIR, % BY VOLUME: LOWER: 1.0
UPPER: 7.0
EXTINGUISHING MEDIA: Foam, Carbon Dioxide, dry chemicals

SPECIAL FIRE FIGHTING PROCEDURES: Do not use straight hose water stream. Full protective equipment, including self-contained breathing apparatus, is recommended to protect from combustion products. Cool exposed containers with water.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Containers may explode if exposed to extreme heat; isolate from heat, electrical equipment, sparks and open flames. Do not put in contact with oxidizing materials.

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SECTION VI REACTIVITY DATA

STABILITY: Stable
CONDITIONS TO AVOID: Excessive heat
INCOMPATIBILITY (MATERIALS TO AVOID): Strong oxidizers; avoid strong acids and bases
HAZARDOUS DECOMPOSITION PRODUCTS: Normal combustion products, i.e. CO_x, NO_x
HAZARDOUS POLYMERIZATION: Will not occur
CONDITIONS TO AVOID: None

SECTION VII SPILL, LEAK AND DISPOSAL PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED:
SMALL SPILL: Absorb liquid on paper, oil dry or other absorbent material and allow to dry or evaporate under a hood.

LARGE SPILL: Wear protective equipment (see section VIII). Eliminate all sources of ignition (open flames, pilot lights, electrical sparks) and ventilate spill area. Contain spill by diking to prevent spreading. Absorb spill with sand, earth, oil dry or other absorbent material and place into containers. This product is toxic to fish and wildlife. Prevent run-off to sewers, streams, lakes or other bodies of water; notify local health and wildlife officials if run-off occurs.

WASTE DISPOSAL METHOD: Discarded spill residue may be incinerated at a permitted facility. Do not incinerate sealed containers. Do not reuse empty containers; destroy by perforating and bury in an approved, secure chemical landfill. Dispose according to Federal, State and local regulations. Liquids CANNOT be disposed of in a landfill.

SECTION VIII SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION: If 8-hour exposure limit or value is exceeded for any component, use an approved NIOSH/MSHA respirator. Consult your safety equipment supplier and the OSHA regulation, 29 CFR 1910.134 for respirator requirements.

VENTILATION: Provide sufficient mechanical ventilation (local or general exhaust) to maintain exposure below limits and values.

PROTECTIVE GLOVES: Solvent impervious gloves

EYE PROTECTION: Goggles or safety glasses with side shields

OTHER PROTECTIVE EQUIPMENT: Provide eyewash and solvent impervious apron if body contact with product may occur. Barrier creams may be used.

SECTION IX SPECIAL PRECAUTIONS

HANDLING AND STORING: Keep containers from excessive heat and freezing. Provide cross ventilation in storage area. Keep containers tightly closed when not in use. Keep out of reach of children.

OTHER PRECAUTIONS: Combustible. Harmful or fatal if swallowed. Use only with adequate ventilation and eliminate sources of ignition when product is used. Avoid prolonged or repeated breathing of vapor(s). Do not get in eyes, on skin or on clothing. Remove and wash contaminated clothing before reuse. Keep contents and freshly treated articles away from flames, food and living plants. Do not contaminate water by cleaning of equipment or disposal of waste.

THIS DATA IS OFFERED IN GOOD FAITH AS TYPICAL VALUES AND NOT AS A PRODUCT SPECIFICATION. NO WARRANTY, EITHER EXPRESS OR IMPLIED, IS HEREBY MADE. THE RECOMMENDED INDUSTRIAL HYGIENE AND SAFE HANDLING PROCEDURES ARE BELIEVED TO BE GENERALLY APPLICABLE. HOWEVER, EACH USER SHOULD REVIEW THESE RECOMMENDATIONS IN THE SPECIFIC CONTEXT OF THE INTENDED USE AND DETERMINE WHETHER THEY ARE APPROPRIATE.

PREPARED BY: D.J. Orlett

REVIEWED BY: J.W. Rader

DATE: July 16, 1986

LAST REVISED: May 1, 1986

SAFETY
DATA
SHEET

KOPPERS COMPANY, INC.
436 SEVENTH AVENUE
PITTSBURGH, PA. 15219

IN PENNSYLVANIA: 1 800-323-6571
OUTSIDE U.S.A. 412-227-2000
CHEMTREC ASSISTANCE: 1 800-424-9300
CUSTOMER SERVICE: 1 800-556-7737

SECTION I - PRODUCT IDENTIFICATION

PRODUCT NAME: Woodtreat MB RTU

COMMODITY NUMBER: 38012572

SYNONYM: none

CHEMICAL FAMILY: water repellant wood preservative

FORMULA: mixture

CAS NUMBER: none

DOT PROPER SHIPPING NAME: combustible liquid NOS

DOT HAZARD CLASS: Combustible liquid

UN/NA NUMBER: NA 1993

SECTION II - HEALTH/SAFETY ALERT

CAUTION
COMBUSTIBLE
HARMFUL TO THE SKIN, OR IF INHALED OR SWALLOWED
CAUSES EYE BURNS
AVOID CONTACT WITH SKIN, EYES AND CLOTHING
OBSERVE GOOD HYGIENE AND SAFETY PRACTICES WHEN HANDLING THIS PRODUCT
DO NOT USE THIS PRODUCT UNTIL MSDS HAS BEEN READ AND UNDERSTOOD
USE WITH ADEQUATE VENTILATION

SECTION III - HEALTH HAZARD INFORMATION

EYE: Direct contact causes substantial but temporary injury.

SKIN: May cause irritation.

INHALATION: Exposure in enclosed areas may cause headache, nausea, dizziness, confusion, collapse, coma or death.

INGESTION: May cause gastrointestinal disturbances and serious systemic effects causing death. Aspiration into lungs is possible.

SECTION IV - EMERGENCY AND FIRST AID PROCEDURES

EYE CONTACT: Immediately flush with large amounts of water for 15 minutes. Seek medical aid.

SKIN CONTACT: Wash thoroughly with soap and water. Remove contaminated clothing. If irritation persists, seek medical aid. Wash contaminated clothing before reuse.

INHALATION: Remove from exposure. If breathing has stopped or is difficult, administer artificial respiration or oxygen as indicated. Seek medical aid.

INGESTION: Immediately seek medical aid. Do not induce vomiting. Give 1 glass of milk or 1 to 2 oz (30 to 60g) of activated charcoal in water to victim as tolerated. DO NOT ATTEMPT TO GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

NOTE TO PHYSICIAN: There is no specific antidote for this product. Due to the possibility of myocardial sensitization, an electrical defribillator should be maintained near the patient. Although carbamates are known to cause cholinesterase inhibition, iodopropynl carbamate did not inhibit cholinesterase in animal tests.

SECTION V - FIRE AND EXPLOSION HAZARD INFORMATION

FLASH POINT & METHOD: 40 C (104 F) AUTOIGNITION TEMP: ND

FLAMMABLE LIMITS (% BY VOLUME/AIR): LOWER: 1 UPPER: 6

EXTINGUISHING MEDIA: Use carbon dioxide, dry chemical or foam.

FIRE-FIGHTING PROCEDURES: Wear complete fire service protective equipment, including full-face MSHA/NIOSH approved self-contained breathing apparatus. Use water to cool fire-exposed container/structure/protect personnel. Toxic vapors may be given off in a fire.

FIRE AND EXPLOSION HAZARDS: When heated (fire conditions), vapors/decomposition products may be released forming flammable/explosive mixtures in air. Closed containers may explode when exposed to extreme heat(fire). Vapors are heavier than air and may travel along the ground, pit or sewer line to some distant source of ignition and flash back.

SECTION VI - SPILL, LEAK AND DISPOSAL INFORMATION

SPILL OR LEAK PROCEDURES (PRODUCT): Stop leak if no risk involved. Stay upwind. Small spills: Take up with sand or other noncombustible absorbent material. Flush area with water. Dike large spills for later disposal. Contain runoff from fire control and dilution water.

WASTE DISPOSAL: This product is a US EPA defined ignitable hazardous waste. Dispose of as an ignitable waste in accordance with local, state and federal regulations. Place in tightly sealed labeled containers. This product released into the environment must be reported to the National Response Center (1 800-424-8802). The reportable quantity (RQ) for this product is 100 pounds.

SECTION VII - RECOMMENDED EXPOSURE LIMIT/HAZARDOUS INGREDIENTS

EXPOSURE LIMIT (PRODUCT):

None established. See exposure limits for ingredients.

*NIOSH - 350 mg/m3 (10 hr. TWA); 1800 mg/m3 (15 min. ceiling)

HAZARDOUS INGREDIENTS	CAS NUMBER	PERCENT	EXPOSURE LIMIT (PPM;MG/M3)		
Mineral Spirits*	8051-42-3	90	ACGIH-TLV	100	525
			OSHA-PEL	500	2900
Iodopropynl Butyl Carbamate	55406-53-6	5	none		

SECTION VIII - PERSONAL PROTECTION INFORMATION

EYE PROTECTION: Industrial safety glasses, minimum. As necessary to comply with 29 CFR 1910.133 and work area conditions: use side shields, goggles or face shield.

SKIN PROTECTION: As required, industrial resistant flexible-type gloves. Wear industrial-type work clothing and safety footwear. Depending on working conditions, i.e., contact potential, wear impervious protective garments such as head/neck cover, aprons, jackets, pants, coveralls, boots, etc.

RESPIRATORY PROTECTION: If ventilation does not maintain inhalation exposures below TLV(PEL), use MSHA/NIOSH approved units as per current 29 CFR1910.134 and manufacturers' "Instructions" and "Warnings". Combination filter/organic vapor cartridges or canister may be used.

VENTILATION: Provide sufficient general/local exhaust ventilation in pattern/volume to control inhalation exposures below current exposure limits and areas below flammable vapor concentrations. Local exhaust is necessary for use in enclosed or confined spaces. See OSHA Requirement/NIOSH Pub. 80-106 "Working in a Confined Space".

SECTION IX - PERSONAL HANDLING INSTRUCTIONS

HANDLING: Avoid prolonged or repeated breathing of vapors, mists or fumes. Avoid prolonged or repeated contact with skin or eyes. Avoid skin and eye contact with molten material. Handle and use in accordance with OSHA 29 CFR 1910.106 and/or other applicable state/local codes.

STORAGE: Keep in a closed, labeled container within a cool (well shaded), dry -ventilated area. Protect from physical damage. Keep containers closed when material is not in use. Maintain good housekeeping. Store in areas/buildings designed to comply with OSHA 1910.106.

OTHER: Not for use or storage in or around the home. Ground and bond drums. Do not use pressure to empty drums. Do not use until manufacturer's precautions have been read/understood. Wash exposed areas promptly and thoroughly after skin contact and before eating, drinking, using tobacco products or rest rooms.

SECTION X - REACTIVITY DATA

CONDITIONS CONTRIBUTING TO INSTABILITY: None

INCOMPATABILITY: None

HAZARDOUS REACTIONS/DECOMPOSITION PRODUCTS: May produce carbon monoxide and carbon dioxide.

CONDITIONS CONTRIBUTING TO HAZARDOUS POLYMERIZATION: None

SECTION XI - PHYSICAL DATA

BOILING POINT: 55-179C (131-354F)	SPECIFIC GRAVITY: 0.786 @ 60 F
MELTING POINT: NA	% VOLATILE BY VOL: 99
VAPOR PRESSURE: 2 mm Hg	EVAPORATION RATE(ETHER=1): 1
VAPOR DENSITY(AIR=1):4.7	VISCOSITY: ND
SOLUBILITY (WATER): negligible	PH: ND
	VOC: ND

FREEZING POINT: -18 C (0 F)

APPEARANCE/ODOR: Clear liquid with a mild petroleum odor

SECTION XII - COMMENTS

EPA Reg. No. - 453-298

Individuals with pre-existing disease in, or a history of ailments involving the liver, kidney, eyes, skin may be at a greater risk of developing adverse health effects when working with this product.

EMPTY CONTAINERS may retain product residue including flammable or explosive vapors. Do not cut, drill, grind or weld on or near full, partially full or empty product containers.

No known ingredients which occur at greater than 0.1% are listed as a carcinogen in the IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Humans, the NTP Annual Report on Carcinogens or OSHA 29 CFR 1910.1001-1047 subpart Z Toxic and Hazardous Substances (Specifically Regulated Substances).

SKIN PROTECTION (protective material): Permeation/degradation values of chemical mixtures cannot be predicted from pure components or chemical classes. Thus, these materials are normally best estimates based on available pure component data. A significant difference in chemical breakthrough time has been reported for generically similar gloves from different manufacturers (AIHA J., 48, 941-947 1987).

Do not use until manufacturer's precautions have been read/understood. Wash exposed areas promptly and thoroughly after skin contact and before eating, drinking, using tobacco products or rest rooms.

Do not wear contact lens without proper eye protection when using this product.

NOTICE: While the information and recommendations set forth herein are believed

to be accurate as of the date hereof, Koppers Company makes no warranty with respect thereto and disclaims all liability from reliance thereon.

MATERIAL SAFETY DATA SHEET

UNOCAL

UNOCAL CHEMICALS DIVISION
PETROCHEMICALS GROUP

Product Name: NAPHTHOL SPIRITS 66/3
Product Code No: 11103

Issue Date: 6/16/87

MANUFACTURER:

UNOCAL CHEMICALS DIVISION
UNION OIL COMPANY OF CALIFORNIA
1345 N. MEACHAM
SCHAUMBURG, ILLINOIS 60196

CONTACT FOR FURTHER INFORMATION:
MSDS COORDINATOR (312) 490-2500

Transportation Emergencies:
Call CHEMTREC
(800) 424-9300 Cont. U.S.
(202) 483-7616 (Collect)
from Alaska & Hawaii
Health Emergencies:
CALL LOS ANGELES POISON
INFORMATION CENTER (24 hrs.)
(213) 664-2121

PRODUCT IDENTIFICATION

PRODUCT NAME:	NAPHTHOL SPIRITS 66/3
SYNONYMS:	AMSCO SOLV 1103
GENERIC NAME:	VOLATILE SOLVENT
CHEMICAL FAMILY:	HYDROCARBON MIXTURE
DOT PROPER SHIPPING NAME:	PETROLEUM NAPHTHA
ID NUMBER:	UN1255
DOT HAZARD CLASSIFICATION:	COMBUSTIBLE LIQUID
CAS NUMBER:	8052-41-3

SECTION I - HAZARDOUS INGREDIENTS/EXPOSURE LIMITS

		TLV	UNITS	AGENCY	TYPE
STODDARD SOLVENT	8052-41-3	100.0000	PPM	ACGIH	TWA
		200.0000	PPM	ACGIH	STEL
		500.0000	PPM	OSHA	TWA

SECTION II - EMERGENCY AND FIRST AID PROCEDURES

EMERGENCY
Have physician call LOS ANGELES POISON
INFORMATION CENTER (24 hrs.) (213) 664-2121

EYE CONTACT:

IF IRRITATION OR REDNESS FROM EXPOSURE TO VAPORS DEVELOPS, MOVE VICTIM AWAY FROM EXPOSURE AND INTO FRESH AIR. IF IRRITATION OR REDNESS PERSISTS, SEEK MEDICAL ATTENTION. FOR DIRECT CONTACT, FLUSH THE AFFECTED EYE(S) WITH CLEAN WATER. SEEK MEDICAL ATTENTION.

SKIN CONTACT:

REMOVE CONTAMINATED CLOTHING. CLEANSE AFFECTED AREA(S) THOROUGHLY BY WASHING WITH MILD SOAP AND WATER. IF IRRITATION OR REDNESS DEVELOPS AND PERSISTS, SEEK MEDICAL ATTENTION.

SECTION II - EMERGENCY AND FIRST AID PROCEDURES

EMERGENCY
Have physician call LOS ANGELES POISON INFORMATION CENTER (24 hrs.) (213) 664-2121

INHALATION (BREATHING):

IF IRRITATION OF NOSE OR THROAT DEVELOPS, MOVE VICTIM AWAY FROM SOURCE OF EXPOSURE AND INTO FRESH AIR. IF IRRITATION PERSISTS, SEEK MEDICAL ATTENTION. IF VICTIM IS NOT BREATHING, ARTIFICIAL RESPIRATION SHOULD BE ADMINISTERED. IF BREATHING DIFFICULTIES DEVELOP, OXYGEN SHOULD BE ADMINISTERED BY QUALIFIED PERSONNEL. SEEK IMMEDIATE MEDICAL ATTENTION.

INGESTION (SWALLOWING):

ASPIRATION HAZARD: DO NOT INDUCE VOMITING OR GIVE ANYTHING BY MOUTH BECAUSE THIS MATERIAL CAN ENTER THE LUNGS AND CAUSE SEVERE LUNG DAMAGE. IF VICTIM IS DROWSY OR UNCONSCIOUS, PLACE ON THE LEFT SIDE WITH THE HEAD DOWN. IF POSSIBLE, DO NOT LEAVE VICTIM UNATTENDED. SEEK MEDICAL ATTENTION.

SECTION III - HEALTH HAZARDS/ROUTES OF ENTRY

EYE CONTACT:

THIS MATERIAL MAY CAUSE EYE IRRITATION. DIRECT CONTACT WITH THE LIQUID OR EXPOSURE TO ITS VAPORS OR MISTS MAY CAUSE BURNING, TEARING AND REDNESS.

SKIN CONTACT:

THIS MATERIAL MAY CAUSE SKIN IRRITATION. PROLONGED OR REPEATED EXPOSURE TO THIS MATERIAL MAY CAUSE REDNESS, BURNING, AND DRYING AND CRACKING OF THE SKIN. NO HARMFUL EFFECTS HAVE BEEN DEMONSTRATED IN SKIN ABSORPTION STUDIES. PERSONS WITH PRE-EXISTING SKIN DISORDERS MAY BE MORE SUSCEPTIBLE TO THE EFFECTS OF THIS MATERIAL.

INHALATION (BREATHING):

BREATHING HIGH CONCENTRATIONS OF VAPORS OR MISTS MAY CAUSE: IRRITATION OF THE NOSE AND THROAT. SIGNS OF NERVOUS SYSTEM DEPRESSION (E.G., DROWSINESS, DIZZINESS, LOSS OF COORDINATION, AND FATIGUE). RESPIRATORY SYMPTOMS ASSOCIATED WITH PRE-EXISTING LUNG DISORDERS (E.G., ASTHMA-LIKE CONDITIONS) MAY BE AGGRAVATED BY EXPOSURE TO THIS MATERIAL.

INGESTION (SWALLOWING):

INGESTION OF EXCESSIVE QUANTITIES MAY CAUSE: IRRITATION OF THE DIGESTIVE TRACT. SIGNS OF NERVOUS SYSTEM DEPRESSION (E.G., DROWSINESS, DIZZINESS, LOSS OF COORDINATION, AND FATIGUE). ASPIRATION HAZARD - THIS MATERIAL CAN ENTER LUNGS DURING SWALLOWING OR VOMITING AND CAUSE LUNG INFLAMMATION AND DAMAGE.

COMMENTS:

THIS SUBSTANCE HAS NOT BEEN IDENTIFIED AS A CARCINOGEN OR PROBABLE CARCINOGEN BY NTP, IARC OR OSHA.
REPORTS HAVE ASSOCIATED REPEATED AND PROLONGED OCCUPATIONAL OVEREXPOSURE TO SOLVENTS WITH PERMANENT BRAIN AND NERVOUS SYSTEM DAMAGE (SOMETIMES REFERRED TO AS SOLVENT OR PAINTERS' SYNDROME). INTENTIONAL MISUSE BY DELIBERATELY CONCENTRATING AND INHALING THIS PRODUCT MAY BE HARMFUL OR FATAL.

SECTION IV - SPECIAL PROTECTION INFORMATION

VENTILATION:

IF CURRENT VENTILATION PRACTICES ARE NOT ADEQUATE FOR MINIMIZING EXPOSURES, ADDITIONAL VENTILATION OR EXHAUST SYSTEMS MAY BE REQUIRED. WHERE EXPLOSIVE MIXTURES MAY BE PRESENT, SYSTEMS SAFE FOR SUCH LOCATIONS SHOULD BE USED.

SECTION IV - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

THE USE OF RESPIRATORY PROTECTION IS ADVISED WHEN CONCENTRATIONS EXCEED THE ESTABLISHED EXPOSURE LIMITS (SEE SECTION I). DEPENDING ON THE AIRBORNE CONCENTRATION, USE A RESPIRATOR OR GAS MASK WITH APPROPRIATE CARTRIDGES AND CANNISTERS (NIOSH APPROVED, IF AVAILABLE) OR SUPPLIED AIR EQUIPMENT.

PROTECTIVE GLOVES:

THE USE OF GLOVES IMPERMEABLE TO THE SPECIFIC MATERIAL HANDLED IS ADVISED TO PREVENT SKIN CONTACT AND POSSIBLE IRRITATION.

EYE PROTECTION:

APPROVED EYE PROTECTION TO SAFEGUARD AGAINST POTENTIAL EYE CONTACT, IRRITATION OR INJURY IS RECOMMENDED.

OTHER PROTECTIVE EQUIPMENT:

IT IS SUGGESTED THAT A SOURCE OF CLEAN WATER BE AVAILABLE IN WORK AREA FOR FLUSHING EYES AND SKIN. IMPERVIOUS CLOTHING SHOULD BE WORN AS NEEDED.

SECTION V - REACTIVITY DATA

STABILITY:

STABLE

INCOMPATIBILITY (MATERIALS TO AVOID):

THIS PRODUCT IS INCOMPATIBLE WITH STRONG ACIDS OR BASES, OXIDIZING AGENTS AND SELECTED AMINES.

HAZARDOUS DECOMPOSITION PRODUCTS:

THERMAL DECOMPOSITION IN THE PRESENCE OF AIR MAY YIELD CARBON MONOXIDE AND/OR CARBON DIOXIDE.

HAZARDOUS POLYMERIZATION:

WILL NOT OCCUR

SECTION VI - SPILL OR LEAK PROCEDURES

HIGHWAY OR RAILWAY SPILLS
Call CHEMTREC (800) 424-9300 Cont. U.S.
(Collect) (202) 483-7616 from Alaska & Hawaii

PRECAUTIONS IN CASE OF RELEASE OR SPILL:

STAY UPWIND AND AWAY FROM SPILL. KEEP ALL SOURCES OF IGNITION AND HOT METAL SURFACES AWAY FROM SPILL. IF SPILL IS INDOORS, VENTILATE AREA OF SPILL. A UNIVERSAL TYPE FOAM MAY BE USED TO SUPPRESS VAPORS. KEEP OUT OF DRAINS, SEWERS OR WATERWAYS. USE SAND OR OTHER INERT MATERIAL TO DAM AND CONTAIN SPILL. DO NOT FLUSH AREA WITH WATER. FOR SMALL SPILLS, DO NOT FLUSH WITH WATER; USE ABSORBANT PADS. CALL SPILL RESPONSE TEAM IF LARGE SPILL. NOTIFY APPROPRIATE STATE/LOCAL AGENCIES.

WASTE DISPOSAL METHOD:

DISPOSE OF PRODUCT IN ACCORDANCE WITH LOCAL, COUNTY, STATE, AND FEDERAL REGULATIONS.

SECTION IV - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION:

THE USE OF RESPIRATORY PROTECTION IS ADVISED WHEN CONCENTRATIONS EXCEED THE ESTABLISHED EXPOSURE LIMITS (SEE SECTION I). DEPENDING ON THE AIRBORNE CONCENTRATION, USE A RESPIRATOR OR GAS MASK WITH APPROPRIATE CARTRIDGES AND CANNISTERS (NIOSH APPROVED, IF AVAILABLE) OR SUPPLIED AIR EQUIPMENT.

PROTECTIVE GLOVES:

THE USE OF GLOVES IMPERMEABLE TO THE SPECIFIC MATERIAL HANDLED IS ADVISED TO PREVENT SKIN CONTACT AND POSSIBLE IRRITATION.

EYE PROTECTION:

APPROVED EYE PROTECTION TO SAFEGUARD AGAINST POTENTIAL EYE CONTACT, IRRITATION OR INJURY IS RECOMMENDED.

OTHER PROTECTIVE EQUIPMENT:

IT IS SUGGESTED THAT A SOURCE OF CLEAN WATER BE AVAILABLE IN WORK AREA FOR FLUSHING EYES AND SKIN. IMPERVIOUS CLOTHING SHOULD BE WORN AS NEEDED.

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WASTE DISPOSAL METHOD:

DISPOSE OF PRODUCT IN ACCORDANCE WITH LOCAL, COUNTY, STATE, AND FEDERAL REGULATIONS.

SECTION XI - DOCUMENTARY INFORMATION

ISSUE DATE: 6/16/87 PRODUCT CODE NO. 11103

PREV. DATE: 7/23/86 PREV. PROD. CODE NO. 1103

MSDS NO: 6289 PREV. MSDS NO: 856

DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information in this document is believed to be correct as of the date issued. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THIS INFORMATION, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. This information and product are furnished on the condition that the person receiving them shall make his own determination as to the suitability of the product for his particular purpose and on the condition that he assume the risk of his use thereof.

Woodtreat® MB

Ready-To-Use Water Repellent Wood Preservative

NOTE: THIS SECTION IS A FUTURE SUPPLEMENT REFERENCE ONLY. THE "MB" = MINERAL BASE.

T.G. YONASH

Product Data

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FOR INDUSTRIAL USE ONLY

Koppers Company, Inc.
Protection Products Dept.
5137 Southwest Avenue
St. Louis, MO 63110-3497
314-772-2200

General:

WOODTREAT® MB RTU is a water repellent wood preservative. This solution has been specially formulated for the treatment of millwork prior to factory or field priming. It is also effective on particleboard, plywood, and other dry wood products requiring protection.

Product Characteristics:

Description: Clear liquid with mild petroleum solvent odor.

Use: WOODTREAT® MB is used for the treatment of sash and other millwork to meet the Seal of Approval program of the NWWDA for a preservative water repellent (IS-4). It is also useful for the treatment of other dry wood products where the benefits of a preservative solution are desired that will help control fungus growths which cause rot, mold and stain. It contains water repellents to aid in the control of shrinking, swelling, end checking, grain raising and warping. WOODTREAT® MB may be applied by the vacuum, immersion, brush or flooding methods. If bundles or skid treating is the applied method, the immersion time is 3 minutes. If individual units are dipped the immersion time is 15 seconds. For other open tank treatments, complete immersion of the wood in the solution is generally recommended for five minutes per inch of thickness.

Paintability: Woodtreat® MB has been specially formulated for maximum compatibility with paint primer and finish coatings applied at the factory. The mineral spirits carrier may be "trapped" when sash parts are stacked or bundled too tightly and dip treated; doors or plywood flat stacked is another problem. However, where there is fresh air circulation to volatilize the light solvent from the wood surfaces, Woodtreat® MB open tank treated millwork, lumber or plywood can usually be finished within 24-60 hours after treatment. Periodic analysis of the treating solution may indicate an overconcentration of preservative which can lead to finishibility problems. This condition can be corrected by adding the proper amount of mineral spirits (360°F end point) to the tank.

Coverage: 5 to 10 gallons per thousand board feet for open tank treatment and 200 square feet per gallon for brush application.

Woodtreat® MB Ready-to-use
EPA Reg. No. 453-298
EPA Est. No. 453-MO-1

Active Ingredients:

[redacted] ..... [redacted]
Inert Ingredients: 99.50%
Total 100.00%

Packaging: 5 gal. pails, 55 gallon drums, bulk.

Physical Properties:

Boiling Range ..... 313°-354°F
% Volatile by Volume ..... 99.0 %
Specific Gravity 0.786%
Vapor Density ..... 4.7 %
Freezing Point ..... less than 0°F
Vapor Pressure ... Mineral Spirits 2mm
Evaporation Rate .... slower than ether
Solubility in water ..... negligible
Appearance and odor.....
Clear liquid; petroleum odor
Flash point..... 104°F Tag Closed Cup

FOR ADDITIONAL INFORMATION ON THE FOLLOWING SUBJECTS REFER TO THE MATERIAL SAFETY DATA SHEET ON WOODTREAT® MB READY-TO-USE.

Storage:

Combustible liquid by DOT definition: DO NOT STORE, USE, POUR OR SPILL NEAR HEAT OR OPEN FLAME. Store in closed, properly labeled containers in a cool place. See OSHA 1910.106 for storage compliance. Stable over normal range of storage temperatures (40°F to 90°F). KEEP OUT OF THE REACH OF CHILDREN. If static generating conditions exist, provide necessary grounding and bonding. Refer to label for specific storage instructions.

EXPLOSION AND FIRE HAZARD:

Use CO_2, dry chemical or foam as extinguishing media. Avoid spreading fire and liquid by water flooding. Closed liquid containers may build up pressure due to heat exposure; therefore, water may be used to cool containers. Wear complete fire service protective equipment, including NIOSH/MSHA approved self-contained breathing apparatus for firefighting.

Chemical Reactivity:

Carbon monoxide and carbon dioxide may be produced by thermal decomposition of this product. Hazardous polymerization will not occur.

Health Data:

Ventilation: Maintain vapor concentrations below the PEL limits. Use appropriate NIOSH/MSHA approved respirators to comply with OSHA 1910.134 if ventilation is inadequate.

PEL:

Mineral Spirits* 500ppm; 2900 mg/M³**

*Synonym-Stoddard Solvent
**ACGIH 85-86
TLV = 100 ppm;
525 mg/M³

Employee Exposure: Impervious gloves and chemical goggles should be worn. Eye baths and a safety shower should be accessible and adequate resistant protective clothing should be worn if clothing or skin contact is probable.

Over Exposure: May cause gastrointestinal disturbances if swallowed. DO NOT take internally! May cause skin irritation. May cause substantial but temporary eye injury. May cause nausea, dizziness or headache if inhaled

Emergency First Aid:

Eye Contact: Immediately flush with large amounts of water for 15 minutes. Seek medical aid.

Skin Contact: Wash thoroughly with soap and water. Remove contaminated clothing. If irritation persists, seek medical aid. Wash contaminated clothing before reuse.

Inhalation: Remove from exposure. If breathing has stopped or is difficult, administer artificial respiration or oxygen as indicated. Seek medical aid.

Ingestion: Immediately seek medical aid. Do not induce vomiting. Give 1 glass of milk or 1 to 2 oz. (30 to 60g.) of activated charcoal in water to victim as tolerated. DO NOT ATTEMPT TO GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

Environmental Aspects:

Spill or leak procedures: Stop leak if no risk involved. Stay upwind.

Small spills: Take up with sand or other noncombustible absorbent material. Flush area with water. Dike large spills for later disposal. Contain runoff from fire control and dilution water.

Waste disposal: This product is a USA EPA defined ignitable hazardous waste. Dispose of as an ignitable waste in accordance with local, state and federal regulations.

Hazard: This product is toxic to fish, wildlife and domestic animals. Do not apply directly to water. Do not contaminate water by cleaning of equipment or disposal of wastes. Treated sawdust and other wood wastes should not be used as mulch where they will come in contact with useful living plants. Care should be taken to prevent drip from contacting ornamental shrubs, trees, grass and other desirable vegetation.

FOR ADDITIONAL ENVIRONMENTAL AND SAFETY INFORMATION PLEASE REFER TO MATERIAL SAFETY DATA SHEET ON WOODTREAT® MB RTU.

KOPPERS
Protection Products

the information and recommendations set forth herein are believed to be accurate as of the date hereof. Koppers Company makes no warranty with respect to and disclaims all liability from reliance thereon.

KOPPERS

FOR INDUSTRIAL USE ONLY
DO NOT DILUTE

DIRECTIONS FOR USE

It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

This preservative is recognized as effective for above ground use, and not recommended for ground contact. WOODTREAT® MB is intended for use on new lumber, plywood, particleboard, waferboard, millwork and similar types of wood products.

This [illegible] solution has been developed for the protection of wood against fungus growths which cause rot and stain. It also contains water repellents to aid in the control of shrinking, swelling, end checking, grain raising and warping.

For best results, this product should be applied so as to effect maximum penetration into the wood and heavy absorption especially at joints and wherever end grain exists. A 3-minute immersion period is recommend for millwork. For other open tank treatments complete immersion of the wood in the solution is generally recommended for five minutes per inch of thickness. For the control of dimensional changes, shrinkage and swelling, the treatment of the end grain is most important since the moisture pick-up there is a hundred to a thousand times greater than at the flat or edge grain surface for many species of wood.

Where open tank treating is impractical, two heavy brush applications of this product should be applied, cutting out and removing all unsound wood two feet beyond any visible evidence of decay. All wood should be normally dry and the framing or cutting completed before application of this product.

ESTIMATED COVERAGE 5 to 10 gallons per thousand board feet for open tank treatment. 200 square feet per gallon for brush application.

STORAGE AND DISPOSAL

STORAGE: Store in a closed, properly labelled container in a cool place. If static generating conditions exist, provide necessary grounding and bonding. Keep containers closed when not in use.

PESTICIDE DISPOSAL: Do not contaminate water, food or feed by storage or disposal. Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL: Triple rinse (or equivalent), then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by other procedures approved by state and local [illegible]

WOODTREAT® MB

READY TO USE

WATER REPELLENT

WOOD PRESERVATIVE

Preserves Wood - Stops Rot and Deacy - Prevents Fungi and Molds of Wood
Clear - Paintable

KEEP OUT OF REACH OF CHILDREN.

CAUTION

See side panel for additional precautionary statements.

READ "LIMIT OF WARRANTY AND LIABILITY" BEFORE BUYING OR USING. IF SUCH TERMS ARE NOT ACCEPTABLE, RETURN AT ONCE UNOPENED.
EPA Reg. No. 453-298
EPA Est. 453-MO-1

ACTIVE INGREDIENT	
3-Iodo-2-Propynyl butyl carbamate	0.50%
INERT INGREDIENTS ...	99.50%
TOTAL	100.00%

Koppers Company, Inc.
Protection Products Dept.
5137 Southwest Avenue, St. Louis, Missouri 63110
314/772-2200

NET CONTENTS U.S. GALLONS (Liters)

PRECAUTIONARY STATEMENTS
HAZARDS TO HUMANS AND DOMESTI ANIMALS

CAUTION: CONTAINS PETROLEUM DISTILLATES. Use with adequate ventilation. Avoid prolonged breathing of vapor. Ma fatal if swallowed. Causes substantial but temporary eye injury. D gel in eyes, on skin or on clothing. Wear goggles and rubber g when handling, and rubber gloves and protective clothing when h ing freshly treated lumber. Wash thoroughly with soap and water handling. Remove contaminated clothing and wash before re-use.

Vapors may cause injury if adequate ventilation is not insured. D use this product indoors or in any other confined areas where va may concentrate and cause injury to plant or animal life.

STATEMENT OF PRACTICAL TREATME

IF ON SKIN: Wash with plenty of soap and water. Get medical a tion if irritation persists.

IF SWALLOWED: Do not induce vomiting. Promptly drink a quantity of milk, egg whites or gelatin solution, if these are not avail drink large quantities of water. Avoid alcohol. Get medical attento mediately.

IF INHALED: Remove victim to fresh air.

IF IN EYES: Flush with plenty of water. Get medical attention

ENVIRONMENTAL HAZARDS

This product is toxic to fish. Do not apply directly to water. Do not taminate water by cleaning of equipment or disposal of wastes. T sawdust and other wood wastes should not be used as mulch w they will come in contact with useful living plants. Care should be to prevent drip from contacting ornamental shrubs, trees, grass other desirable vegetation.

PHYSICAL AND CHEMICAL HAZARD

COMBUSTIBLE: Do not use, pour, or spill near heat or open flar case of fire, use water, fog, foam, carbon dioxide or dry chemical closed containers with water.

LIMIT OF WARRANTY AND LIABILITY

This company warrants that this material conforms to the chemical descrip the label and is reasonably fit for the purposes referred to in the directio use. This product is sold subject to the understanding that the buyer assu risks of use or handling of this material not in strict accordance with the tions given herewith which are beyond the control of the seller, such as fo ple incompatibility with other products and the manner of the use of app NO OTHER EXPRESSED OR IMPLIED WARRANTY OF FITNESS OR MER TABILITY IS MADE. The exclusive remedy of the buyer and the limit of lia this company or any other seller for any and all losses, injuries or da resulting from the use or handling of this product shall be the purchase pr by the user or buyer for the quantity of the product involved. The buyer and user are deemed to have accepted the terms of this [illegible] unless [illegible] by any verbal or written agreement.

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II. B) CO2 System

The Dip System is equipped with a CO2 extinguishment unit that can be actuated in three different ways. Listed below is operational information on the CO2 system.

* carbon dioxide is a colorless, odorless, electrically non-conductive gas. Extinguishment of the fire leaves no water, foam or powder residue behind to damage equipment.

* BEFORE ENTERING DIP TANK BE SURE TO:
  1) notify supervisor or have fellow worker assist.
  2) block doors in open position
  3) turn control panel selector switch to off position and lock out
  4) remove actuators from CO2 tanks

* there are 3 CO2 tanks that will set off one of three ways:
  a) Automatically (by means of temperature detection)
  b) Pulling the levers on the CO2 tanks
  c) Pulling the fire pull station located next to door of new bldg.

* When the CO2 System has been actuated a signal will be sent to the control cabinet, the damper closes on the fans, opens the dump valve, and sounds the alarm. The control cabinet then shuts down the system and closes the doors. (discharge of CO2 will occur approx. 30 sec. after actuation)

* Trouble light on CO2 control panel indicates an abnormal condition which can mean a wire is broken, low battery, circuit problem, and etc. If problem can't be corrected by maintenance promptly contact the installer:

Horgan Sales & Service Inc.
901 Clark Street
St. Point, WI 54481
(715) 344-0727

Note: Additional information can be found on the next 4 pages.

ANSUL AUTOPULSE 1000 CONTROL SYSTEM OPERATION

NORMAL — IN THE NORMAL STAND-BY CONDITION ALL YELLOW AND RED INDICATORS WILL BE OFF. ONLY THE **GREEN** "ON" INDICATOR WILL BE LIT.

TROUBLE — ANY SYSTEM TROUBLE WILL BE ANNUNCIATED BY A **YELLOW** "TROUBLE" INDICATOR AT THE FRONT PANEL. A LOCAL AUDIBLE BUZZER WITHIN THE CONTROL SYSTEM WILL SOUND.

ALARM — AN INITIATING CIRCUIT (ZONE) ALARM WILL BE INDIVIDUALLY ANNUNCIATED BY A **RED** INDICATOR AT THE FRONT PANEL.

RELEASE — ACTIVATION OF RELEASE CIRCUIT WILL BE ANNUNCIATED BY A **RED** SYSTEM FIRED INDICATOR AT THE FRONT PANEL.

RESET — TO RESET THE SYSTEM, UNLOCK, LIFT COVER UP AND OUT. MOMENTARILY OPERATE (PUSH UP) THE SYSTEM RESET SWITCH.

ALARM SILENCE — TO SILENCE THE ALARM CIRCUIT, UNLOCK AND LIFT OUT COVER. MOMENTARILY OPERATE THE ALARM SILENCE SWITCH (PUSH DOWN).

LOCAL TROUBLE SILENCE — TO SILENCE THE LOCAL AUDIBLE TROUBLE BUZZER FOLLOW SAME DIRECTIONS AS ALARM SILENCE.

THESE INSTRUCTIONS SHOULD BE FRAMED AND PLACED ADJACENT TO THE CONTROL SYSTEM FOR READY REFERENCE.

IN THE EVENT OF TROUBLE, CONTACT:

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WARNING

TANK ENCLOSURE PROTECTED WITH CO2 FIRE SUPPRESSION SYSTEM. DO NOT ENTER ENCLOSURE UNLESS THE FOLLOWING STEPS ARE TAKEN.

* NOTIFY SUPERVISER OR HAVE FELLOW WORKER ASSIST. (DO NOT ENTER ALONE)
* BLOCK DOOR IN OPEN POSITION
* TURN CONTROL PANEL SELECTOR SWITCH TO OFF POSITION AND LOCK OUT.
* REMOVE ACTUATORS FROM CO2 TANKS

(FOLLOW INSTRUCTIONS POSTED BY CO2 TANKS)

FOLLOW SAFTY SHEET RECOMMENDATIONS WHEN WORKING WITH OR AROUND WOOD PRESERVATIVE

THE DIP TANK MAY HAVE TO BE DRAINED FOR SOME MAINTENANCE PROCEDURES.

DISCONNECTING CO2 SYSTEM

* USING THE 2 1/4" OPEN END WRENCH PROVIDED CAREFULLY REMOVE CYLINDER ACTUATORS FROM BOTH TANKS.

* REST DISCONNECTED ACTUATOR HEADS ON TOP OF CYLINDERS.

RECONNECTING CO2 SYSTEM

* CHECK SYSTEM PANEL FOR ALARM OR TROUBLE SIGNAL. IF A SIGNAL EXISTS TAKE CORRECTIVE ACTION TO BRING SYSTEM BACK TO READY CONDITION.

* BEFORE REPLACING ACTUATOR HEADS VARIFY THAT NOBODY IS IN THE DIP TANK ENCLOSURE.

* PRESS IN ACTUATOR PINS TO INSURE THAT THEY ARE IN SET BACK POSITION.

* SLOWLY THREAD ACTUATOR HEADS ONTO CYLINDERS LISTENING FOR CO2 RELEASE. IF YOU HEAR A PRESSURE RELEASE OF CO2 REMOVE ACTUATOR HEADS AND RECHECK PINS.

* TIGHTEN ACTUATOR HEADS WITH 2 1/4" OPEN END WRENCH.

II. C) Working in the Tank Enclosure

*** Conditions that must be met before entering into the tank:

1. Notify supervisor or have fellow worker assist
2. Block doors opened with pins in to prevent doors from closing
3. System locked out
4. CO_2 cylinder actuators removed from <u>both</u> tanks

** Follow safety sheet recommendations when working with or around wood preservative.

* Reasons for entering the dip tank are:
  - to get loose stock
  - to clean
  - for maintenance
  - to inspect

II. D) Lockout Procedures

* To shut the system down turn key to the off position, remove it, close the plastic cover, and place lock in the hole.

  Note: Everything will be shut down except for the fans which the operator has the option to turn on. This can be done by pulling the purge button.

* Lockout fans at the Motor Starter Cabinet.

II. E) Spill Control Procedure

On page 33 thru 42 is the Spill Prevention Control & Counter Measure Action Plan. It contains; the Coordinators to contact, spill control and counter measure action plan, agencies to notify, safety precautions, and first aid procedure.

SNE ENTERPRISES LIMITED PARTNERSHIP

SITE SPECIFIC

SPILL PREVENTION CONTROL & COUNTERMEASURE

ACTION PLAN
(SPCC-AC)

FOR:

MINERAL BASED WOOD PRESERVATIVE

BATCH DIP OPERATIONS

SNE Enterprises Limited Partnership
Wausau Operations
910 Cleveland Avenue
Wausau, Wisconsin

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I. INTRODUCTION:

The primary objective of the SNE Site Specific Spill Prevention Control and Countermeasure Action Plan for the Mineral Based Wood Preservative Batch Dip Operations is provide the SNE employee a set of guidelines to follow in the event of a spill or release of Mineral Based Wood Preservative. These guidelines when followed will reduce the health and environmental risks associated with a spill or release of this material.

II. EMERGENCY COORDINATOR

The emergency coordinator for the Mineral Based Wood Preservative Batch Dip Operation will be responsible for coordinating all emergency response activities in the event of a spill. The emergency coordinator is to be familiar with all contingency measures needed to effectively control, contain and dispose of the released material in a safe method that is compatible with all EPA, DNR and OSHA regulations. The emergency coordinator will have the authority to commit additional resources needed to properly carry out the contingency plan.

The following SNE personnel are qualified to act as emergency coordinators in the event of a mineral based wood preservative spill.

PRIMARY COORDINATOR

Name: Pat Wierzba
Title: Project '88 Coordinator
Home Address: 2404 Jonquil Lane
Wausau, WI 54401
Office Phone: (715) 845-4494, Ext. 835
Home Phone: (715) 359-6443

ALTERNATE COORDINATORS

Name: Terry Yonash
Title: Corporate Safety Director
Home Address: 1003 McIntosh Street
Wausau, WI 54401
Office Phone: (715) 845-1161, Ext. 567
Home Phone: (715) 842-5227

Name: Bob Bentz
Title: Maintenance Department Supervisor
Home Address: 514 Lincoln Street
Wausau, WI 54401
Office Phone: (715) 845-4494, Ext. 805
Home Phone: (715) 842-1439

Name: George Apfel
Title: Security Supervisor
Home Address: 24 Wilson Avenue
Rothschild, WI
Office Phone: (715) 845-4494, Ext. 821 or 427
Home Phone: (715) 359-0467

III. SITE SPECIFIC SPILL PREVENTION CONTROL AND COUNTERMEASURE ACTION PLAN FOR THE RELEASE OF MINERAL BASED WOOD PRESERVATIVE

The following spill control and containment procedures apply to any release of Mineral Based Wood Preservative products at the SNE Facility in Wausau, Wisconsin.

1. Spill Emergency

Spills can occur due to leaks in drums, or other bulk containment vessels - during shipment, storage or transfer operations.

(a) When a spill occurs immediately:

* Notify the Supervisor
* Notify the Emergency Coordinator
* Remove or extinguish all sources of ignition (flames, electrical equipment, sources of heat or sparks)
* Evacuate all non-essential personnel from the immediate area
* Attempt to minimize the leak by stopping the source of the leak and controlling the spread of material using the spill kit
* Administer first aid if necessary
* Secure the spill site from entry by unauthorized non-essential personnel by roping off or posting warning signs around the spill area
* Ventilate area of spill

(b) Spilled materials must be contained at the original site of the spill using the spill kit materials.

* Only those people trained in spill control procedures should don appropriate protective equipment.

* Prevent further spill or leakage by repositioning container.

* Contain spill with sawdust or oil-dry material to prevent further spread of spilled material.

* Prevent the Mineral Based Wood Preservative from entering any storm or sanitary sewer, drains or manholes.

* Determine exact amount of material involved in the spill.

* Under no circumstances should any spills be washed down with water hoses.

(c) Adequate cleanup of spills is essential in order to remove any health or environmental hazards. When cleaning up spills, it is advisable not to work alone and to make sure the area is properly ventilated and that appropriate protective clothing and equipment is used by all personnel.

* Liquid spills should be cleaned up by placing an appropriate absorbent material over the spill; and

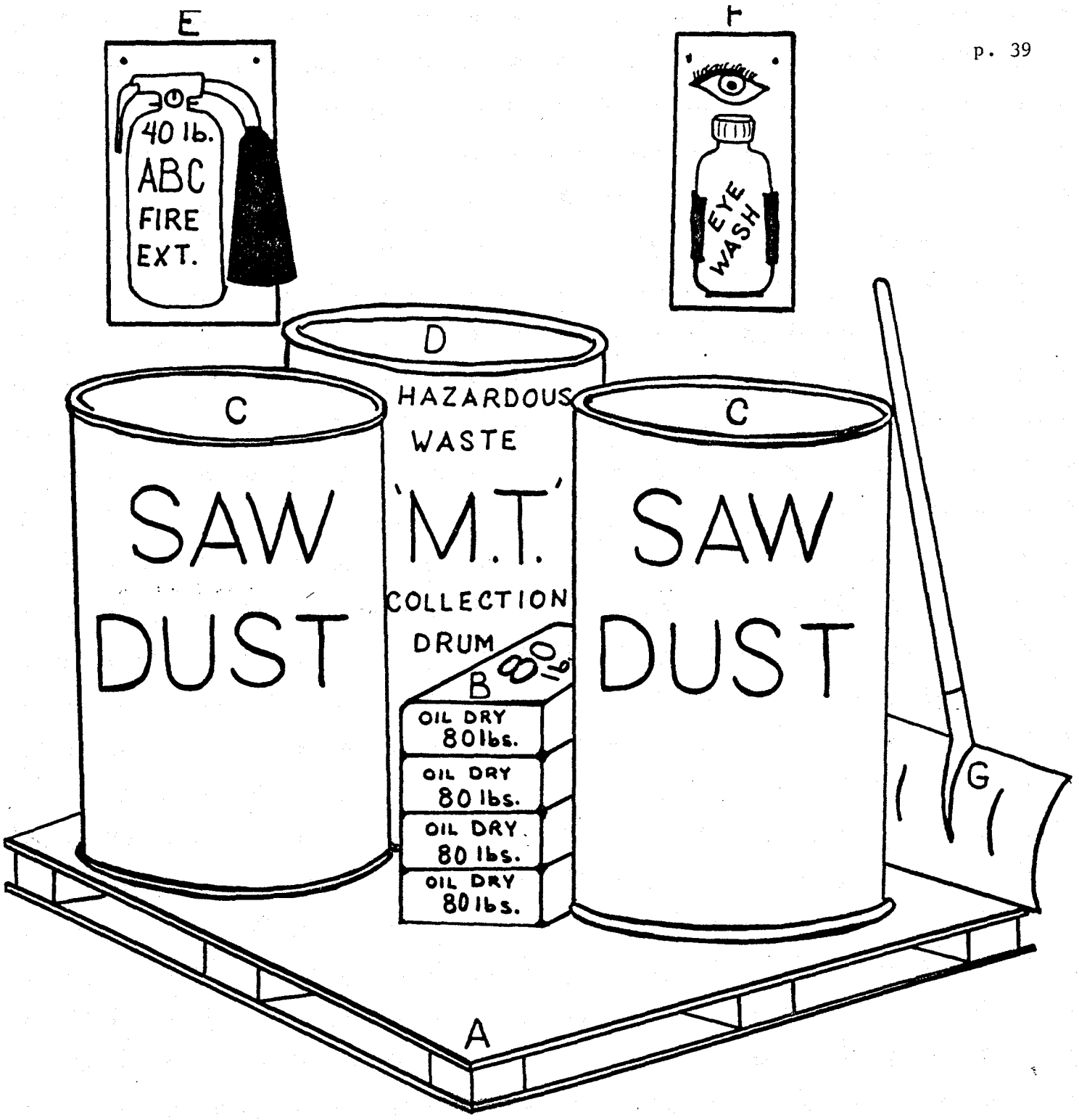
* Collect all spent absorbent material and place into properly labeled 55-gallon drums.

(d) All contaminated materials, including cloth, soil, absorbent material etc.. shall be placed in properly labeled 55-gallon drums and be disposed of properly.

(e) After the affected areas have been properly decontaminated and cleaned, the following actions should be taken to ensure that decontamination has been adequate:

* Where appropriate, analyze representative samples of affected environmental areas (soil, water, etc.); and

* Investigate the cause of the incident and any contributing events.



DESCRIPTION OF SPILL KIT

A FOURWAY ACCESSABLE PALLET.

B FOUR (4) 80 POUND BAGS OF OIL-DRY

C TWO (2) 55 GALLON DRUMS FILLED WITH SAWDUST

D ONE (1) EMPTY "M.T." 55 GALLON DRUM FOR COLLECTION OF HAZ. WASTE

E ONE (1) 40 POUND A-B-C ALL PURPOSE DRY-CHEM. FIRE EXTINGUISHER

F ONE (1) EMERGENCY EYE WASH STATION

G ONE (1) SCOOP SHOVEL

V. AGENCIES TO BE NOTIFIED BY THE EMERGENCY COORDINATOR

1) Wausau Fire Department
606 East Thomas Street
Wausau, WI 54401
Telephone Number: (715) 845-1111

2) Wausau Police Department
610 5th Street
Wausau, WI 54401
Telephone Number: (715) 842-2136
Emergency: (715) 842-2055

3) Marathon County Office of Emergency Government
Marathon County Courthouse
Wausau, WI 54401
Contact: Donald A. Kostuck
Telephone Number: (715) 847-5226
After Hours: (715) 359-6678

4) Marathon County Sheriff's Department
Marathon County Courthouse
Wausau, WI 54401
Telephone Number: (715) 845-8228

5) Wisconsin Department of Natural Resources
5301 Rib Mountain Drive
Wausau, WI 54401
Telephone Number: (715) 359-4522

6) Chemical Transportation Emergency Center (CHEMTREC)
Telephone Number: (800) 424-9300

The following information should be provided to all agencies if the emergency coordinator must call:

* Name of caller and call back number
* Name of company and address location
* Day, date and time of incident
* Name of material(s) involved in the spill and approximate quantities
* Extent of injuries
* Immediate health risk to humans and the environment outside the facility

VI. FIRE OR EXPLOSION EMERGENCY

In the event of a fire, immediately:

* Activate the Emergency Dump switch which will flush contents of dip tank into emergency storage tank located below the dip tank;

* Evacuate the immediate area and report to your supervisor so he/she can account for all of his/her employees;

* The vapors or gasses generated may be toxic;

* The area must be secured from entry by the supervisor by roping off the area;

* Contact the emergency coordinator or alternate emergency coordinator;

* Notify the fire department;

* Strictly adhere to the directions of the emergency coordinator;

* Advise the emergency response team or emergency coordinator whether or not any personnel are unaccounted for;

* In-house fire response team to only respond to small localized fires;

* In the event of an extensive fire the city fire department fire fighters would have the proper equipment including self contained breathing apparatus to safely control and extinguish the fire;

* Extensive fire only to be fought by the Wausau Fire Department; and

* Prevent fire fighting water, foam, etc. from entering sanitary or storm drains and manholes.

VII. SAFETY PRECAUTIONS

In the event of a fire, immediately evacuate the area. The vapors and gas that would be generated if the mineral based wood preservative caught fire may be toxic.

In the event of a spill or release of any flammable or combustible liquid, insure that no liquid comes in contact with skin. Contact with material may cause burns to the skin and eyes.

VIII. FIRST AID

If flammable or combustible materials such as mineral based wood preservative vapors, have been inhaled, immediately evacuate the personnel to a safe area to get fresh air. If breathing is difficult obtain oxygen. If not breathing artificial respiration should be administered.

If mineral based wood preservative comes into contact with skin or eyes, immediately flush skin or eyes with running water for 15 minutes. Speed in removing liquid from skin is of extreme importance. If clothing has been contaminated it should be immediately removed.

IX. FOLLOW UP ACTIONS

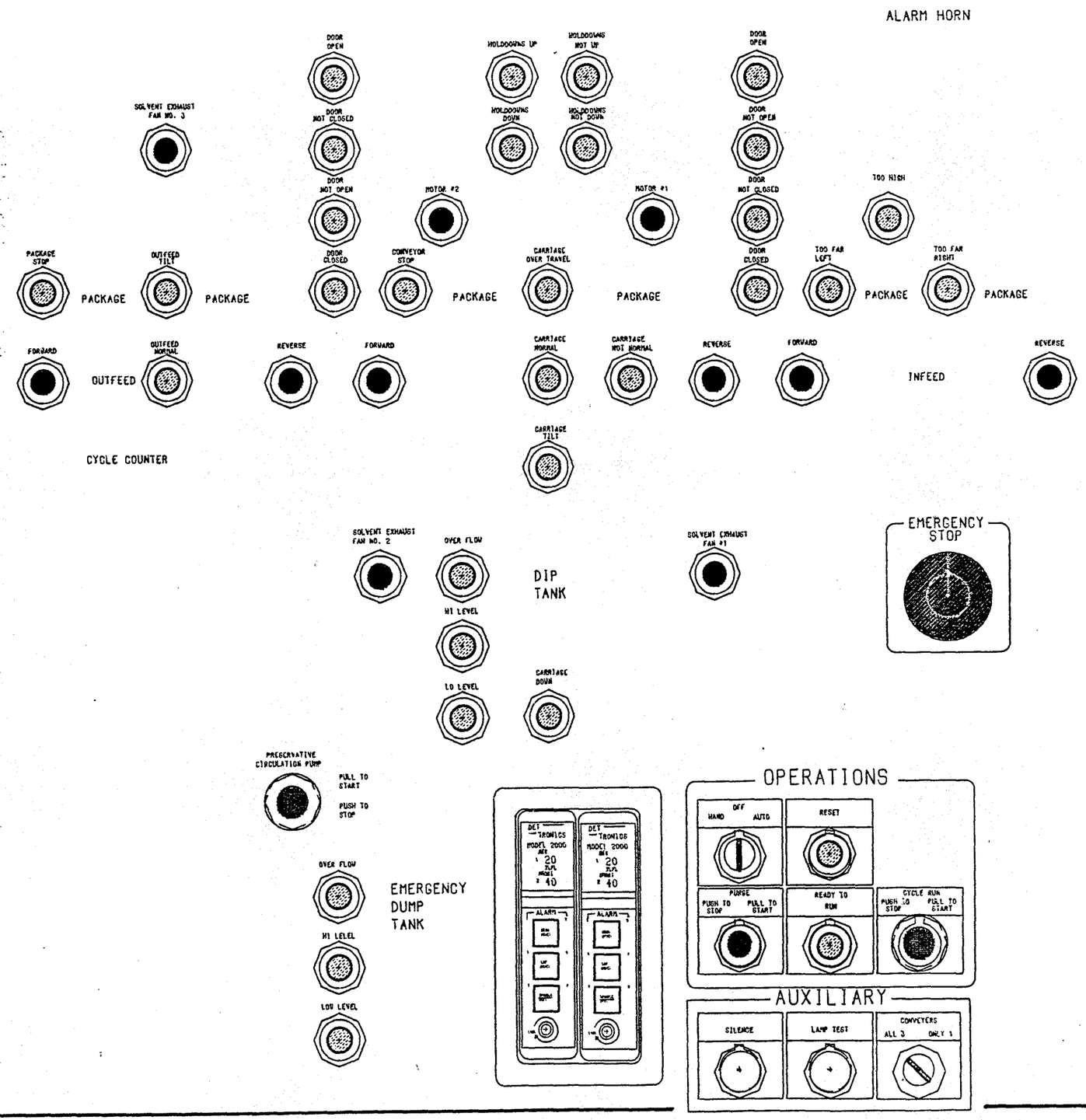
Following control and containment of the emergency, the emergency coordinator will arrange for collection and proper disposal of the waste. This will also include any contaminated soil, water, or absorption material.

The coordinator will check to make sure that all emergency equipment that was used will be properly cleaned and returned to full operating condition.

The coordinator and the plant manager will investigate the cause of the accident and take any necessary action to prevent it from occurring again.

Once the cause of the emergency has been eliminated, and the clean-up has reached the point where it will not harm human health or the environment, the EPA and the State would be notified, if necessary, before resuming operations of the affected process.

CONTROL PANEL



III. A) Control Panel

The control panel is made up of a number of switches and lights which control the Batch Dip System. The panel is relatively easy to operate because all the switches are located right at the control panel, making it easy to visualize everything taking place. On the previous page is a duplicate drawing of the control panel.

III. A. 1) Description of Controls

* For the column, Conditions To Operate, we are assuming In Hand Position.

CONTROL	FUNCTION	CONDITIONS TO OPERATE
	a) INFEED	
Infeed Reverse	Drives infeed conveyor in reverse	None
Infeed Forward	Drives infeed conveyor forward	Infeed door open, hold downs up, carriage normal, load detection beam not broke
Doors Open	Opens doors so one can move load in or out	Doors can be opened at any time except during the raising and lowering of carriage.
Doors Closed	Doors close to contain fumes and prevent dip from draining from end of tank.	None
	b) CARRIAGE	
Carriage Conveyor Reverse	Drives carriage conveyor in reverse	In hand position, infeed door open, hold downs up, carriage normal
Carriage Conveyor Forward	Drives carriage conveyor forward	Outfeed door open, hold downs up, carriage normal
Conveyor Tilt	Tilts carriage after load has been dipped (8 min.)	Hold downs up, doors closed

Carriage Not Normal	Carriage in tilt position	Doors closed, hold downs up
Carriage Normal	Carriage is in normal position and cycle finished or ready to operate.	Auto: Get a green ready light. Doors closed.
Carriage over Travel	Raises carriage conveyor higher than outfeed rollers.	* Only used by maintenance
* Care to be position	taken when lowering carriage back to normal	
Conveyor Stop	Stops conveyor when front load from infeed conveyor reaches back of carriage conveyor	Carriage in normal position, infeed door open
Motors 1 & 2	Moves the carriage up and down in the dip tank	Doors closed, hold downs down, carriage stopped. Pilot lights illuminated when motors operate
Hold downs down	Holds package to carriage conveyor	Carriage not tilted
Hold downs up	Hold downs up to allow movement of loads through system	Carriage in normal position

c) OUTFEED

Outfeed Reverse	Drives outfeed conveyor in reverse	Outfeed doors open, carriage normal, hold downs up, out feed conveyor normal
Outfeed Forward	Drives outfeed conveyor in forward	Can't go past limit switch on out feed conveyor or wil have a flashing blue light on the package stop
Outfeed Normal	Conveyor is in normal positon	Removal of any loads
Outfeed Tilt	Tilts conveyor for 6 min. for drainage of the solvent	None

Package Stop	Stops load on the out feed conveyor	Outfeed in normal position
Solvent Exhaust Fan No. 3	Back up fan for outfeed conveyor	

DIPTANK

Solvent Exhaust Fan No. 1	To maintain low LFL	When LFL exceeds 10%
Solvent Exhaust Fan No. 2	To maintain low LFL	Runs during system operation or when LFL exceeds 10%

Note: For Overflow, Hi level, and Low level refer to: III. C) Fluid level control on page 48.

Carriage Down	lowers carriage into dip	Carriage not tilted, hold downs down, doors closed, carriage conveyor stopped
Emergency Stop	Stops the cycle	Push to stop
Perserv. Circulation Pump	Pumps fluid from dump tank to dip tank	Fluid Level below 74".

e) EMERGENCY DUMP TANK

Note: For Over flow, Hi level, and Low level refer to: III. C) Fluid Level Control on page 48.

f) OPERATIONS

Key Selector Switch	Operator has the chose to turn to Hand, Off, or Auto	None
Reset	Resets system and shuts off the alarm	Correct problem

Purge	Run fans for 3 min. to purge air form tank enclosure	Automatic purge when system is first turned on. Fan can be run when key selector switch is locked out. See page 32 for additional information.
Ready to Run	Ready for operation	Previous cycle complete
Cycle Run	Stops or starts the cycle once selector switch is turned to off or hand. The cycle is lost and cycle needs to be completed in hand.	Auto: flashing green light

g) AUXILIARY

Silence	Silence alarm and leaves lights blinking	Push silence button, correct problem, and the reset
Lamp Test	Test the bulbs on the control panel	Push lamp test button
Conveyors	Able to run 1 or 3 conveyors	Hand: turn 1 or 3 Auto: all conveyors will run

i) Pilot Light Color Representation

1) amber: motors are running
2) red: there´s an emergency or faulty situation
3) white: designates the status of numerous system functions
4) blue: is an abnormal situation that needs to be corrected. In some cases system will continue to operate.
5) green: ready light; when flashing means previous cycle is complete.

III. B) Solvent Detection

The solvent detection unit is controlled by the Det Tronics Model 2000 controller. It automatically monitors for the Lower Flammability Limit (LFL) of solvent in the air. Below is the operation and settings for the unit along with the address of the sale representative and the company.

- Solvent fan #2 will run when the LFL is below 10%, more than 10% both fans will run, and if the LFL get above 40% the system will shut down leaving the fans still running until LFL percentage is below 40%.

  Note: In automatic both fans will run at first until the purge cycle is over, this is done in case the flammability limit is high when starting up.

Williams Control Equipment, Inc.
P.O. Box 378
West Bend, WI 53095
(414) 334-1144

DET TRONICS
Detector Electronics
Gas Detection Products
207 Java Drive
Sunnyvale, CA 94089
(408) 734-1221

III. C) Fluid Level Control

1) Top Tank: fed from Dump tank
   -overflow is 92"
   -high level is 74"
   -low level is 72"

   < 72" get a blinking blue light, alarm every 10 cycles
   72" to < 74" have a steady blue light
   74" get a solid white light
   > 92" get a red light and carriage will stop momentarily then return to normal position.

2) Bottom Tank: fed from outside supply tank
   -overflow is 12"
   -high level is 10"
   -low level is 4"

   < 4" get a blinking blue light
   4" to < 10" have a steady blue light
   10" get a solid white light
   > 12" get a red light

*** To Fill Basement Emergency Tank:**

Fill when Sash line is not in operation. Go to Sash line and

turn selector switch to Dip System. Turn on Fluid pump, once the Dump tank fluid level is 10" the pump will stop automatically. Switch the selector switch back to Sash Line and turn off sash line pump.

* **To Fill Batch Dip System Tank:**

Switch to Auto and it will automatically pump the fluid into the dip system tank, once it's up to 74" it will shut off.

3) Operations
   a) In Automatic - fluid from the basement will start being pumped automatically at 70" and quit at 74"
   b) In Hand - operator needs to start manually by pulling the preservative circulation pump, then it will stop by itself.

      * If pump is running it will continue to run until it gets a white light. (Hi level)

III. D) Start Up Procedure

* Turn on Hand: open your doors and turn on lights to check the inside of the tank out for damages.

* Check the fluid level

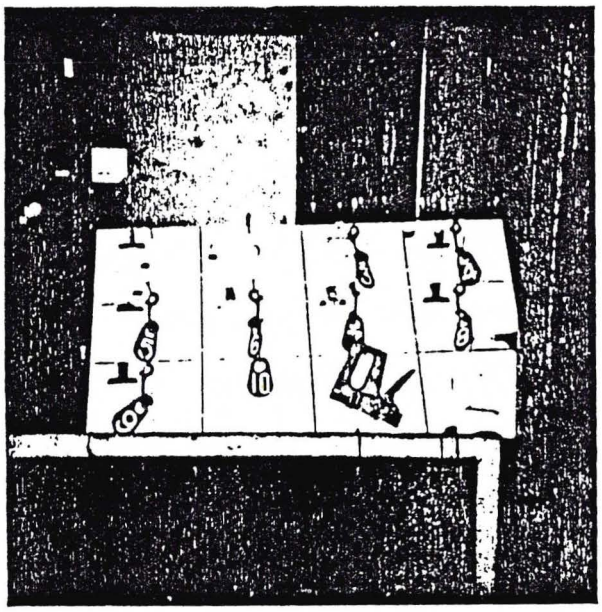
* In the morning push the system reset button because the air pressure may be low in the lines.

* Push Lamp test button to see and check if all pilot lights are illuminated.

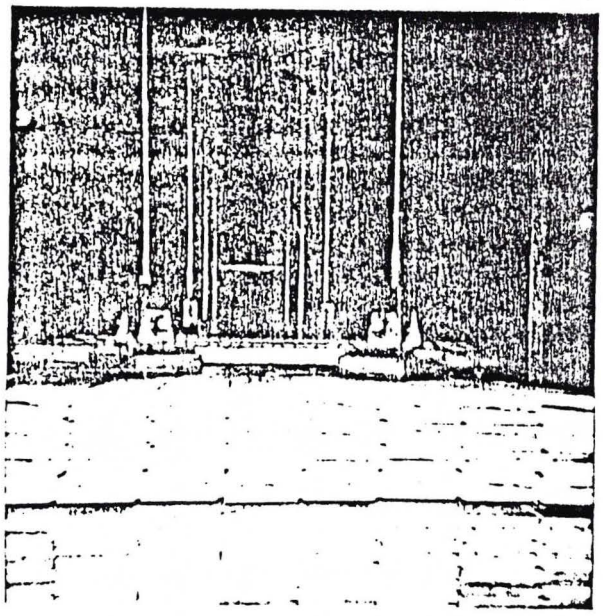
III. E) Loading Precautions

Below are listed some pointers on proper binding and placing of the loads along with pictures of proper procedures.

* place loads on the steel sleds with fork lift then put the chains over the load.
  -put two sets of chains and binders on a load that has two rows of work in process
* place wood underneath chains on top of load to prevent damage to package
* put cardboard on loads that are too short (inside of skids) or too low (27") so that sensor will be activated
* best if a short load is your leading load
* place first loads next to the yellow piece of angle iron on the infeed conveyor
* when placing loads on the infeed conveyor place the center of the load on the red dots



Here we have the tag board. The move tag gets removed from the load and placed on the board then the corresponding number tag will be hooked on the load. Note: If there's more than one move tag on a load then staple them together.



Notice the holddowns are FLAT on the load and centered on the load.

LOAD STACKING PROCEDURES FOR ITEMS DIPPED

(To Assist Dip Tank Operator)

* Clean off flat or pallet to be used. Loose tape, cardboard, paper, sawdust, etc. will end up at the bottom of our dip tank.

* Load should be centered on flat or pallet.

* Before loading parts on a stack truck, place 2 x 4's on the truck platform to allow lift truck forks to pick parts off the stack truck.

* When running short parts and placing more than one roll of parts on a flat, try to maintain the same height of parts in each roll if possible.

* Do not over fill flat. It is difficult to bind down parts for dip cycle if they extend above sides of flat.

* Maximum load width through dip system is 40". Do not use a pallet with side stacks wider than 40".

* The solvent based preservative effects vinyl parts. Therefore, whatever possible position saw kerf facing downward on a load to allow maximum drainage of preservative.

* Wood parts on a pallet bottom with side stakes have a tendency to shift. Stack parts flat wise or stick periodic layers to stabilize load.

YOUR HELP IN THIS MATTER IS APPRECIATED!

III. F) In Hand Operation

1) Start Up (Can't start if LFL is more than 40%)
2) Turn switch to Hand
3) Load packages on infeed conveyor
4) Open doors
5) Run loads in (conveyor selector switch on all 3)
6) Lower hold downs
7) Close doors
8) Lower carriage -- 3min. (tilt outfeed conveyor)
9) Return carriage to normal pos. and raise hold downs up.
10) Tilt carriage -- 6min.
11) Return carriage to normal position
12) Lower outfeed conveyor to remove loads
13) Remove loads from outfeed conveyor
14) End of cycle

III. G) Automatic Operating Sequence

1) Start up -- can't start if LFL is more than 40 %
2) Turn key to automatic (operator)
3) All three fans start running
4) Turn conveyor switch to all three. (operator)
5) Three minute Purge Cycle or until LFL is below 40 %. (then green light comes on)
6) Load packages on the infeed conveyor (operator)
7) Take loads off the outfeed conveyor (operator)
8) Pull cycle run switch to start the following: (Green light must be on. Operator stands at the control panel looking at the conveyor mirror making sure load is advancing properly.)
   a) Intermittent buzzer sounds to indicate start of cycle.
   b) Opens the doors

c) All three conveyors run
d) Doors close
e) Hold downs down
f) Outfeed table tilts
g) Motors on carriage
h) Carriage dips into the solvent (3 minutes)
i) Motors on carriage
j) Carriage goes back to its normal position
k) Hold downs go to the up position
l) Carriage tilts (6 minutes); # 1 motor runs to tilt carriage
m) Carriage returns to normal position
n) Green light comes on and indicates cycle is complete

9) End of shift
a) Turn key to off position
b) Turn light off inside of tank

IV. Maintenance Procedures

Maintenance is everyone's business, keeping equipment clean, lubing bearings, and having the work area clean can prevent break downs and accidents or injuries. Below are listed some responsibilities an operator and the maintenance department should follow through on.

A) Operators Responsibility
1) Daily:
- remove any wood parts floating inside the tank
- fill out daily forklift report
- check chains and binders; if broke, take to maintenance
- check tank for damages
- do a lump test on the control panel

B) Maintenance Responsibility
1) Weekly
- check tank for damages
- oil level in air system

2) Monthly
- check carriage leveling
- lube bearings
- calibrate solvent detections

3) Yearly
- drain and clean tank
- check entire system

V. Trouble Shooting

If you are having problems with the Batch Dip System, listed below are some trouble shooting ideas that may help you correct the problem.

* If carriage raises while in the lowered position, then there is too much fluid in the tank <u>or</u> not enough pressure in the air lines to keep the hold downs tight against the load.

* If hear strange noises when advancing the carriage, stop the carriage and look inside for pieces that might have fallen loose from the pallet.

* If alarm is going off for the doors, hold downs or carriage and they appear to be in the position they should be in. The problem could be they aren't finishing in the time allotted for the individual process. Just push the reset button and continue, but should notify Maintenance and have them adjust timing.

* If you are finding that loads are not holding together, use additional chains and binders.

RECEIVED WAUSAU 5/19/88

MAY 19 1988

WAULECO Inc.

1800 North Point Drive Stevens Point, WI 54481 346-6000

May 17, 1988

Mr. Mark Johnson
Hazardous Waste Specialist
Wisconsin Department of Natural Resources
5301 Rib Mountain Drive
Wausau, WI 54401

Re: WAULECO Quarterly Monitoring

Dear Mark:

Attached are the results for the second quarter groundwater monitoring at WAULECO. The second quarter testing was expanded in accordance with DNR requirements to include analysis for soluble arsenic, barium, and chromium. The results show that these metals are below detection limits.

If you have any questions regarding the results, please contact Ron O'Toole at Keystone.

Sincerely,

David Stephenson

DLS:ddk
Att.

xc: Mark Giesfeldt, ER-SW/3
Gary Edelstein, HW-SW/3

QUARTERLY GROUNDWATER MONITORING RESULTS
WAULECO, INC. SECOND QUARTER 1988

April 7, 1988

PARAMETER	W-2	W-8	W-9	W-10A	W-11	W-14	W-16	W-20	W-21	W-28	W-29	W-31	W-32	FB	TB
Chloride, mg/L	119	25.5	48.0	59.2	42.9	101	141	129	83.0	123	13.2	12.2	8.11	1.01	1.01
Conductivity, umhos/cm	632	238	440	426	396	642	737	790	550	693	247	283	229	9.00	4.00
Nitrate as N, mg/L	3.73	1.10	0.129	0.134	1.55	6.19	10.3	1.94	2.76	<0.020	2.80	<0.020	<0.020	<0.020	<0.020
Sulfate, mg/L	27.0	31.5	17.3	26.2	14.9	21.2	25.3	35.1	28.9	47.2	30.2	27.3	32.4	<10.0	<10.0
TOC, mg/L	3.68	4.70	7.30	10.9	4.04	2.93	4.06	7.00	2.93	8.47	5.46	8.33	9.31	<1.00	<1.00
TDS, mg/L	441	163	272	270	224	429	485	487	296	386	154	166	124	<1.00	<1.00
TSS, mg/L	1900	4620	812	1900	592	1540	6650	10900	1650	3300	1050	556	87.0	2.00	2.00
pH, units	6.4	6.6	6.5	6.3	6.6	6.2	6.3	6.7	6.5	6.5	6.9	6.6	6.4	8.2	8.1
Oil & Grease, mg/L	<6.00	7.38	<5.00	13.7	9.97	<6.00	<5.00	<6.00	<6.00	<5.00	<5.00	<5.00	<5.00	<5.00	<5.00
PCP, ug/L	10.0	<1.00	<1.00	12100	<1.00	<1.00	<1.00	1360	<1.00	6480	560	<1.00	<1.00	<1.00	<1.00
Arsenic (Sol.), ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0
Barium (Sol.), ug/L	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200	<200
Chromium (Sol.), ug/L	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0

Department of Natural Resources

4/27/88

SOLID WASTE MANAGEMENT FACILITY CONTACT FORM
Form 4400-106 6-86

NOTE: DO NOT USE THIS FORM WHEN DOCUMENTING INSPECTIONS AT HAZARDOUS WASTE AND SOLID WASTE FACILITIES. SEE BACK SIDE OF THIS FORM FOR MORE INFORMATION.

ATTN: WAULECO File (SNE Corp.)

License Number: —

☒ Residuals Management SW/3 — Mark Giesfeldt - ER-SW/3 ☒ District Gary Kulibert, NCD

EPA ID Number: WI-D006125835

☐ Hazardous Waste Management SW/3 Unit ☐ Environmental Enforcement EE/5

Facility ID Number: 737063800

☐ Systems Management SW/3 ☒ Greg Hill, WW/2

Facility/Company Name	Location (Address or ¼¼)	City, State, Zip Code
WAULECO Inc.	910 Cleveland Ave.	Wausau, WI 54401

Facility Type	District	County	Contact Method	Date (M M D D Y Y)	Time (24-Hour Clock)
Spill	NCD	Marathon	☒ Telephone ☐ In-Person	4/27/88	0905

Facility Representative Contacted	Title or Position of Representative	Telephone Number (include area code)
Ron O'Toole	Project Mgr. (Keystone)	(412) 733-9446

O'Toole called in response to call to Stephenson on 4/21/88 for status clarification. O'Toole said system is on, but pumping 8 gal/min and only using half of leach bed. Explained Department's concerns and that time has become an issue - now approaching original pilot evalution date. O'Toole said they are waiting on lab results before upscaling Fe/Mg↓ system, current system "maxed out" at this rate. As to preliminary system evaluation, he said there is a net reduction in nutrients now. There was a sharp drop initially, and they have been slowly increasing nutrient concentration over the last two weeks. O'Toole said monthly summaries of data would be sent to WAULECO, and he would relay our request for copies. As to status of system, they plan to increase pumpage to 16-20 gal (if data supports Fe/Mg↓ system), but will include the past operations in overall evalution of system. O'Toole estimated coring would take place in September.

Bill Andrae was identified as the local operator, and to contact him at SNE to look at system.

Check if additional sheets attached ☐

By Mark D. Thomson

xc: Gary Edelstein, HW-SW/3

Attachment: WAULECO Quarterly Monitoring, 4/21/88

5/22/88

CORRESPONDENCE/MEMORANDUM

STATE OF WISCONSIN

MAY 3 1988
N. C. Dist. Hqtrs.
RHINELANDER, WI

DATE: April 26, 1988 FILE REF: 4430

TO: Gary Kulibert - NCD

FROM: Mark F. Giesfeldt - SW/3 MFG

SUBJECT: Comments on the Letter to Mark Johnson dated March 8, 1988 from Keystone Environmental Resources, Inc., for the Wauleco Spill Site

The following comments were prepared by Gary Edelstein and Tom Karwoski and are based on reviewing the above-referenced letter and my January 21, 1988 memorandum to you. We received copies of the letter on March 14, 1988. Our comments are as follows and are numbered according to the January 21, 1988 memo:

1. The letter does not address this comment on system description and design, nor parts a. and b. of the comments, except for the seepage system sizing calculations provided. The calculations are acceptable.

2.a. Wauleco has not justified the assumption that no additional withdrawal is needed. The calculations presented used one monitoring well to measure drawdown for a pumping test; this is an absolute minimum for such a test and increases the dependence on assumptions and extrapolations (i.e., that the water table is flat across the courtyard; the zone of influence would be circular). We believe another 2 to 3 wells should be installed to increase accuracy and verify if the assumptions made are valid.

b. Wauleco has not justified their statements that the possibility of migration along utility trenches is minimal. The water main and storm sewer trenches could act as conduits; we understand they were not removed. We are not suggesting that the trenches would carry all contaminated recharge water away from the withdrawal wells. Some water could be carried further away from the site, while the withdrawal wells would still show a presence of nutrients from a portion of the recharge water that does eventually reach them.

We would appreciate a detailed explanation of the statement that "characteristics of the surrounding soils" preclude the installation of barriers in the utility trenches. The statement is unjustified.

2.c. & 3.
Expanded monitoring proposal - Wauleco has proposed to monitor existing wells W-5, W-30, W-3A, and W-3B for PCP, phenolics, NO_3-N and O-PO_4 bi-monthly. We understand that W-3A has been damaged and is no longer in use. In addition to the wells listed above, a new well which is directly

down gradient of the pilot study is essential. The recommended location for this well is shown on the attached drawing and is approximately 250 feet down gradient of the pilot study area. For the sampling program, we recommend bi-monthly sampling of purgeable aromatics, purgeable halogenated organics, PCP, total phenolics, NO_3-N and O-PO_4 in Wells W-5, W-30, W-3B, the new recommended well and the extraction wells. If the results of the total phenolics analysis become elevated, individual phenolic compounds analysis would then be required.

4. City of Wausau Water Utility personnel and/or district Department water supply staff should confirm the presence of the check valve and approve of this protection method.

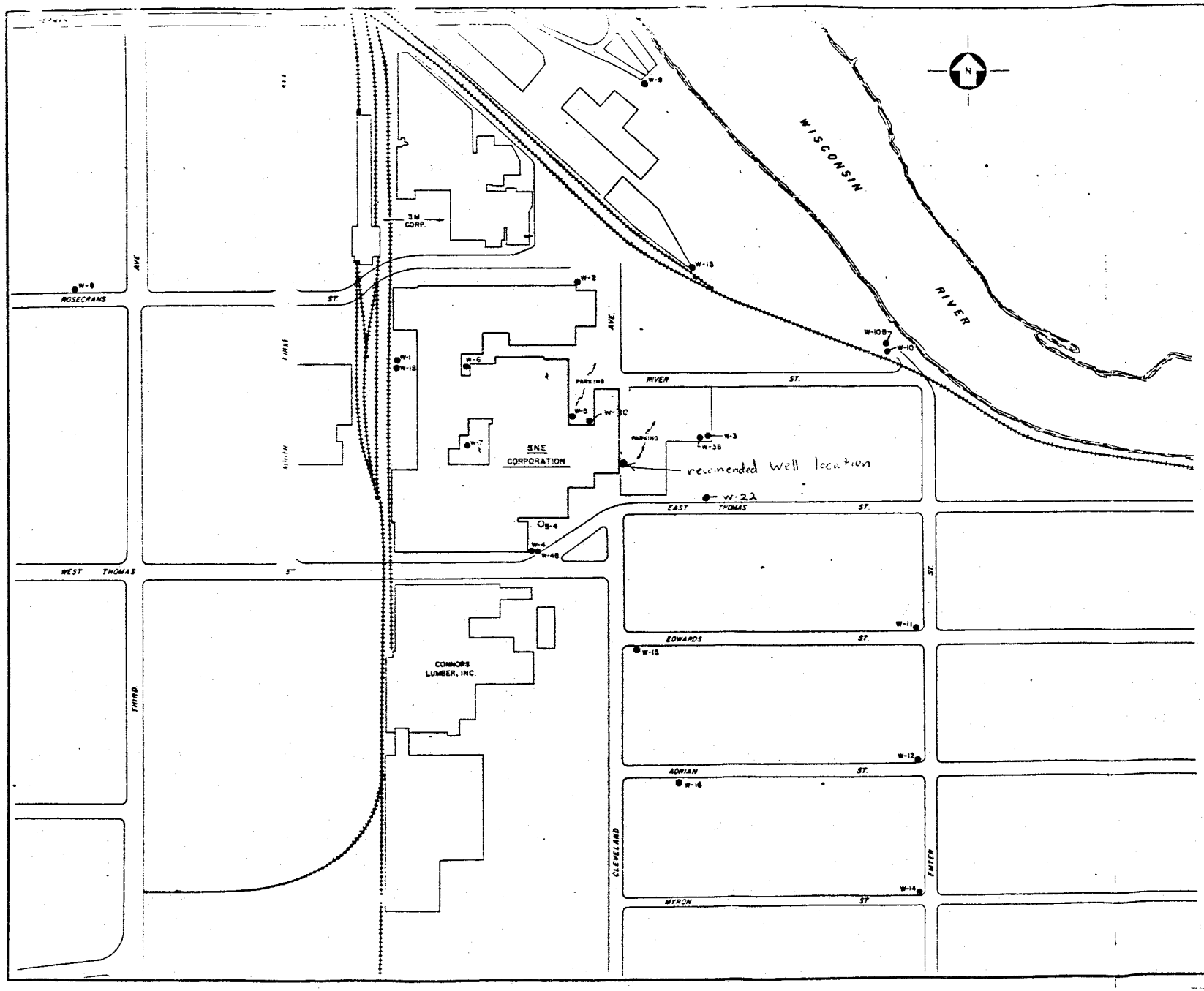
5. The letter does not address this comment on seepage system clogging.

6. The letter does not address this comment on a defoaming agent description.

Should you have any questions, please contact Gary Edelstein or Tom Karwoski.

MG:GE:cn/5488E

cc: Mark Johnson - Wausau Sub Area
Greg Hill - WW/2



GROUNDWATER SAMPLING PROGRAM

SNE CORPORATION

WAUSAU, WISCONSIN

eder associates consulting engin[redacted] p.c.

PROJECT
GROUNDWATER SAMPLING PROGRAM
SNE CORPORATION
WAUSAU, WISCONSIN

TITLE
LOCATION OF MONITOR WELLS

DRAWN BY
SCALE
DESIGNED BY
PROJECT NO
APPROVED BY
DWG NO
1

WAULECO Inc.

1800 North Point Drive Stevens Point, WI 54481 346-6000

April 21, 1988

RECEIVED
WAUSAU
APR 25 1988

Mr. Mark Johnson
Hazardous Waste Specialist
Wisconsin Department of Natural Resources
5301 Rib Mountain Drive
Wausau, WI 54401

Re: WAULECO Quarterly Monitoring

Dear Mark:

Attached are the results for the first quarter groundwater monitoring at WAULECO.

If you have any questions regarding the results, please contact Ron O'Toole at Keystone.

Sincerely,

David Stephenson

DLS:ddk
Att.

QUARTERLY GROUNDWATER MONITORING RESULTS
WAULECO, INC. FIRST QUARTER 1988

	March 2, 1988							March 3, 1988								
PARAMETER	W-2	W-8	W-9	W-31	W-32	FB	TB	W-10A	W-11	W-14	W-16	W-20	W-21	W-28	W-29	FB
Chloride, mg/L	125	25.7	51.4	11.3	7.19	<1.00	3.08	64.7	45.2	128	164	153	69.9	129	66.8	<1.00
Conductivity, umhos/cm	549	210	515	174	129	2.00	4.00	429	417	768	768	760	478	706	492	2.00
Nitrate as N, mg/L	3.16	0.727	0.082	<0.020	<0.020	<0.020	<0.020	<0.020	1.16	6.34	10.1	0.371	2.44	<0.020	0.415	<0.020
Sulfate, mg/L	32.4	20.7	13.8	24.9	32.6	<10.0	<10.0	27.6	16.2	22.7	31.0	32.4	19.6	43.5	34.0	<10.0
TOC, mg/L	3.49	2.44	8.33	10.2	11.5	<1.00	<1.00	11.2	4.55	3.78	2.33	6.32	5.60	12.0	16.0	1.40
TDS, mg/L	457	183	336	123	89.0	4.00	14.0	280	267	439	490	541	331	471	327	24.0
TSS, mg/L	1590	12500	1260	1020	416	2.00	5.00	2800	624	972	880	2050	1560	2070	1470	31.0
pH, units	4.9	6.2	5.2	5.4	5.2	6.0	6.7	6.0	6.9	6.4	6.4	6.5	6.7	6.3	6.3	7.6
Oil & Grease, mg/L	14.7	<6.00	13.4	6.05	8.62	<6.00	6.46	10.5	<6.00	8.74	15.4	9.53	<6.00	9.52	13.7	<6.00
PCP, ug/L	1200	<1.00	<1.00	<1.00	<1.00	<1.00	<1.00	13500	824	<1.00	13.9	3000	<1.00	10000	16400	<1.00

6/15/88
15:28

David Stephenson

last conversation on April 21
expressed Dept concerns on timely actions
Ron O'Toole gave verbal update, but no
copies of status reports or data received

DNR OFFICE MEMO
Form 9500-43 4-85

To | Date | Time

From | of

Phone | Received by

☐ Please Call ☐ Returning Your Call ☐ Will Call Again ☐ Called to See You

☐ Comment
☐ For Your Information
☐ See Me
☐ Take Action
☐ Approve
☐ Sign
☐ Revise
☐ Prepare Reply For My Signature
☐ Reply Direct
☐ Per Your Request
☐ Code
☐ Route to:
☐ Return
☐ File

Dave —
Talk Gary
Review
talked to atty
it seems to emergency
doesn't possible emergency funds!
clean-up or referral issues
on state
remember, site is
already in SF process
no longer timely and
appropriate,

3/8/88

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

440 College Park Dr., Monroeville, PA 15146

March 8, 1988

Wisconsin Department of Natural Resources
5301 Rib Mountain Drive
Wausau, Wisconsin 54401

Attention: Mark Johnson

Re: WAULECO General Discharge Permit

Dear Mark:

This letter is a follow-up to our telephone conversation of Monday, January 11, 1988, and your January 12, 1988 letter to Dave Stephenson of WAULECO, regarding the General Discharge Permit.

The General Discharge Permit was for treatment of pumped groundwater followed by a discharge to an underground recharge trench system. The permit was issued on January 19, 1988. WAULECO commenced activities under this permit on January 20, 1988. As you are aware, the treatment system was shut down on January 26, 1988, due to the unexpected presence of iron and manganese in the water.

You have asked for documentation of four matters associated with the activity to be undertaken pursuant to the permit, those items are: i) isolation of the water line in the vicinity of the recharge trenches; ii) what preventive measures have been taken to minimize the possibility of the recharge water migrating along local utility lines; iii) provide calculations for groundwater mounding and trench design; and iv) establish additional monitoring to detect breakdown components of PCP beyond the courtyard area.

In response to the first item, the water line in the vicinity of the recharge trenches is used only to provide fire protection to adjacent buildings and is isolated from other water supplies by a check valve. Plant personnel have verified that a check valve is in place. A check valve (back-flow preventer) is also in place in the water supply line which goes to components of the above-ground treatment system. Based on this information, it can be concluded that there is no risk of the water being discharged to the seepage beds accidentally entering the main water line.

The possibility of the water being discharged to the recharge trenches migrating off-site and not being recovered by the pumping wells is minimal. All abandoned utility lines were removed during the installation of the recharge trenches and are not available as conduits for the recharged

water. It was not possible to install an impermeable barrier around the utility lines still in service due to the characteristics of the surrounding soils. The influence of pumping wells on local groundwater gradients should preclude any appreciable amounts of discharged water to the seepage bed from migrating off-site. The levels of NO_3 and PO_4 present in the pumping wells after two days of operation indicate that a direct path exists from the recharge trenches to the pumping wells. Preliminary data suggests that the recharged water will be contained within the recharge and pumping system. Additionally, on-site wells (W5, W30, W3A, and W3B) located approximately 250-400 feet downgradient of the pumping wells will be monitored daily for NO_3-N and O-PO_4. These analyses will be performed using HACH test kits.

Item iii) requested information regarding trench design and groundwater mounding. The calculations used for designing the recharge trenches and for determining the flow paths of the recharge water and influence of the pumping wells are attached.

Item iv) was a request for additional off-site monitoring to ensure that no breakdown components of PCP are getting off-site. It is proposed that immediately after restarting the treatment system, that a background round of PCP, phenolics (EPA 604), NO_3-N, and O-PO_4 be taken from Wells W-5, W-30, W-3A, and W-3B. After one month of operation, the same wells would be sampled for the parameter suite identified above, on a bimonthly schedule.

WAULECO also received a General Discharge Permit in January for discharging treated bailing water to the Wisconsin River. It is intended at this time to put the bailing water through the treatment system and discharge this water to the recharge trenches, however, WAULECO does not want to relinquish this permit as it may become necessary to utilize this permit at some future time.

The system was restarted the week of February 29, 1988. Details of the iron and manganese removal system will be provided to you and Greg Hill of the Department's Madison office by March 15, 1988.

If you have any questions or comments regarding any of these matters, please feel free to give me a call.

Sincerely,

Ron O'Toole

Ron O'Toole
Project Manager

RO:ss
Attachments
cc: H. Handzel
G. Kulibert
D. Stephenson

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

PUMPING & DRAWDOWN CALCULATIONS

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Pumping Effects on Groundwater Conditions
Wauleco Site
Wausau, Wisconsin

On January 13 and 14, 1988 pump tests were conducted to evaluate the operating effects of the interim remedial treatment plant on groundwater conditions at the former SNE plant courtyard. A test was conducted on January 13 pumping only from well PW-2 and observing water level decline at the pumping well, PW-3, OW-1, and W-7. This test was run for 16 hours before the pump was shut off and the water table returned to static conditions. The second test conducted on January 14, involved pumping from both PW-2 and PW-3 and subsequent monitoring of water levels for a period of one day. Discharge rates were set at approximately 8 gallons/minute from each well prior to the two tests.

The resultant water level data from the two tests has been tabulated and is found on Tables 1 and 2. The configuration of the water table, and the resultant groundwater flow directions in the courtyard is of interest in this study. In order to evaluate groundwater flow directions utilizing the pump test data it is necessary to make some assumptions. First, the static water levels measured prior to testing show that the water table is essentially flat across the courtyard with wells OW-1, PW-2, and PW-3 showing similiar water level elevations. Thus, it is expected that the pumping cone-of-influence will be approximately circular in nature. In areas displaying a steeper natural gradient the drawdown area would more closely resemble an elipse with a greater percentage of the total area being influenced present on the upgradient side of the well.

It is also assumed that the aquifer response is uniform so that additive properties for total drawdown in a well field are applicable. The final assumption is that mounding

effects due to recharge of water through the leach fields are negligible. This conclusion is based on the shallow drawdown present at the two pumping wells being dissipated over a significantly larger area (approximately 1150 square feet). The larger recharge area would result in negligible mounding being observed at any one location beneath the leach field.

The water table configuration map presented as Figure 1 was constructed using the above assumptions and the following methodology. The first step involved drawing concentric drawdown contours around well PW-2 based on the drawdown seen at PW-2, PW-3, and OW-1 during the first pump test (only PW-2 pumping). Well W-7 could not be used because of the presence of a floating product layer. The data from both the first and second pump tests were then used to determine the amount of the total drawdown, at each location, which was due to pumping in well PW-3. This data was then used to draw concentric drawdown contours around well PW-3 on the same base map as the contours due to pumping at PW-2. Groundwater theory principles dictate that the total drawdown at any point is equal to the sum of the drawdowns due to the individual wells. Thus, by adding the drawdown at each intersecting point the net effect of pumping can be determined.

A cross-sectional view of the water table drawdown is presented as Figure 2. This figure is vertically exaggerated to more clearly show the configuration of the water table during pumping.

Figures 1 and 2 both illustrate that the effects of pumping extend beyond the area of recharge and the courtyard; thus, all waters which are being reinjected should migrate under the new gradient into the pumping wells. In addition, because there is no appreciable groundwater mounding, there

is no component of flow in the upgradient direction which could bypass the recovery system.

TABLE 1

Groundwater Elevations
PW-2 Pump Test

Wauleco
Wausau, Wisconsin

PW-2				PW-3				OW-1			
Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)	Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)	Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)
0	34.17	1162.92	0	0	34.56	1162.94	0	0	34.78	1162.9	0
0.18	34.2	1162.89	0.03	-	-	-	-	-	-	-	-
0.45	35.05	1162.04	0.88	-	-	-	-	-	-	-	-
0.55	35.15	1161.94	0.98	-	-	-	-	-	-	-	-
0.73	35.25	1161.84	1.08	-	-	-	-	-	-	-	-
0.92	35.28	1161.81	1.11	-	-	-	-	-	-	-	-
1.12	35.3	1161.79	1.13	-	-	-	-	-	-	-	-
1.5	35.32	1161.77	1.15	-	-	-	-	-	-	-	-
2	35.33	1161.76	1.16	-	-	-	-	-	-	-	-
2.5	35.345	1161.745	1.175	-	-	-	-	-	-	-	-
3	35.35	1161.74	1.18	-	-	-	-	-	-	-	-
3.5	35.36	1161.73	1.19	-	-	-	-	-	-	-	-
4	35.36	1161.73	1.19	-	-	-	-	-	-	-	-
4.5	35.365	1161.725	1.195	-	-	-	-	-	-	-	-
5	35.37	1161.72	1.2	-	-	-	-	-	-	-	-
5.5	35.38	1161.71	1.21	-	-	-	-	-	-	-	-
6	35.38	1161.71	1.21	-	-	-	-	-	-	-	-
6.5	35.385	1161.705	1.215	-	-	-	-	-	-	-	-
7	35.385	1161.705	1.215	-	-	-	-	-	-	-	-
7.5	35.385	1161.705	1.215	-	-	-	-	-	-	-	-
8	35.385	1161.705	1.215	-	-	-	-	-	-	-	-
8.5	35.385	1161.705	1.215	-	-	-	-	-	-	-	-
9	35.385	1161.705	1.215	-	-	-	-	-	-	-	-
9.5	35.385	1161.705	1.215	-	-	-	-	-	-	-	-
10	35.39	1161.7	1.22	11	34.69	1162.81	0.13	-	-	-	-
20	35.42	1161.67	1.25	-	-	-	-	-	-	-	-
30	35.43	1161.66	1.26	30	34.78	1162.72	0.22	-	-	-	-
40	35.44	1161.65	1.27	-	-	-	-	-	-	-	-
50	35.44	1161.65	1.27	-	-	-	-	-	-	-	-
60	35.44	1161.65	1.27	-	-	-	-	-	-	-	-
70	35.46	1161.63	1.29	-	-	-	-	-	-	-	-
90	35.49	1161.6	1.32	-	-	-	-	-	-	-	-
100	35.5	1161.59	1.33	100	34.78	1162.72	0.22	-	-	-	-
120	35.505	1161.585	1.335	-	-	-	-	110	34.85	1162.83	0.07
150	35.52	1161.57	1.35	-	-	-	-	-	-	-	-
180	35.52	1161.57	1.35	-	-	-	-	-	-	-	-
210	35.525	1161.565	1.355	-	-	-	-	-	-	-	-
237	35.53	1161.56	1.36	233	34.79	1162.71	0.23	-	-	-	-
300	35.53	1161.56	1.36	294	34.79	1162.71	0.23	-	-	-	-
				348	34.8	1162.7	0.24	-	-	-	-
360	35.53	1161.56	1.36	-	-	-	-	-	-	-	-
420	35.55	1161.54	1.38	-	-	-	-	-	-	-	-
480	35.55	1161.54	1.38	474	34.82	1162.68	0.26	-	-	-	-
540	35.56	1161.53	1.39	-	-	-	-	-	-	-	-
600	35.58	1161.51	1.41	598	34.81	1162.69	0.25	-	-	-	-
660	35.59	1161.5	1.42	-	-	-	-	-	-	-	-
720	35.59	1161.5	1.42	728	34.82	1162.68	0.26	-	-	-	-
960	35.57	1161.52	1.4	960	34.815	1162.685	0.255	960	34.87	1162.81	0.09

TABLE 2

Groundwater Elevations
PW-2 and PW-3 Pump Tests

Wauleco
Wausau, Wisconsin

PW-2				PW-3				OW-1			
Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)	Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)	Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)
0	34.25	1162.84	0	0	34.64	1162.86	0	0	34.78	1162.9	0
0.165	34.3	1162.79	0.05	-	-	-	-	-	-	-	-
0.274	34.7	1162.39	0.45	-	-	-	-	-	-	-	-
0.32	34.95	1162.14	0.7	-	-	-	-	-	-	-	-
0.38	35.1	1161.99	0.85	-	-	-	-	-	-	-	-
0.45	35.2	1161.89	0.95	-	-	-	-	-	-	-	-
0.5	35.25	1161.84	1	-	-	-	-	-	-	-	-
0.6	35.3	1161.79	1.05	-	-	-	-	-	-	-	-
0.7	35.35	1161.74	1.1	-	-	-	-	-	-	-	-
0.9	35.4	1161.69	1.15	-	-	-	-	-	-	-	-
1.08	35.42	1161.67	1.17	-	-	-	-	-	-	-	-
1.28	35.43	1161.66	1.18	-	-	-	-	-	-	-	-
1.47	35.44	1161.65	1.19	-	-	-	-	-	-	-	-
1.67	35.46	1161.63	1.21	-	-	-	-	-	-	-	-
2.03	35.47	1161.62	1.22	-	-	-	-	-	-	-	-
2.5	35.49	1161.6	1.24	-	-	-	-	-	-	-	-
3	35.5	1161.59	1.25	-	-	-	-	-	-	-	-
3.5	35.505	1161.585	1.255	-	-	-	-	-	-	-	-
4	35.515	1161.575	1.265	-	-	-	-	-	-	-	-
4.5	35.515	1161.575	1.265	-	-	-	-	-	-	-	-
5	35.525	1161.565	1.275	-	-	-	-	-	-	-	-
5.5	35.53	1161.56	1.28	-	-	-	-	-	-	-	-
6	35.54	1161.55	1.29	-	-	-	-	-	-	-	-
6.5	35.54	1161.55	1.29	-	-	-	-	-	-	-	-
7	35.545	1161.545	1.295	-	-	-	-	-	-	-	-
7.5	35.555	1161.535	1.305	-	-	-	-	-	-	-	-
8	35.555	1161.535	1.305	-	-	-	-	-	-	-	-
8.5	35.555	1161.535	1.305	-	-	-	-	-	-	-	-
9	35.555	1161.535	1.305	-	-	-	-	-	-	-	-
9.5	35.555	1161.535	1.305	-	-	-	-	-	-	-	-
10	35.56	1161.53	1.31	10	35.53	1161.97	0.89	-	-	-	-
20	35.56	1161.53	1.31	20	35.57	1161.93	0.93	20	34.84	1162.84	0.06
30	35.61	1161.48	1.36	30	35.59	1161.91	0.95	-	-	-	-
		PW-3 off									
50	35.56	1161.53	1.31	50	34.81	1162.69	0.17	-	-	-	-
60	35.56	1161.53	1.31	60	34.8	1162.7	0.16	-	-	-	-
70	35.56	1161.53	1.31	-	-	-	-	-	-	-	-
		PW-3 on									
90	35.63	1161.46	1.38	90	35.59	1161.91	0.95	-	-	-	-
100	35.64	1161.45	1.39	100	35.61	1161.89	0.97	-	-	-	-
110	35.64	1161.45	1.39	110	35.63	1161.87	0.99	-	-	-	-
140	35.65	1161.44	1.4	140	35.57	1161.93	0.93	145	34.85	1162.83	0.07
150	35.655	1161.435	1.405	150	35.67	1161.83	1.03	-	-	-	-
180	35.67	1161.42	1.42	180	35.66	1161.84	1.02	-	-	-	-
210	35.68	1161.41	1.43	210	35.68	1161.82	1.04	-	-	-	-
270	36.69	1160.4	2.44	270	35.7	1161.8	1.06	-	-	-	-
300	35.7	1161.39	1.45	-	-	-	-	-	-	-	-
330	35.7	1161.39	1.45	330	35.74	1161.76	1.1	-	-	-	-
360	35.71	1161.38	1.46	-	-	-	-	-	-	-	-

TABLE 2

Groundwater Elevations
PW-2 and PW-3 Pump Tests

Wauleco
Wausau, Wisconsin

PW-2				PW-3				OW-1			
Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)	Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)	Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)
390	35.74	1161.35	1.49	-	-	-	-	-	-	-	-
420	35.72	1161.37	1.47	420	35.74	1161.76	1.1	420	34.87	1162.81	0.09
480	35.72	1161.37	1.47	480	35.75	1161.75	1.11	-	-	-	-
540	35.72	1161.37	1.47	540	35.74	1161.76	1.1	-	-	-	-
600	35.74	1161.35	1.49	600	35.76	1161.74	1.12	-	-	-	-
660	35.73	1161.36	1.48	660	35.77	1161.73	1.13	-	-	-	-
720	35.74	1161.35	1.49	720	35.76	1161.74	1.12	-	-	-	-
840	35.73	1161.36	1.48	840	35.77	1161.73	1.13	-	-	-	-
960	35.72	1161.37	1.47	960	35.75	1161.75	1.11	-	-	-	-
1080	35.72	1161.37	1.47	1080	35.72	1161.78	1.08	1080	34.89	1162.79	0.11
1320	35.68	1161.41	1.43	1320	35.67	1161.83	1.03	1320	34.89	1162.79	0.11
1440	35.68	1161.41	1.43	1440	35.73	1161.77	1.09	-	-	-	-

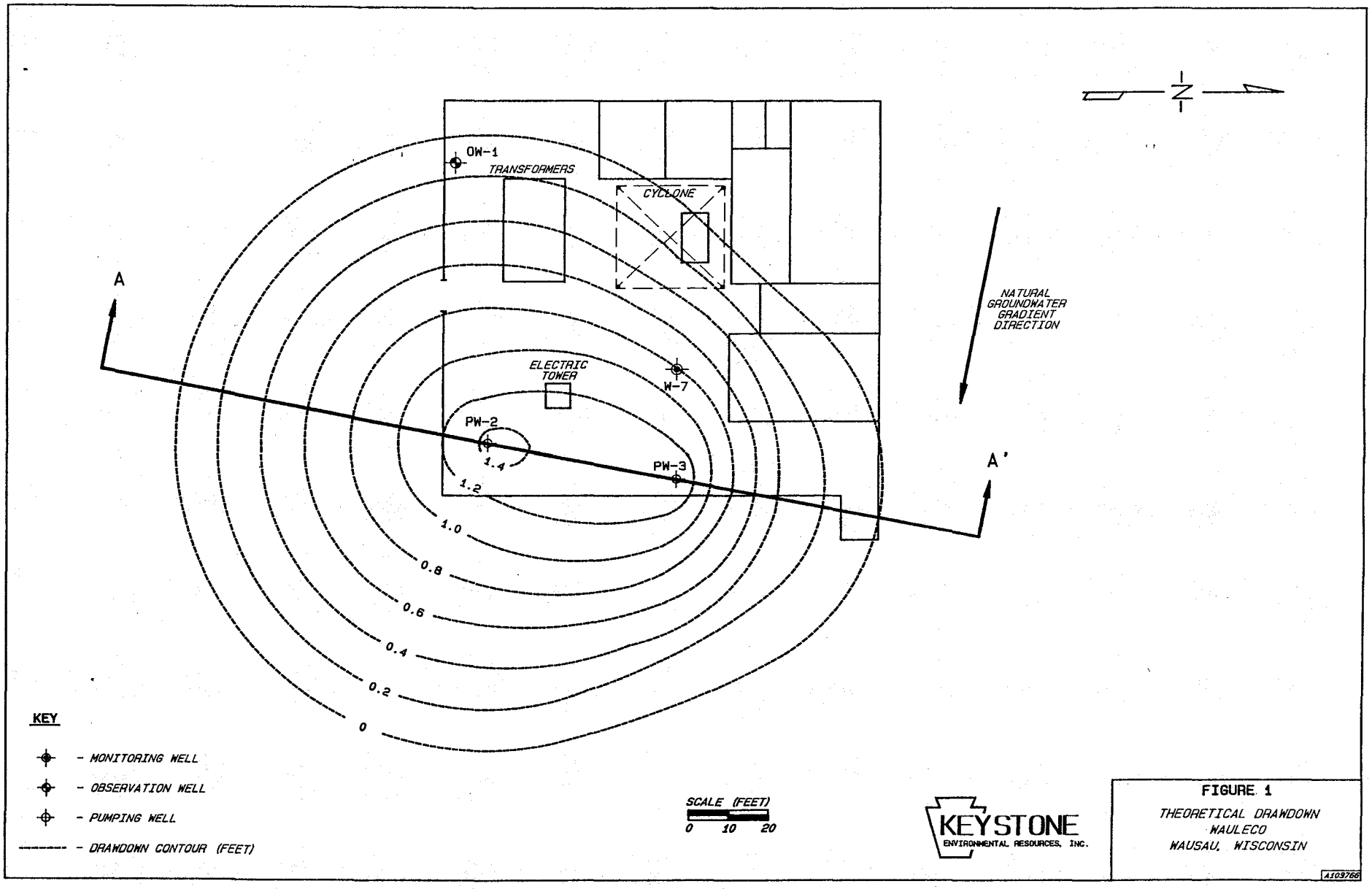
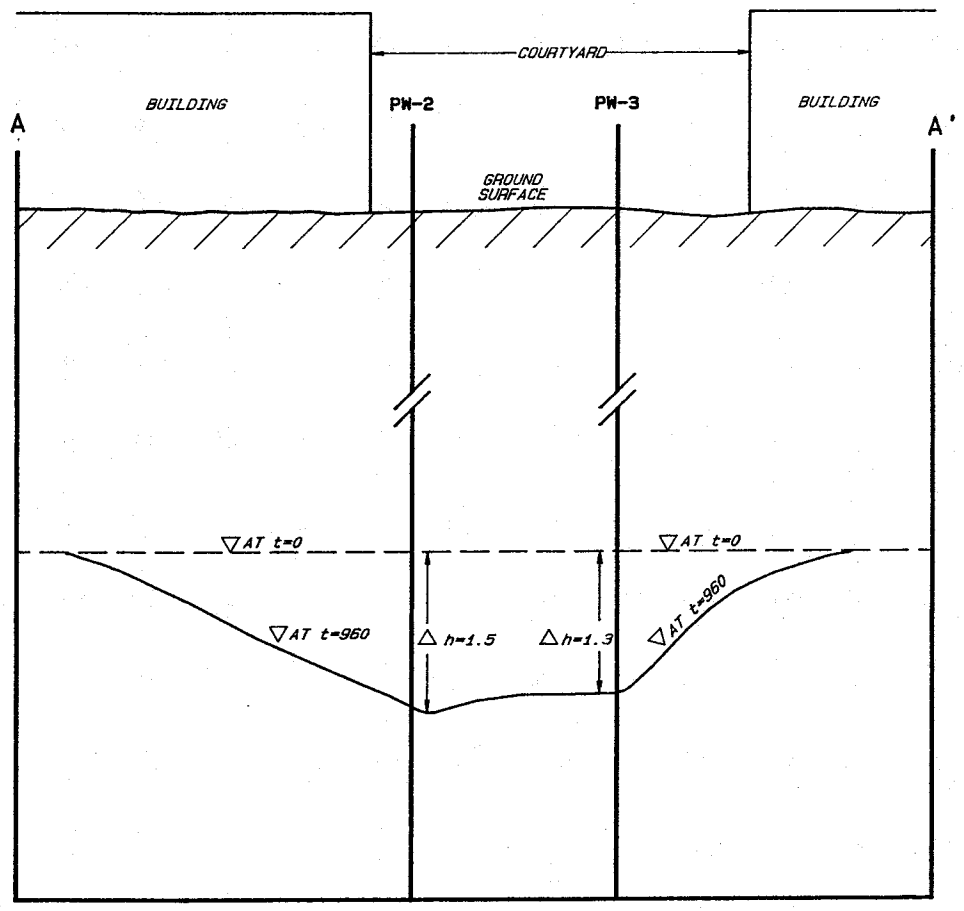


FIGURE 1

THEORETICAL DRAWDOWN
WAULECO
WAUSAU, WISCONSIN

A103766



KEY

▽ - WATER TABLE

△h= CHANGE IN HEAD DUE TO PUMPING

SCALE (HORIZONTAL)
0 10 20

VERTICAL
NOT TO SCALE
LOOKING WEST

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

FIGURE 2

WATER TABLE CONFIGURATION
CROSS-SECTION A-A'
WAULECO
WAUSAU, WISCONSIN

A103767

3/8/88

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

440 College Park Dr., Monroeville, PA 15146

March 8, 1988

Wisconsin Department of Natural Resources
5301 Rib Mountain Drive
Wausau, Wisconsin 54401

Attention: Mark Johnson

Re: WAULECO General Discharge Permit

Dear Mark:

This letter is a follow-up to our telephone conversation of Monday, January 11, 1988, and your January 12, 1988 letter to Dave Stephenson of WAULECO, regarding the General Discharge Permit.

The General Discharge Permit was for treatment of pumped groundwater followed by a discharge to an underground recharge trench system. The permit was issued on January 19, 1988. WAULECO commenced activities under this permit on January 20, 1988. As you are aware, the treatment system was shut down on January 26, 1988, due to the unexpected presence of iron and manganese in the water.

You have asked for documentation of four matters associated with the activity to be undertaken pursuant to the permit, those items are: i) isolation of the water line in the vicinity of the recharge trenches; ii) what preventive measures have been taken to minimize the possibility of the recharge water migrating along local utility lines; iii) provide calculations for groundwater mounding and trench design; and iv) establish additional monitoring to detect breakdown components of PCP beyond the courtyard area.

In response to the first item, the water line in the vicinity of the recharge trenches is used only to provide fire protection to adjacent buildings and is isolated from other water supplies by a check valve. Plant personnel have verified that a check valve is in place. A check valve (back-flow preventer) is also in place in the water supply line which goes to components of the above-ground treatment system. Based on this information, it can be concluded that there is no risk of the water being discharged to the seepage beds accidentally entering the main water line.

The possibility of the water being discharged to the recharge trenches migrating off-site and not being recovered by the pumping wells is minimal. All abandoned utility lines were removed during the installation of the recharge trenches and are not available as conduits for the recharged

water. It was not possible to install an impermeable barrier around the utility lines still in service due to the characteristics of the surrounding soils. The influence of pumping wells on local groundwater gradients should preclude any appreciable amounts of discharged water to the seepage bed from migrating off-site. The levels of NO_3 and PO_4 present in the pumping wells after two days of operation indicate that a direct path exists from the recharge trenches to the pumping wells. Preliminary data suggests that the recharged water will be contained within the recharge and pumping system. Additionally, on-site wells (W5, W30, W3A, and W3B) located approximately 250-400 feet downgradient of the pumping wells will be monitored daily for NO_3-N and O-PO_4. These analyses will be performed using HACH test kits.

Item iii) requested information regarding trench design and groundwater mounding. The calculations used for designing the recharge trenches and for determining the flow paths of the recharge water and influence of the pumping wells are attached.

Item iv) was a request for additional off-site monitoring to ensure that no breakdown components of PCP are getting off-site. It is proposed that immediately after restarting the treatment system, that a background round of PCP, phenolics (EPA 604), NO_3-N, and O-PO_4 be taken from Wells W-5, W-30, W-3A, and W-3B. After one month of operation, the same wells would be sampled for the parameter suite identified above, on a bimonthly schedule.

WAULECO also received a General Discharge Permit in January for discharging treated bailing water to the Wisconsin River. It is intended at this time to put the bailing water through the treatment system and discharge this water to the recharge trenches, however, WAULECO does not want to relinquish this permit as it may become necessary to utilize this permit at some future time.

The system was restarted the week of February 29, 1988. Details of the iron and manganese removal system will be provided to you and Greg Hill of the Department's Madison office by March 15, 1988.

If you have any questions or comments regarding any of these matters, please feel free to give me a call.

Sincerely,

Ron O'Toole

Ron O'Toole
Project Manager

RO:ss
Attachments
cc: H. Handzel
G. Kulibert
D. Stephenson

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

RECHARGE TRENCH DESIGN

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

WAULECO PROJ
WAUSAU WIS.

RVT
3/7/88

SEEPAGE BED - DESIGN SUMMARY

	Page
Plan	1/17
Cross Sections	2/17
Details	3/17
Construction Specs.	5/17
Boring & Perc test Plan	8/17
Permeability Based on Perc. Test	9/17
Flow Net Analysis	10/17
Pipe Spacing	11/17
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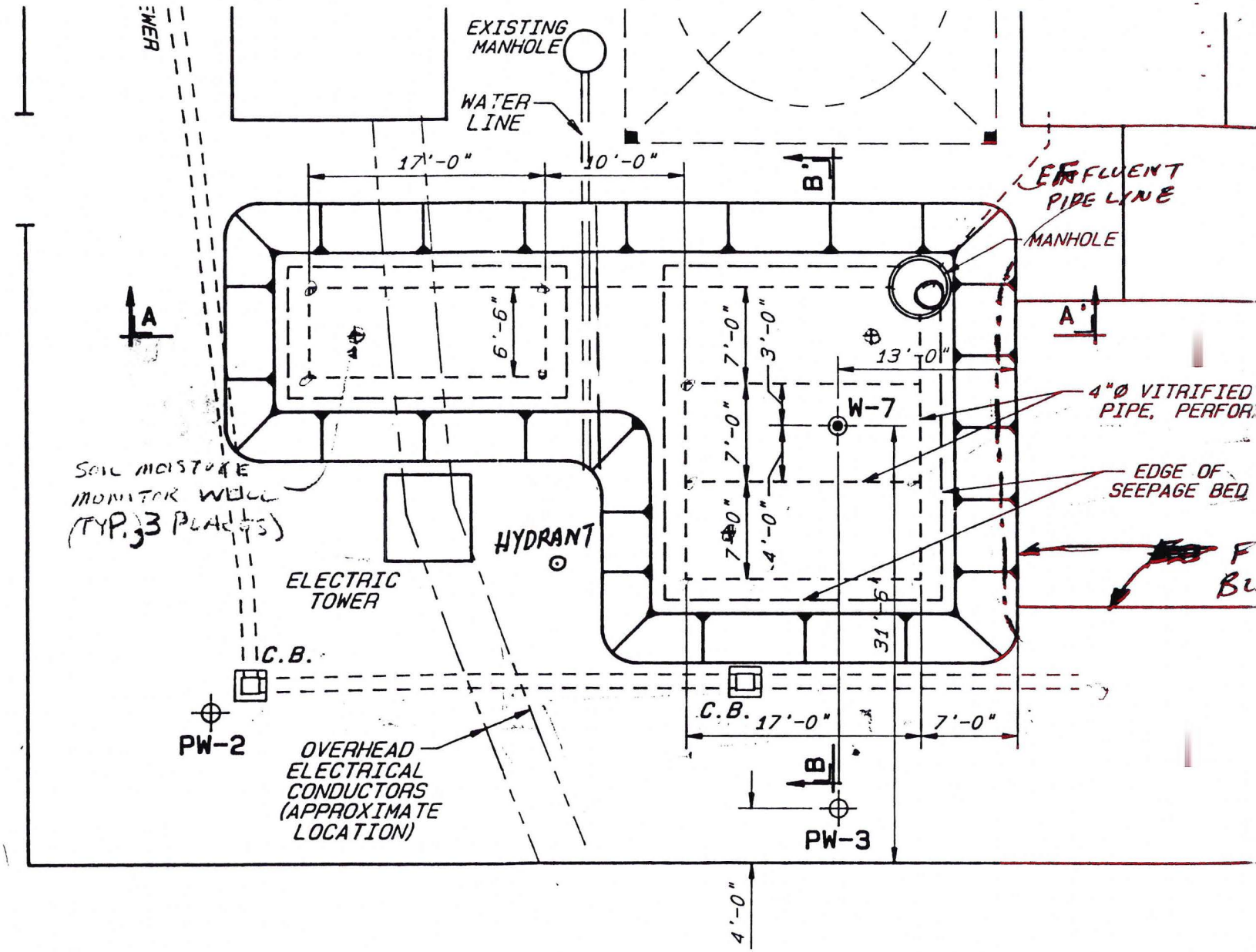
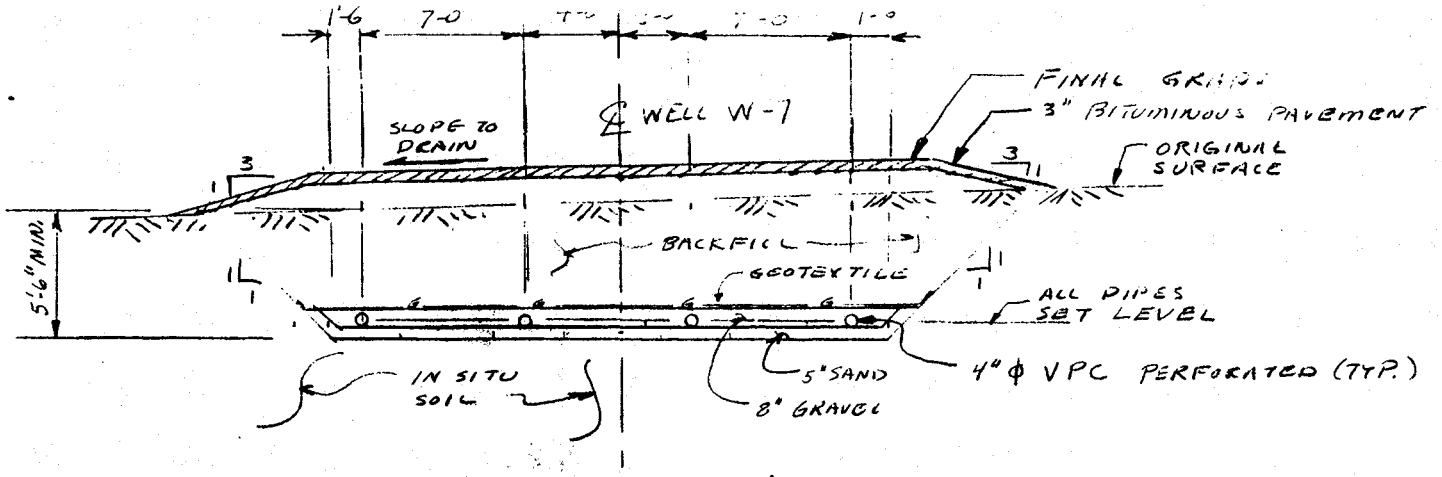
Low Permeability Estimate	15/17
* Seepage Bed w/ Filter Layer	16/17
Pipe Diameter & Hydraulic Gradient	17/17

* <u>Note</u>: The Seepage Bed design that was selected was based upon the Seepage Bed w/ Filter Layer analysis.

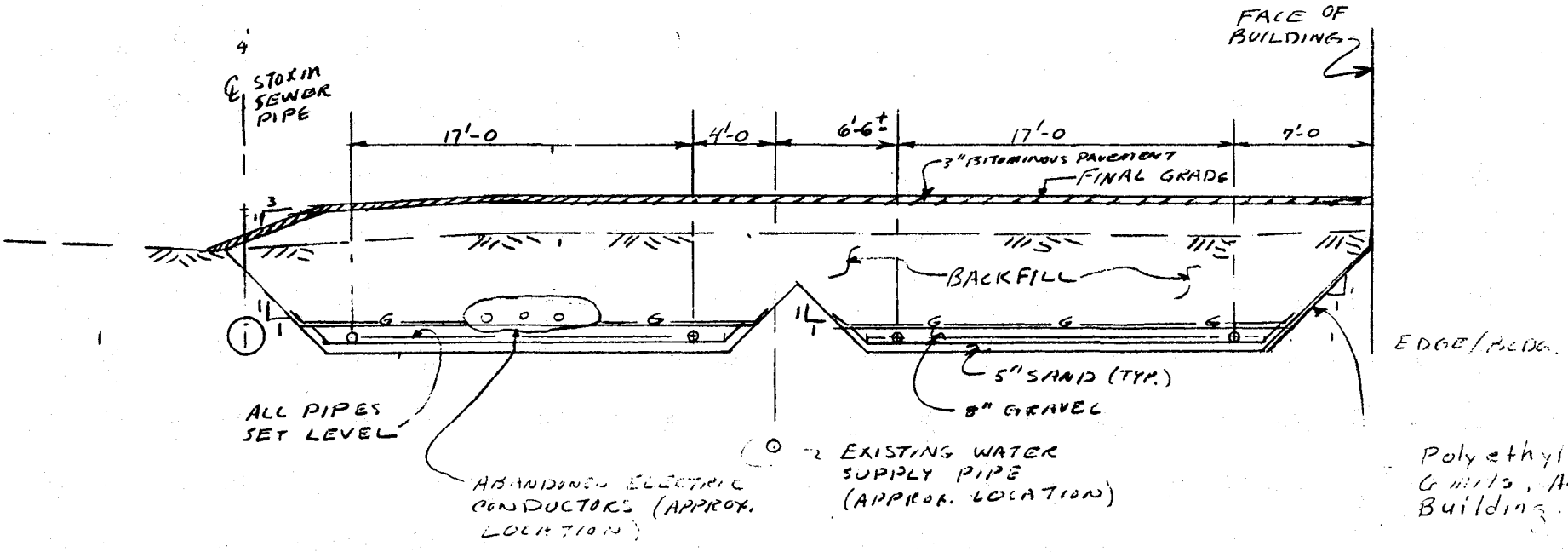


PLAN
COURTYARD AND SEEPAGE BED



SECTION A-A'

1" = 5' VERT. & HORIZ.

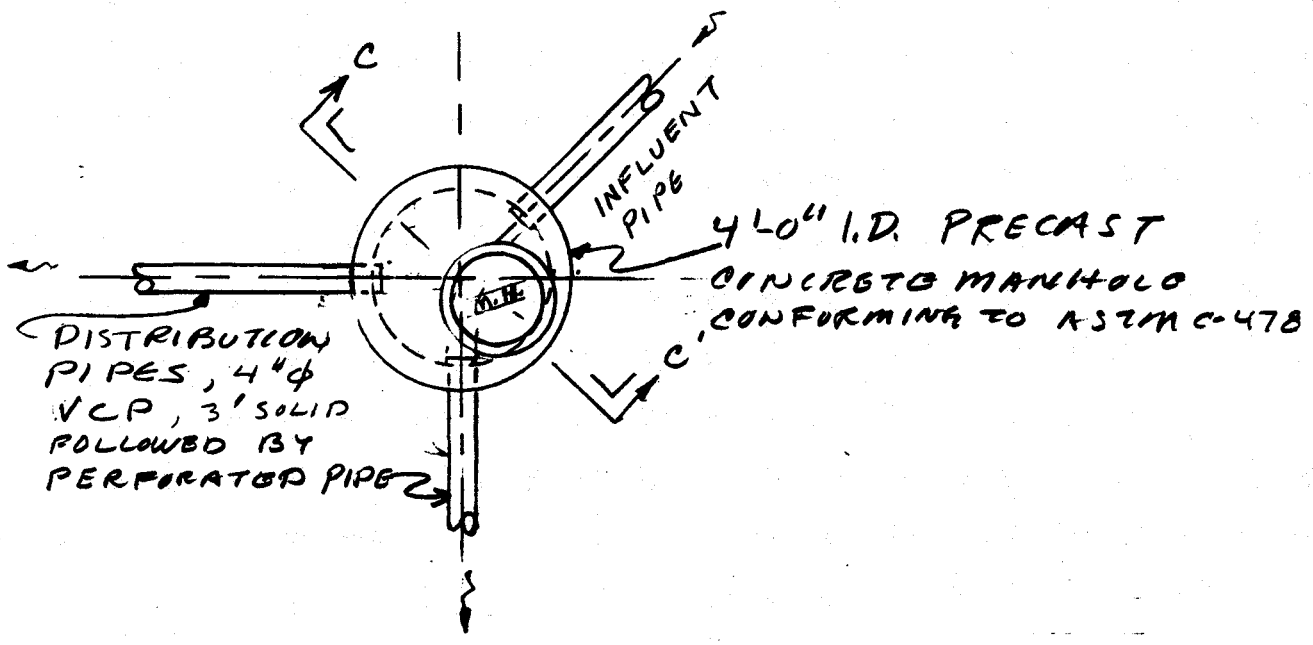


Polyethylene Gutters, Adjac Building

SECTION B-B'

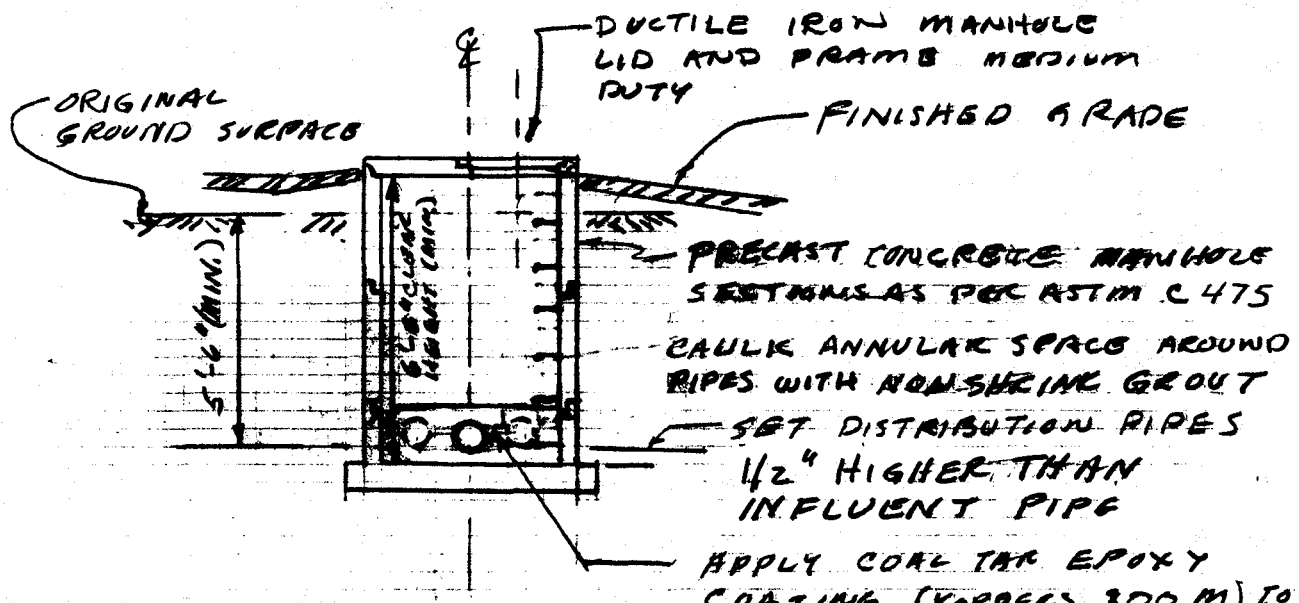
SNE
WISCONSIN

RVT 1/10/87



PLAN — MAN HOLE

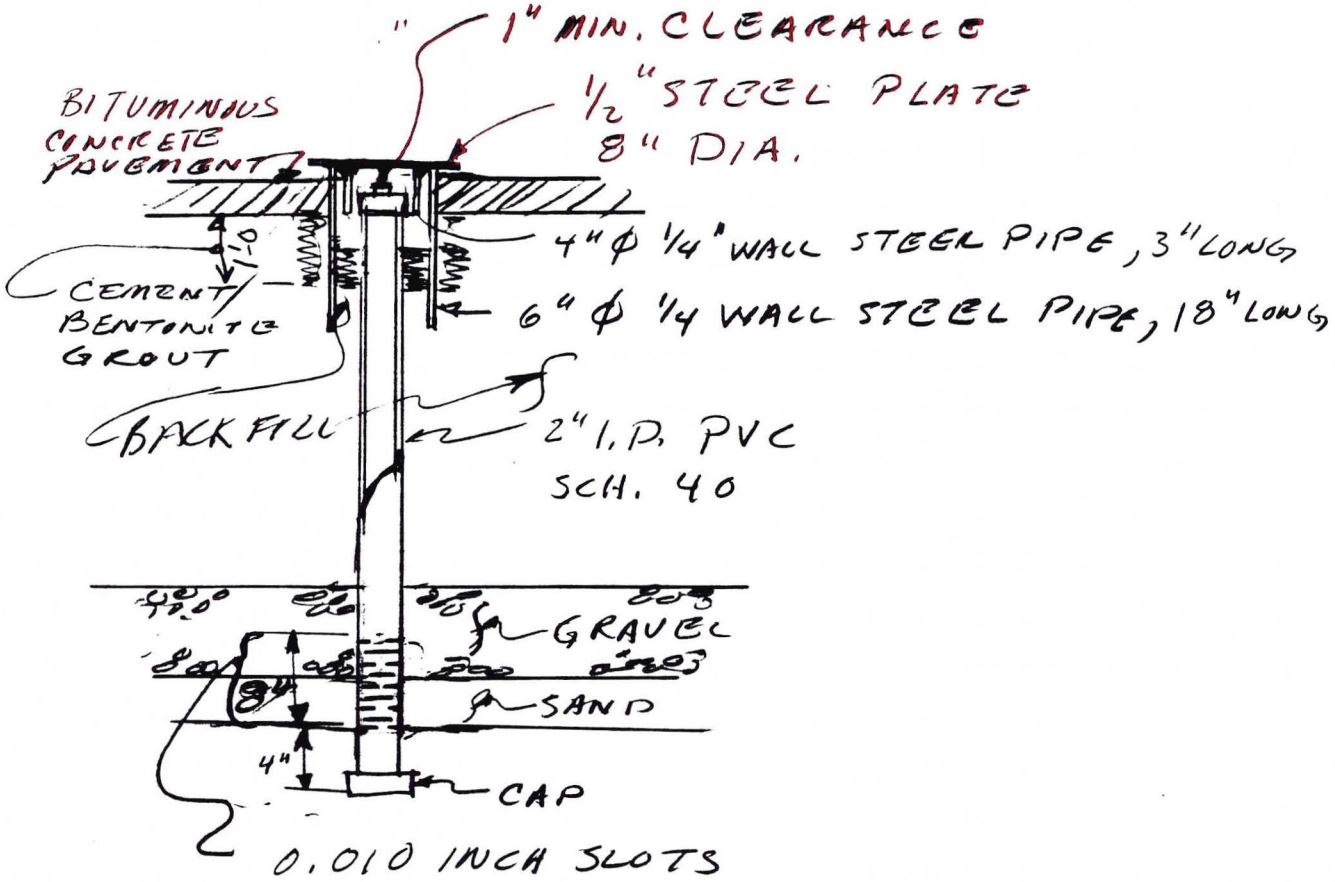
SCALE: 1/4" = 1'



SECTION C—C'

ELEVATION OF MANHOLE

SNG RV 11/10/87 4/17



DETAIL - 1

SOIL MOISTURE MONITORS

SNE RVT 11/10/87

CONSTRUCTION SPECIFICATIONS

1. The seepage bed shall be constructed to the dimensions and grades shown on the drawings. Applicable sections of Wisconsin Code ILHR, Chapter H63 and the following minimum requirements will govern the work.

2. Prior to beginning excavation, a level survey shall be performed and the data furnished to the Engineer for final adjustment of grades.

3. The existing asphalt pavement will be saw cut at the limits established to complete the construction.

4. Excavation shall be performed to the dimensions and grades required to construct the full thickness of the seepage bed layers.

5. Prior to placing any fill materials, the bottom of the excavation shall be leveled and compacted with a vibratory plate compactor.

6. The bottom of the seepage bed, the sand and gravel layers, and the distribution pipes are to be installed level, no sloping planes.

7. The sand layer shall be placed and compacted with the vibratory plate compactor to provide a final thickness of 4 inches. Excess sand and depressions shall be removed by screeding to the grades established on grade stakes.

8. The sand shall be bituminous concrete sand conforming to AASHTO Type B, No. 2.

9. The 4 inch diameter, vitrified clay pipe will be perforated, extra quality drain tile with 1/4 inch perforations conforming to ASTM C498. Bell and spigot connections will be used and depressions excavated for the bells. The distribution pipes in the seepage bed will be installed level with the perforations down.

10. Gravel bedding material shall conform to AASHTO No. 57 gradation and Type A quality.

11. The gravel bedding material will be placed in two equal lifts and compacted with the vibratory plate compactor to yield a final thickness of not less than 8 inches. The gravel shall be placed carefully and uniformly on both sides of the distribution pipes to prevent displacement.

12. The geotextile fabric shall be a non-woven, spun bonded polypropylene fabric of a minimum weight of 4 ounces per square yard. The fabric shall be new material, undamaged and guaranteed appropriate for the proposed installation by the manufacturer and installer, and approved by the Engineer.

13. The geotextile shall be placed on the compacted gravel layer with 18 inch overlaps for adjoining sheets. The fabric can be held in place by discrete piles of soil. The Engineer's representative shall approve the placement of the geotextile prior to backfilling by the Contractor.

14. The excavated materials will be backfilled and compacted in 6 inch loose measure lifts. The materials, excavated for construction of the seepage bed, will be used for backfill.

15. For sand and gravel materials, the backfill will be compacted with the vibratory plate compactor to achieve a relative density of 85 percent as per ASTM D2049 for cohesionless materials.

16. For materials with greater than 8% passing a number 200 sieve and/or cohesive fines, the backfill will be compacted using a rubber tired roller or other approved compactors to achieve a dry unit weight of at least 90 percent of maximum dry density as determined by ASTM D698.

17. The final surface of the backfill will be graded and sloped to drain. The surface will blend to meet existing, undisturbed grades as shown on the drawings, and as required to accommodate actual site conditions.

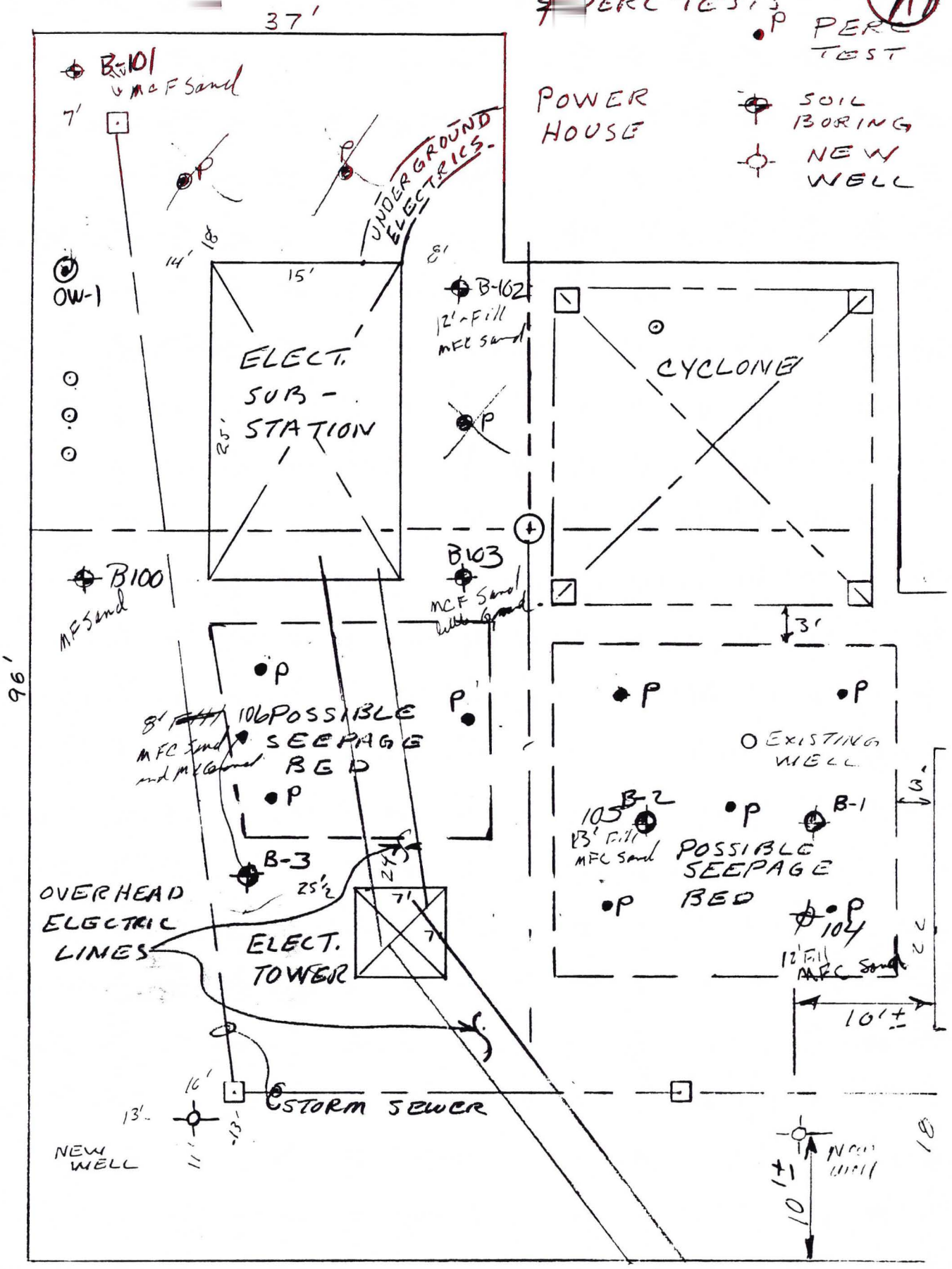
18. The backfilled area will be surfaced with a low permeability, bituminous concrete pavement of 3 inches minimum thickness. The pavement shall be placed and rolled to provide a compact pavement with uniform grades to shed precipitation.

19. In the event of seasonal closure of the asphalt plants prior to capping the backfilled excavation, a temporary, impervious surface consisting of a 30 mil PVC geomembrane with 4 inches of coarse gravel cover can be installed. The geomembrane shall be sandwiched between 2 layers of 4 ounce geotextile material. The gravel shall conform to AASHTO No. 57, Type A.

20. All Work performed by the Contractor shall be approved by the Engineer's on site representative and comply with Wisconsin code ILHR, Chapter 63, and/or the above requirements prior to acceptance and payment.

ADDITIONAL BORINGS, WELL & PERC TESTS

8/17



JNE

RVT 10/8/87

0 5 10

1" = 10'

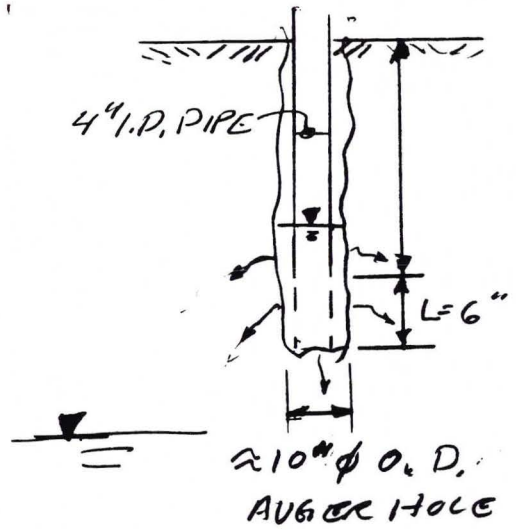
Permeability Based on Percolation Rate

$R = \frac{1}{2}$ O.D. AUGER

$R = \frac{1}{2} \times 10'' = 5''$

$L = 6''$ to $12''$

$\frac{L}{R} = 1.2$ to 2.4



From Nav Fac's, DM 7 Table 4-3

Permeability for open hole

$$K = \frac{R}{16DS} \times \frac{(H_2 - H_1)}{(t_2 - t_1)}$$

FOR PH-2; $H_1 = -0.9'$; $H_2 = -0.5'$; $D = \left[\frac{H_1 + H_2}{2}\right]$

SHAPE FACTOR: $1 - \frac{H_1 + H_2}{2D} = 1 - \frac{(0.5 - (-.9))}{2 \times 0.7}$

$R/D = \frac{5/12}{0.7} = 0.6$ $\quad 1 - \frac{H_1 + H_2}{2D} = 1 - 0.71 = 0.29$

From Fig. 4-3 $S \simeq 1$

$$K_1 = \frac{5/12'}{16 \times 0.7' \times 1} \times \left(\frac{-0.5' - (-.9')}{0.5 \text{ min.}}\right) = 0.03 \frac{FT}{MIN}$$

$$= 1.5 \times 10^{-2} \text{ cm/sec}$$

The other test holes perc'd faster

∴ K_1 is a low value for the area.

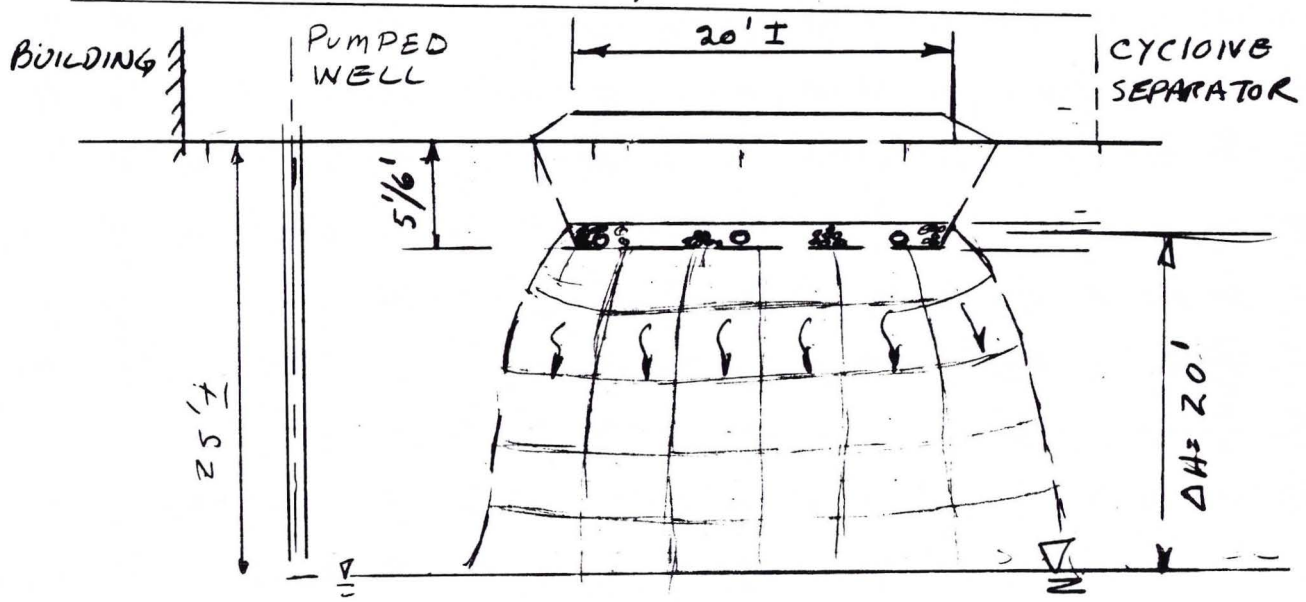
SNE RVT 11/87

Flow Net Analysis

The maximum load rate for Downward gradient of $i = 1$ is

$$q|_{SF} = 0.225 \text{ gpm/S.F.}$$

Approx. Cross Section of Seepage Bed to the collection/extraction well



Downward Flow By Flow Net.

$$q/ft = K \frac{\Delta H}{N_D} \times N_P$$

$$= 0.03 \frac{FT}{MIN.} \times \frac{20'}{4.5} \times 6$$

$$q/ft = 0.8 \frac{FT^3}{MIN} / 1' \text{ length} = 6 \text{ gpm}/1' \text{ length}$$

q/SF = 6 gpm/20 = 0.3 gpm/SF

Possible length of BED. 25'

$$Q_{TOT.} \approx \left(4.5 \frac{gpm}{ft} \text{ to } 60 \frac{gpm}{ft}\right) \times 25'$$

$$Q_{TOT} \simeq (112 \text{ gpm to } 150 \text{ gpm})$$

SNG RVT 11/2/87

Pipe Spacing in Seepage Bed

Refer to Fig. 8-6 of NAVFACS DM-7

The seepage bed is the reverse problem of the relief Drain system with a downward Gradient, $i = 1.0$ in lieu of $i = 0.4$

For gravel seepage bed,
Assume Curve (8) on Fig 8-5,
$\therefore K_F = 0.70$ ft/min.
$K_{subsoil} = 3 \times 10^{-2}$ FT/min

Subsoil Flow For Equivalent Vertical Flow

$Q_V = K i \cdot \propto K_{eq} \times 0.4$

$K_{eq} = 3 \times 10^{-2} \frac{FT}{min} \times \frac{1.0}{0.4}$

$K_{eq} = 0.075$ Ft/min.

Extrapolating the curve values

$K_f = 0.7 \frac{Ft}{min}$; $K_{eq} = 0.075 \frac{FT}{min}$

$\frac{D}{h} \simeq 20$; D = Spacing of pipes
h = Depth gravel

For $h = 1.0'$; $D = 20'$

Flow per pipe/FT. $= K_{eq} \times i_{eq} \times D$

$Q = 0.075' \times 0.4 \times 20'$

$Q = 20' \times 0.03 \frac{FT}{min} \times 1'/1' \text{pipe} = .6 \frac{FT^3}{min}/\text{Ft}$

$Q = 0.6 \frac{FT^3}{min}/\text{Ft. pipe} = 4.5$ gpm/FT. (@20'

SNG

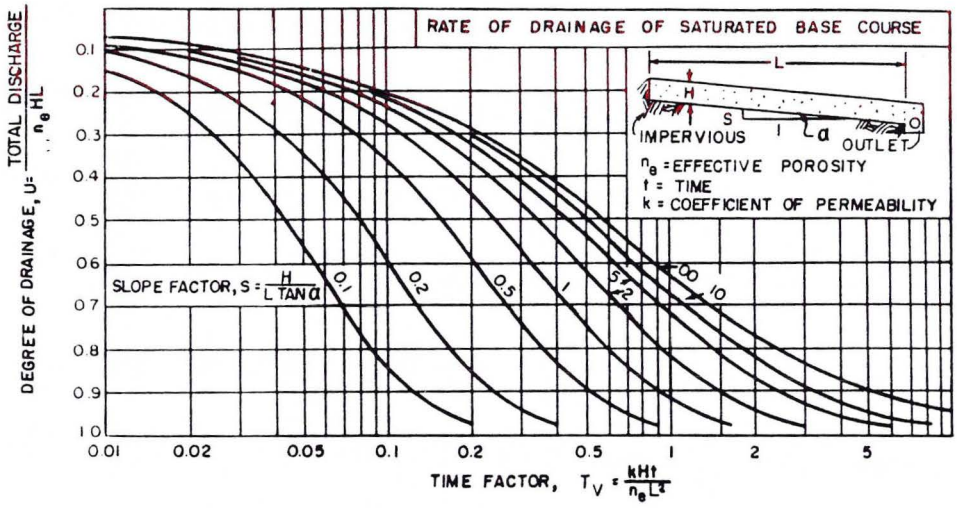
12/17

DESIGN MANUAL

SOIL MECHANICS, FOUNDATIONS, AND EARTH STRUCTURES

NAVFAC DM-7
March 1971

DEPARTMENT OF THE NAVY
NAVAL FACILITIES ENGINEERING COMMAND
200 STOVALL STREET
ALEXANDRIA, VA. 22332

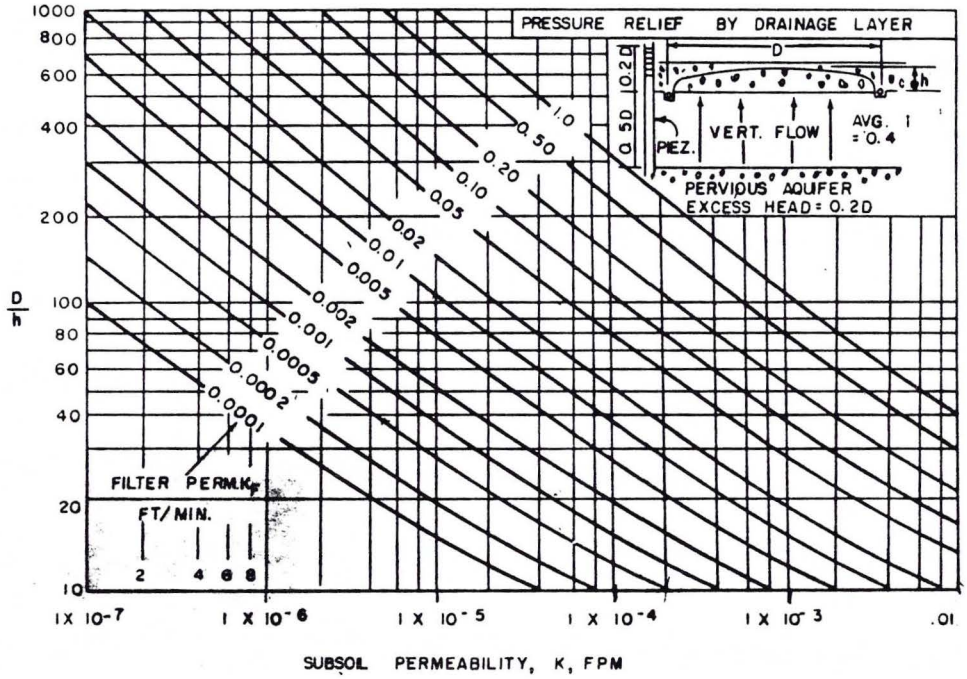


Select drain spacing, L, so that 50% drainage will be completed in 10 days.

$$t_{50} = \frac{T_v n_e L^2}{KH}$$

For estimate use: $t_{50} = \frac{n_e L^2}{2K(H + L \tan\alpha)}$

t_{50} drainage rate: $q = KH \frac{(H + L \tan\alpha)}{2L}$



Assumptions:
Steady seepage moves vertically upward from aquifer at depth 0.5D with average gradient = 0.4

To prevent breakout of seepage on ground surface, select filter permeability and thickness so that max. height of water in drainage layer (h) is less than filter thickness.

FIGURE 8-6
Analysis of Drainage Layer Performance

SNE

14/17

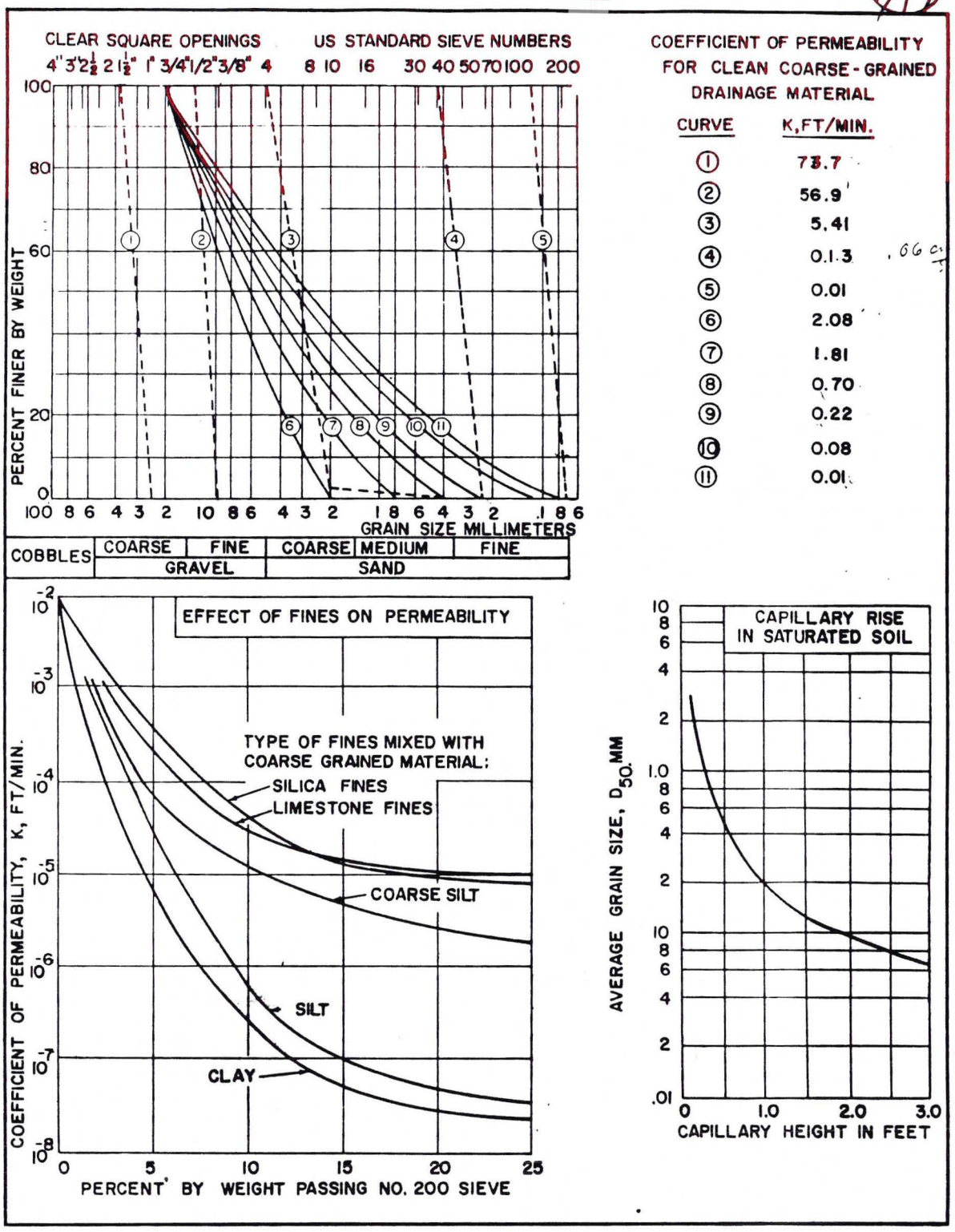


FIGURE 8-5
Permeability and Capillarity of Drainage Materials

SNE RYT 11/3/87

Low Permeability Estimate

What if permeability of soils is 1/20 that computed by one perc test result; i.e.;

$$K = \frac{5''/12''/1}{16 \times 0.7 \times 1} \times \frac{0.5'}{10 \text{ min.}} \approx 0.0019 \frac{ft}{min.} \approx 1 \times 10^{-3} \text{ cm/sec.}$$

This is an absolute lowest value and therefore conservative.

$$K_{eq} \times 0.4 = 1.9 \times 10^{-3} \text{ FT/min} \times 1$$

$$K_{eq} = 4.8 \times 10^{-3} \text{ FT/min.}$$

$$K_{FILTER} = 0.70 \text{ FT/min.}$$

From Curve, $D/h \approx 44$

For $h = 1'$ Gravel, Spacing $(D) = 44'$

If Bed constructed this way

$$q = K\,i\,A = 4.8 \times 10^{-3} \frac{FT}{min} \times 0.4 \times 44' \times 1'/1' \text{ Pipe}$$

$$q = 8.5 \times 10^{-2} \text{ FT}^3/\text{min} / \text{FT. of Pipe}$$

$$q = 0.64 \text{ gal/min} / \text{Ft. of Pipe}$$

$$Q_{tot} = 0.64 \text{ gpm} \times 3 \times 25 = 48 \text{ gpm}$$

Check Calc.: (Downward flow, Gradient $(i) = 1$)

$$q = K\,i\,A = (1.9 \times 10^{-3}) \times 1 \; (\times 44' \times 1'/1' \text{ of Pipe})$$

$$q = 8.36 \times 10^{-2} \text{ FT}^3/\text{min} / 1' \text{ of Pipe.}$$

$$q = 0.63 \text{ gpm} / \text{FT of pipe.}$$

$$\text{Load/SF.} = 1.9 \times 10^{-3} \frac{FT}{min} \times 1 \times 1^{SF} \times 7.5 \frac{gal}{FT^3} = 0.014 \frac{gal}{SF}$$

SEEPAGE BED WITH FILTER LAYER

$Q = 15\ gpm = 2\ CFM$

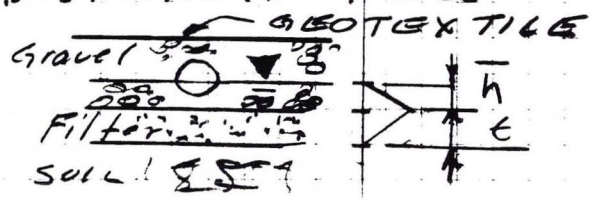
$A = 24' \times 23' + 10' \times 20'$

$A = 752\ SF$

Permeability to Distribute Flow

$Q = K_f i A$

$K_f = \dfrac{Q}{i A}$



$K_f = \dfrac{Q}{A} \times \dfrac{t}{h}$; $i = \dfrac{h}{t} = 0.4$

$K_f = \dfrac{2\ cfm}{750\ sf} \times \dfrac{1}{0.4}$

$K_f = 6.6 \times 10^{-3}\ \dfrac{ft}{min} = 3.3 \times 10^{-3}\ \dfrac{cm}{sec}$

The Distribution Bed is the opposite of the spacing of pipes for a collection system but with reversed Q (Recharge) and reversed gradient.

SEE FIG. 8-6 NAVFAC'S DM-7.

FROM FIG. 8-5, NAVFAC'S.

SELECT A WELL GRADED COARSE, MEDIUM TO FINE SAND SIMILAR TO CURVE NO. 11. ALLOW ABOUT 2% SILT., ∴ K ≈ 7×10^{-3} FT/MIN.

FOR GRAVEL LAYER, SELECT MATERIAL AS GRAVEL TO MEDIUM SAND, WELL GRADED BETWEEN CURVES 8 & 9 SAY K = 0.5 FT/MIN.

FROM FIG. 8-6: $D/h = 30$

FOR $D = 7' = 84''$, $h_{max} = 2.8''$

SAY $\bar{h} = 2/3\ h = 1.86''$ SAY $2''$

$t = \bar{h}/i = 1.86''/.4 = 4.67$ SAY $5''$ ≤ 8"

SNE
Seepage Bed

RVT 11/09/87

Pipe Diameter and Hydraulic Gradient

Assumptions:

1. All flow directed to the southern half of seepage bed.
2. Treatment flow of 15 gpm
3. The friction slope for level pipe flowing 1/2 full will equal slope of the hydraulic grade line.

Friction slope for 4" ϕ VCP @ 15 gpm flowing half full

$$V = Q/A_f = (15/450) \Big/ \frac{\pi}{8}\left(\frac{4}{12}\right)^2$$

$$V = 0.033 \text{ cfs} / 0.0436$$

$$V = 0.764 \text{ ft/sec.}$$

$$V = \frac{1.486}{n} R^{2/3} S_f^{1/2} \qquad R = \frac{A}{P} = \frac{0.0436}{\pi \times \frac{D}{2}}$$

$$R = \frac{0.0436 \text{ ft}^2}{0.523 \text{ ft}} = 1.459$$

$$S_f = \left(\frac{V \times n}{1.486\, R^{2/3}}\right)^2$$

$$= \left(\frac{0.746 \times 0.011}{1.486 \times 1.459^{2/3}}\right)^2$$

$$S_f = 1.84 \times 10^{-5}$$

Therefore, for a pipe length of 24', one-half the maximum flow length for 1/2 the seepage bed;

$$H_f = 1.84 \times 10^{-5} \times 24' = 0.00046 \text{ ft.}$$

Total Head = $H_v(1+K_e) + H_f$; $H_v = V^2/2g$; $K_e = 1.0$

$H_{TOT.} = 0.0186$ FT. small & OK.

PUMPING & DRAWDOWN CALCULATIONS

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Pumping Effects on Groundwater Conditions
Wauleco Site
Wausau, Wisconsin

On January 13 and 14, 1988 pump tests were conducted to evaluate the operating effects of the interim remedial treatment plant on groundwater conditions at the former SNE plant courtyard. A test was conducted on January 13 pumping only from well PW-2 and observing water level decline at the pumping well, PW-3, OW-1, and W-7. This test was run for 16 hours before the pump was shut off and the water table returned to static conditions. The second test conducted on January 14, involved pumping from both PW-2 and PW-3 and subsequent monitoring of water levels for a period of one day. Discharge rates were set at approximately 8 gallons/minute from each well prior to the two tests.

The resultant water level data from the two tests has been tabulated and is found on Tables 1 and 2. The configuration of the water table, and the resultant groundwater flow directions in the courtyard is of interest in this study. In order to evaluate groundwater flow directions utilizing the pump test data it is necessary to make some assumptions. First, the static water levels measured prior to testing show that the water table is essentially flat across the courtyard with wells OW-1, PW-2, and PW-3 showing similiar water level elevations. Thus, it is expected that the pumping cone-of-influence will be approximately circular in nature. In areas displaying a steeper natural gradient the drawdown area would more closely resemble an elipse with a greater percentage of the total area being influenced present on the upgradient side of the well.

It is also assumed that the aquifer response is uniform so that additive properties for total drawdown in a well field are applicable. The final assumption is that mounding

effects due to recharge of water through the leach fields are negligible. This conclusion is based on the shallow drawdown present at the two pumping wells being dissipated over a significantly larger area (approximately 1150 square feet). The larger recharge area would result in negligible mounding being observed at any one location beneath the leach field.

The water table configuration map presented as Figure 1 was constructed using the above assumptions and the following methodology. The first step involved drawing concentric drawdown contours around well PW-2 based on the drawdown seen at PW-2, PW-3, and OW-1 during the first pump test (only PW-2 pumping). Well W-7 could not be used because of the presence of a floating product layer. The data from both the first and second pump tests were then used to determine the amount of the total drawdown, at each location, which was due to pumping in well PW-3. This data was then used to draw concentric drawdown contours around well PW-3 on the same base map as the contours due to pumping at PW-2. Groundwater theory principles dictate that the total drawdown at any point is equal to the sum of the drawdowns due to the individual wells. Thus, by adding the drawdown at each intersecting point the net effect of pumping can be determined.

A cross-sectional view of the water table drawdown is presented as Figure 2. This figure is vertically exaggerated to more clearly show the configuration of the water table during pumping.

Figures 1 and 2 both illustrate that the effects of pumping extend beyond the area of recharge and the courtyard; thus, all waters which are being reinjected should migrate under the new gradient into the pumping wells. In addition, because there is no appreciable groundwater mounding, there

is no component of flow in the upgradient direction which could bypass the recovery system.

TABLE 1

Groundwater Elevations
PW-2 Pump Test

Wauleco
Wausau, Wisconsin

PW-2				PW-3				OW-1			
Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)	Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)	Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)
0	34.17	1162.92	0	0	34.56	1162.94	0	0	34.78	1162.9	0
0.18	34.2	1162.89	0.03	-	-	-	-	-	-	-	-
0.45	35.05	1162.04	0.88	-	-	-	-	-	-	-	-
0.55	35.15	1161.94	0.98	-	-	-	-	-	-	-	-
0.73	35.25	1161.84	1.08	-	-	-	-	-	-	-	-
0.92	35.28	1161.81	1.11	-	-	-	-	-	-	-	-
1.12	35.3	1161.79	1.13	-	-	-	-	-	-	-	-
1.5	35.32	1161.77	1.15	-	-	-	-	-	-	-	-
2	35.33	1161.76	1.16	-	-	-	-	-	-	-	-
2.5	35.345	1161.745	1.175	-	-	-	-	-	-	-	-
3	35.35	1161.74	1.18	-	-	-	-	-	-	-	-
3.5	35.36	1161.73	1.19	-	-	-	-	-	-	-	-
4	35.36	1161.73	1.19	-	-	-	-	-	-	-	-
4.5	35.365	1161.725	1.195	-	-	-	-	-	-	-	-
5	35.37	1161.72	1.2	-	-	-	-	-	-	-	-
5.5	35.38	1161.71	1.21	-	-	-	-	-	-	-	-
6	35.38	1161.71	1.21	-	-	-	-	-	-	-	-
6.5	35.385	1161.705	1.215	-	-	-	-	-	-	-	-
7	35.385	1161.705	1.215	-	-	-	-	-	-	-	-
7.5	35.385	1161.705	1.215	-	-	-	-	-	-	-	-
8	35.385	1161.705	1.215	-	-	-	-	-	-	-	-
8.5	35.385	1161.705	1.215	-	-	-	-	-	-	-	-
9	35.385	1161.705	1.215	-	-	-	-	-	-	-	-
9.5	35.385	1161.705	1.215	-	-	-	-	-	-	-	-
10	35.39	1161.7	1.22	11	34.69	1162.81	0.13	-	-	-	-
20	35.42	1161.67	1.25	-	-	-	-	-	-	-	-
30	35.43	1161.66	1.26	30	34.78	1162.72	0.22	-	-	-	-
40	35.44	1161.65	1.27	-	-	-	-	-	-	-	-
50	35.44	1161.65	1.27	-	-	-	-	-	-	-	-
60	35.44	1161.65	1.27	-	-	-	-	-	-	-	-
70	35.46	1161.63	1.29	-	-	-	-	-	-	-	-
90	35.49	1161.6	1.32	-	-	-	-	-	-	-	-
100	35.5	1161.59	1.33	100	34.78	1162.72	0.22	-	-	-	-
120	35.505	1161.585	1.335	-	-	-	-	110	34.85	1162.83	0.07
150	35.52	1161.57	1.35	-	-	-	-	-	-	-	-
180	35.52	1161.57	1.35	-	-	-	-	-	-	-	-
210	35.525	1161.565	1.355	-	-	-	-	-	-	-	-
237	35.53	1161.56	1.36	233	34.79	1162.71	0.23	-	-	-	-
300	35.53	1161.56	1.36	294	34.79	1162.71	0.23	-	-	-	-
				348	34.8	1162.7	0.24	-	-	-	-
360	35.53	1161.56	1.36	-	-	-	-	-	-	-	-
420	35.55	1161.54	1.38	-	-	-	-	-	-	-	-
480	35.55	1161.54	1.38	474	34.82	1162.68	0.26	-	-	-	-
540	35.56	1161.53	1.39	-	-	-	-	-	-	-	-
600	35.58	1161.51	1.41	598	34.81	1162.69	0.25	-	-	-	-
660	35.59	1161.5	1.42	-	-	-	-	-	-	-	-
720	35.59	1161.5	1.42	728	34.82	1162.68	0.26	-	-	-	-
960	35.57	1161.52	1.4	960	34.815	1162.685	0.255	960	34.87	1162.81	0.09

TABLE 2

Groundwater Elevations
PW-2 and PW-3 Pump Tests

Wauleco
Wausau, Wisconsin

PW-2				PW-3				OW-1			
Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)	Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)	Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)
0	34.25	1162.84	0	0	34.64	1162.86	0	0	34.78	1162.9	0
0.165	34.3	1162.79	0.05	-	-	-	-	-	-	-	-
0.274	34.7	1162.39	0.45	-	-	-	-	-	-	-	-
0.32	34.95	1162.14	0.7	-	-	-	-	-	-	-	-
0.38	35.1	1161.99	0.85	-	-	-	-	-	-	-	-
0.45	35.2	1161.89	0.95	-	-	-	-	-	-	-	-
0.5	35.25	1161.84	1	-	-	-	-	-	-	-	-
0.6	35.3	1161.79	1.05	-	-	-	-	-	-	-	-
0.7	35.35	1161.74	1.1	-	-	-	-	-	-	-	-
0.9	35.4	1161.69	1.15	-	-	-	-	-	-	-	-
1.08	35.42	1161.67	1.17	-	-	-	-	-	-	-	-
1.28	35.43	1161.66	1.18	-	-	-	-	-	-	-	-
1.47	35.44	1161.65	1.19	-	-	-	-	-	-	-	-
1.67	35.46	1161.63	1.21	-	-	-	-	-	-	-	-
2.03	35.47	1161.62	1.22	-	-	-	-	-	-	-	-
2.5	35.49	1161.6	1.24	-	-	-	-	-	-	-	-
3	35.5	1161.59	1.25	-	-	-	-	-	-	-	-
3.5	35.505	1161.585	1.255	-	-	-	-	-	-	-	-
4	35.515	1161.575	1.265	-	-	-	-	-	-	-	-
4.5	35.515	1161.575	1.265	-	-	-	-	-	-	-	-
5	35.525	1161.565	1.275	-	-	-	-	-	-	-	-
5.5	35.53	1161.56	1.28	-	-	-	-	-	-	-	-
6	35.54	1161.55	1.29	-	-	-	-	-	-	-	-
6.5	35.54	1161.55	1.29	-	-	-	-	-	-	-	-
7	35.545	1161.545	1.295	-	-	-	-	-	-	-	-
7.5	35.555	1161.535	1.305	-	-	-	-	-	-	-	-
8	35.555	1161.535	1.305	-	-	-	-	-	-	-	-
8.5	35.555	1161.535	1.305	-	-	-	-	-	-	-	-
9	35.555	1161.535	1.305	-	-	-	-	-	-	-	-
9.5	35.555	1161.535	1.305	-	-	-	-	-	-	-	-
10	35.56	1161.53	1.31	10	35.53	1161.97	0.89	-	-	-	-
20	35.56	1161.53	1.31	20	35.57	1161.93	0.93	20	34.84	1162.84	0.06
30	35.61	1161.48	1.36	30	35.59	1161.91	0.95	-	-	-	-
		PW-3 off									
50	35.56	1161.53	1.31	50	34.81	1162.69	0.17	-	-	-	-
60	35.56	1161.53	1.31	60	34.8	1162.7	0.16	-	-	-	-
70	35.56	1161.53	1.31	-	-	-	-	-	-	-	-
		PW-3 on									
90	35.63	1161.46	1.38	90	35.59	1161.91	0.95	-	-	-	-
100	35.64	1161.45	1.39	100	35.61	1161.89	0.97	-	-	-	-
110	35.64	1161.45	1.39	110	35.63	1161.87	0.99	-	-	-	-
140	35.65	1161.44	1.4	140	35.57	1161.93	0.93	145	34.85	1162.83	0.07
150	35.655	1161.435	1.405	150	35.67	1161.83	1.03	-	-	-	-
180	35.67	1161.42	1.42	180	35.66	1161.84	1.02	-	-	-	-
210	35.68	1161.41	1.43	210	35.68	1161.82	1.04	-	-	-	-
270	36.69	1160.4	2.44	270	35.7	1161.8	1.06	-	-	-	-
300	35.7	1161.39	1.45	-	-	-	-	-	-	-	-
330	35.7	1161.39	1.45	330	35.74	1161.76	1.1	-	-	-	-
360	35.71	1161.38	1.46	-	-	-	-	-	-	-	-

TABLE 2

Groundwater Elevations
PW-2 and PW-3 Pump Tests

Wauleco
Wausau, Wisconsin

PW-2				PW-3				OW-1			
Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)	Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)	Time (min)	Depth to Water	Groundwater Elevation	Drawdown (ft)
390	35.74	1161.35	1.49	-	-	-	-	-	-	-	-
420	35.72	1161.37	1.47	420	35.74	1161.76	1.1	420	34.87	1162.81	0.09
480	35.72	1161.37	1.47	480	35.75	1161.75	1.11	-	-	-	-
540	35.72	1161.37	1.47	540	35.74	1161.76	1.1	-	-	-	-
600	35.74	1161.35	1.49	600	35.76	1161.74	1.12	-	-	-	-
660	35.73	1161.36	1.48	660	35.77	1161.73	1.13	-	-	-	-
720	35.74	1161.35	1.49	720	35.76	1161.74	1.12	-	-	-	-
840	35.73	1161.36	1.48	840	35.77	1161.73	1.13	-	-	-	-
960	35.72	1161.37	1.47	960	35.75	1161.75	1.11	-	-	-	-
1080	35.72	1161.37	1.47	1080	35.72	1161.78	1.08	1080	34.89	1162.79	0.11
1320	35.68	1161.41	1.43	1320	35.67	1161.83	1.03	1320	34.89	1162.79	0.11
1440	35.68	1161.41	1.43	1440	35.73	1161.77	1.09	-	-	-	-

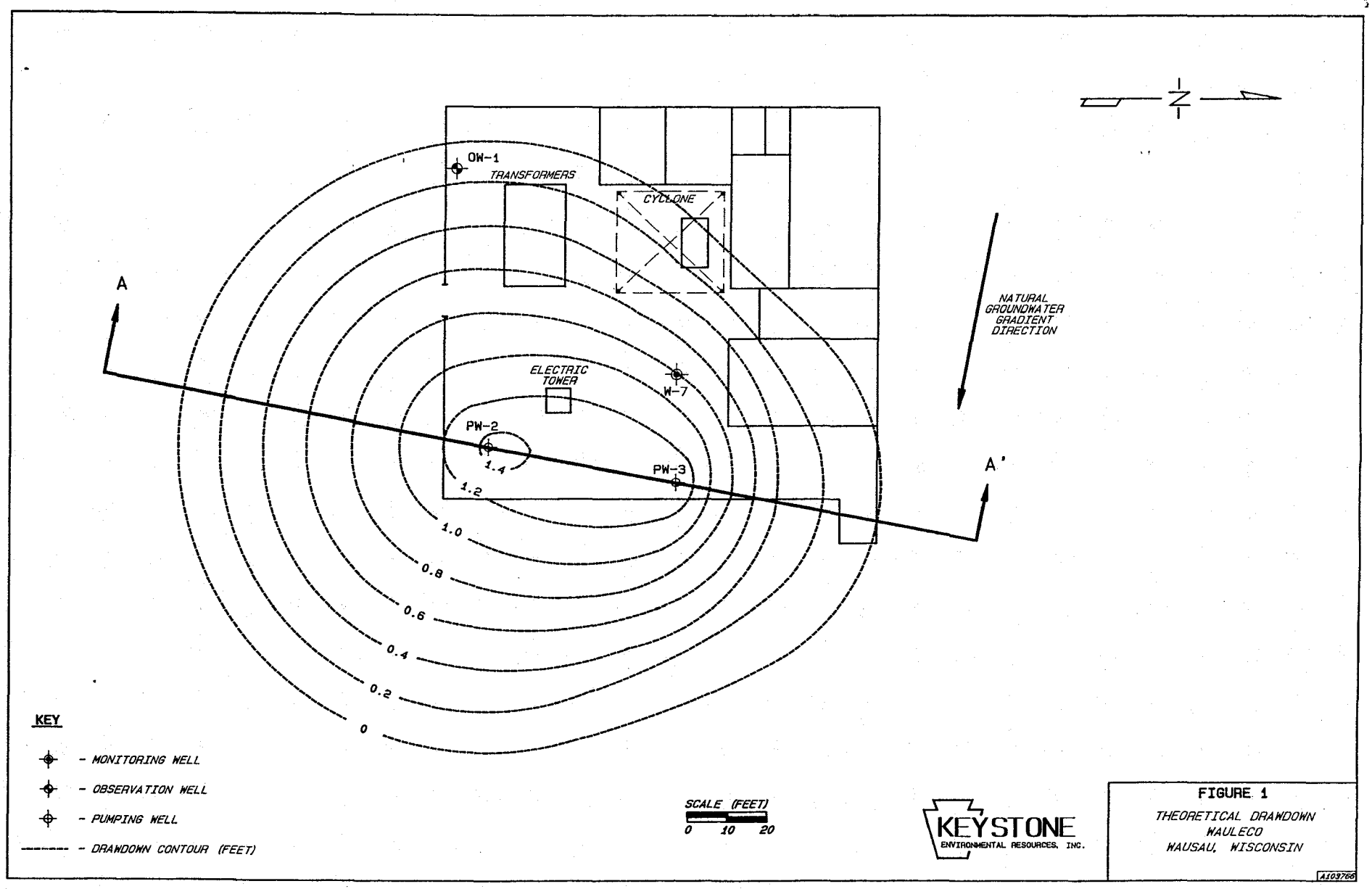
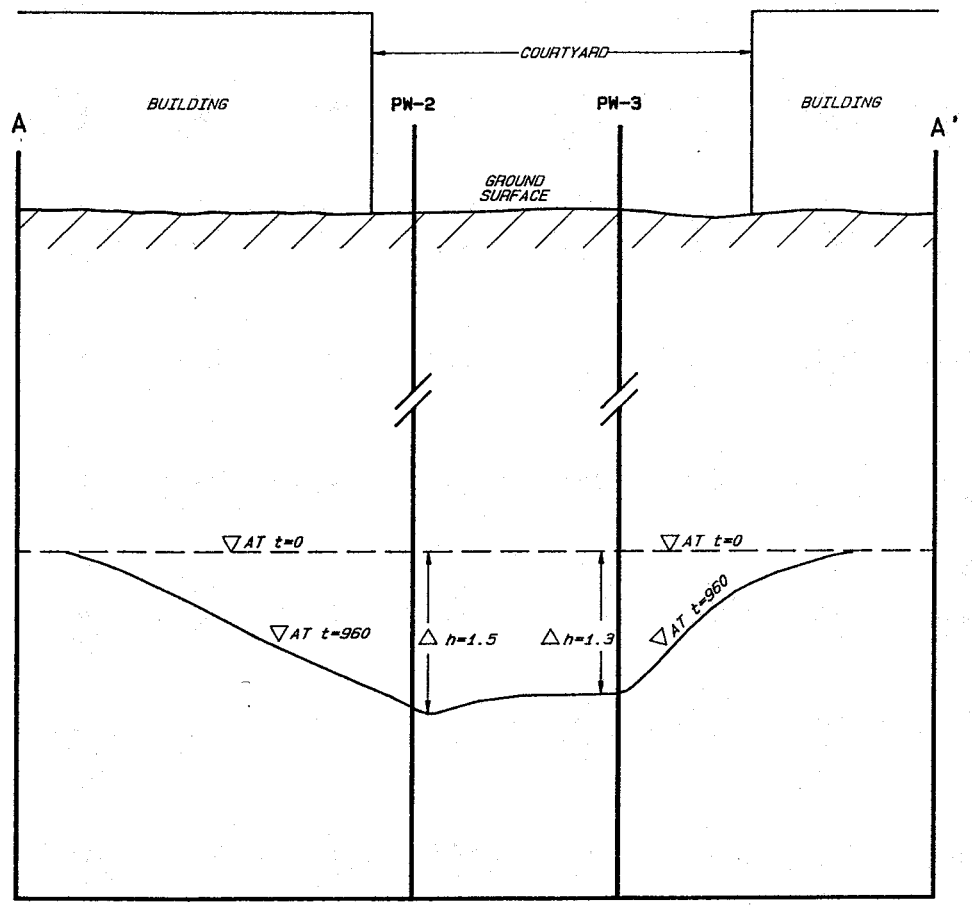


FIGURE 1

THEORETICAL DRAWDOWN
WAULECO
WAUSAU, WISCONSIN

A103766



KEY

▽ - WATER TABLE

△h= CHANGE IN HEAD DUE TO PUMPING

SCALE (HORIZONTAL)
0 10 20

VERTICAL
NOT TO SCALE
LOOKING WEST

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

FIGURE 2

WATER TABLE CONFIGURATION
CROSS-SECTION A-A'
WAULECO
WAUSAU, WISCONSIN

A103767

2/18/88

State of Wisconsin | DEPARTMENT OF NATURAL RESOURCES

Carroll D. Besadny
Secretary

BOX 7921
MADISON, WISCONSIN 53707

RECEIVED WAUSAU FEB 25 1988

February 18, 1988

IN REPLY REFER TO: 4190

Mr. David Stephenson
WAULECO, Inc.
1800 North Point Drive
Stevens Point, WI 54481

SUBJECT: Satisfaction of Order #2A-86-1288 issued to SNE Corporation

Dear Mr. Stephenson:

The Department of Natural Resources issued Order #2A-86-1288 to SNE Corporation requiring specific actions to be taken to comply with the requirements of section 144.76, Wisconsin Statutes. An evaluation by Department staff has verified that the requirements of this Order have been satisfied. Specifically, funds were reimbursed to the Department for conducting a fish study; your company evaluated alternatives for responding to releases; your company evaluated river conditions; and your company conducted a treatability study. This letter represents formal acknowledgement of that fact and constitutes a cancellation of the Order. Please keep in mind that SNE has an obligation for continued cleanup activities in accordance with provisions of Chapter NR 158, Wisconsin Administrative Code, and section 144.76, Wisconsin Statutes. Your cooperation in satisfying this Order is appreciated.

Sincerely,

Kathryn A. Curtner

Kathryn A. Curtner
Assistant Administrator
Division of Enforcement

KAC:GK:hf/8452I

cc: Bureau of Solid Waste Management - SW/3
Dale Erlandson, Antigo
Mark Johnson, Wausau
Linda Wymore - LC/5

Dale Erlandson - Antigo

2/16/88

State of Wisconsin
5301 Rib Mountain Drive
Wausau, WI 54401

DEPARTMENT OF NATURAL RESOURCES

→ Wausau file

Carroll D. Besadny
Secretary

February 16, 1988

4430

Mr. David Stephenson
WAULECO, Inc.
1800 North Point Drive
Stevens Point, WI 54481

Subject: Sample Analysis Results and Treatment Plant Status

Dear Dave:

Enclosed are the sample results of the fish tissue analysis as reported by Enseco, Inc. A copy of the Department memo dated October 23, 1987, regarding these results is also enclosed.

This is also to thank you for the opportunity to observe the pilot treatment plant during the initial start-up phase and to confirm our February 15, 1988, telephone conversation regarding its status. You had stated that the plant was currently shut down and was scheduled for start-up by approximately March 14, 1988. Modifications of the system to incorporate an iron removal process will be detailed in letter to the Department as part of WAULECO response to the January 12, 1988, letter from the Department.

A Department memo dated January 21, 1988, which summarizes specific comments on the original work plan, is enclosed for your review. The concerns detailed in the memo were, in part, the basis for the January 12 letter and should be considered when evaluating the treatment system.

If you have any questions, please contact me at 715-359-4522.

Sincerely,

Mark D. Johnson
Hazardous Waste Specialist

MDJ:gg

Enclosures

cc: Gary Kulibert, Rhinelander
Tom Bashaw, Rhinelander/Pete Hubbard, Wausau
Mark Giesfeldt/Gary Edelstein, ER-SW/3, Madison

Department of Natural Resources

RECEIVED WAUSAU JAN 27 1988

1/21/88

SOLID WASTE MANAGEMENT FACILITY CONTACT FORM
Form 4400-106 6-86

NOTE: DO NOT USE THIS FORM WHEN DOCUMENTING INSPECTIONS AT HAZARDOUS WASTE AND SOLID WASTE FACILITIES. SEE BACK SIDE OF THIS FORM FOR MORE INFORMATION.

ATTN: Nauleco Spill Case file

☐ Residuals Management SW/3 ☒ District Gary Kulibert - NCD ~~Mark Johnson - Wausau~~ Sub Area

☐ Hazardous Waste Management SW/3 Unit ____ ☐ Environmental Enforcement EE/5

☐ Systems Management SW/3 ☒ Greg Hill - WW/2

License Number: ____

EPA ID Number: WI-D006125835

Facility ID Number: ____

Facility/Company Name	Location (Address or ¼¼)	City, State, Zip Code
Nauleco Spill	932 Cleveland Ave	Wausau, Wi

Facility Type	District	County	Contact Method	Date (M M D D Y Y)	Time (24-Hour Clock)
Spill	NCD	Marathon	☐ Telephone ☒ In-Person	01/21/88	10:00

Facility Representative Contacted	Title or Position of Representative	Telephone Number (include area code)
George Goyak; Ron O'Toole	Consultants - Keystone	( )

Gary Kulibert, Mark Johnson and Pete Hubbard (area WW Eng). joined me for a site visit - We saw the above-ground small scale GW treatment system located in the former dip room and the courtyard area where the seepage system is located. Ron O'Toole of Keystone was present. George Goyak, a chemical engineer, is responsible for the above-ground system and he described what was happening. Highlights: 1) Pumping both W/D wells @ 17 GPM each. Started operating on Monday 1/15/88. 160,000 gallons run through so far. 2) Little oil in the influent (drawdown on wells too great). Over 1st 4 days influent at 15 ppm PCP. 3) UV Ozone system effluent at <20 ppb PCP. 4) Act. carbon effluent <1 ppb PCP. 5) Fe hydroxide precip. formed in UV-ozone unit - Fe in GW higher than expected. Currently, this is filtered out in Act. carbon, but they're working on a system to remove the Fe before the oil/water separator. 6) Thinking of adding a filter press for residues/sludge removed to minimize solid waste to manage. 7) Monitoring nitrate in W/D wells - 8 hr grab samples. 8) Adding 150 ppm nitrogen, 50-60 ppm P as nutrients.

Ron O'Toole had photos of seepage cell installation available. Courtyard area now covered. Could ~~not~~ only see moisture probes and W/D wells.

Check if additional sheets attached ☐

By Gary Edelstein

Gary Edelstein

AREA

(AD-75)

1/21/88

CORRESPONDENCE/MEMORANDUM

STATE OF WISCONSIN

Date: January 13, 1988

File Ref: 4430

RECEIVED
WAUSAU
JAN 21 1988

To: John LaFontaine, EE/5

From: Dale T. Urso, NCD
for WAS

Subject: Recommendation to Cancel an Administrative Order Issued to SNE

The North Central District believes this proposed action, cancellation of the Administrative Order, is warranted. There has been an extensive review of the case by District and Central Office staff. At this time, it appears that all conditions required by this Order have been met. Please route this recommendation to the appropriate Department staff for review and concurrence.

If there are any questions concerning this matter, please contact Gary Kulibert of my staff at (715)362-7616.

DTU:ck
Attach.
cc: Gary Kulibert, Rhinelander
Dale Erlandson, Antigo
Mark Johnson, Wausau

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES
Carroll D. Besadny
Secretary

BOX 7921
MADISON, WISCONSIN 53707

4190

Mr. David Stephenson
WAULECO, Inc.
1800 North Point Drive
Stevens Point, Wisconsin 54481

Subject: Order #2A-86-1288

Dear Mr. Jirous:

The Department of Natural Resources issued Order #2A-86-1288 to SNE Corporation requiring specific actions to be taken to comply with the requirements of Chapter NR 157, Wisconsin Administrative Code. An evaluation by Department staff indicates the requirements of this Order have been satisfied. This letter represents formal acknowledgement of that fact and constitutes dismissal of the Order. Please keep in mind that SNE has an obligation to continual cleanup activities and maintain the site perpetually in accordance with provisions of Chapter NR 157, Wisconsin Administrative Code, and State Statutes. Your cooperation in satisfying this Order is appreciated.

Sincerely,

Kathryn A. Curnter
Assistant Administrator
Division of Enforcement

_____
Dated

KAC:GK:ck
cc: Bureau of Solid Waste Management, SW/3
Dale Erlandson, Antigo
Mark Johnson, Wausau

(AD-75)

CORRESPONDENCE/MEMORANDUM

STATE OF WISCONSIN

Date: January 13, 1988 *File Ref:* 4400

To: Dale T. Urso

From: Gary Kulibert GK

Subject: Recommendation to Cancel Administrative Order Issued to SNE

The Department issued Order #2A-86-1288 to SNE concerning a pentachlorophenol discharge from their facility in Wausau. The Order required that the facility do additional monitoring of groundwater, surface waters, and aquatic organisms in the area, prepare a contingency plan and a plan of action. These documents have been prepared and submitted to the Department for review and agreement. We recently received the quality assurance data requested from the lab as it relates to dioxin. With this review and review by Water Resources Management on the fish in the river, it appears that all of the actions SNE has taken to date bring them into compliance with the Order.

Additional work remains to be done at the facility. If progress is not acceptable, a new Administrative Order will be issued. Therefore, based on my reivew, I am recommending that this Order be cancelled at this time.

GK:ck

1/12/88

State of Wisconsin \ DEPARTMENT OF NATURAL RESOURCES
→ Wausau file

5301 Rib Mountain Drive
Wausau, WI 54401

Carroll D. Besadny
Secretary

January 12, 1988

Mr. David Stephenson
WAULECO, Inc.
1800 North Point Drive
Stevens Point, WI 54481

Subject: Conditions for Initiating Immediate Remedial Action Plan

Dear Mr. Stephenson:

The Department has completed review of the Immediate Remedial Action Plan received in December, 1987. As per our telephone conversation on January 7, 1988, the Department will approve of the proposed action if WAULECO, Inc. commits to provide the following:

1) A description of controls on the water supply line, which runs through the study area, that would prevent water from the seepage beds from accidently entering the main water supply system.

2) A description of what actions can be taken to address possible migration of water from the seepage beds along the water supply line.

3) The calculations from Keystone Environmental Resources, Inc. for the groundwater mounding in the treatment process.

4) Establish additional monitoring to ensure that, in the event the process fails to function as a closed system, discharge from the system would be detected.

These requirements are based on the responsibilities of WAULECO, Inc. under Wisconsin Statutes, Section 144.76, Hazardous Substance Spills. They were also discussed with Ron O'Toole on January 11, 1988.

In conversation with Greg Hill, Industrial Wastes Section, on January 11, 1988, it was understood that the permit for the proposed discharge to the seepage bed should be issued by January 15, 1988. The work plan can be implemented after WAULECO, Inc. receives the permit covering the proposed actions and upon receipt of a letter by the Department from you regarding the additional requirements identified above.

If you have any questions or need additional information, please contact me at 715-359-4522 or at the Department address above.

Sincerely,

Mark D. Johnson
Hazardous Waste Specialist

MDJ:gg

cc: Gary Kulibert, Rhinelander
Tom Bashaw, Rhinelander/Pete Hubbard, Wausau
Mark Giesfeldt/Gary Edelstein, SW/3, Madison
Greg Hill, IWW/2, Madison
Ron O'Toole, Keystone Environmental Resources, Inc., 440 College Park Dr., Monroeville, PA 15146

1/5/88

WAULECO Inc.

1800 North Point Drive Stevens Point, WI 54481 346-6000

January 4, 1988

RECEIVED
WAUSAU
JAN 5 1988

Mr. Gary Kulibert
State of Wisconsin
Department of Natural Resources
North Central District Headquarters
Box 818
107 Sutcliff Avenue
Rhinelander, WI 54501

Re: WAULECO Quarterly Monitoring

Dear Gary:

Attached are the results of the fourth quarter groundwater monitoring.

As instructed in your September 10 letter, copies of these results are being sent to:

Mr. Mark Giesfeldt
Wisconsin Department of Natural Resources
Box 7921
Madison, WI 53707

- and -

Mr. Mark Johnson
Wisconsin Department of Natural Resources
5301 Rib Mountain Drive
Wausau, WI 54401

Sincerely,

David Stephenson

David Stephenson

DLS:ddk
Att.

cc: Ron O'Toole - Keystone
John Petkuna - Keystone

QUARTERLY GROUNDWATER MONITORING RESULTS
WAULECO CORPORATION FOURTH QUARTER 1987

Parameter	W-2	W-8	W-9	W-10A	W-11	W-14	W-16	W-20	W-21	W-28	W-29	W-31	W-32	FB	TB
Chloride, mg/l	114	17.2	40.0	5.07	21.7	127	159	140	68.4	14.0	118	12.9	14.0	18.2	18.9
Conductivity, umhos/cm.	480	165	460	330	352	640	675	650	440	540	600	220	275	185	185
Nitrate as N, mg/l	3.56	0.544	<0.020	0.021	2.24	4.69	7.95	0.175	4.59	0.146	0.163	<0.020	<0.020	0.471	0.459
Sulfate, mg/l	38.5	30.1	22.0	38.2	26.4	32.2	35.9	40.5	33.5	42.7	48.1	29.8	57.8	70.0	70.1
TOC, mg/l	1.66	3.52	8.63	7.21	2.45	2.05	4.10	5.24	3.89	5.64	22.8	9.60	14.5	2.67	2.30
TDS, mg/l	347	166	312	224	222	413	449	474	302	351	452	157	175	155	161
TSS, mg/l	1480	3460	407	1100	470	2260	2080	1980	313	768	2220	553	182	3.00	3.00
pH, units	6.6	6.7	6.7	6.6	6.9	7.0	7.0	6.6	6.6	6.6	6.6	6.7	6.4	7.3	7.0
Oil & Grease, mg/l	<6.00	<6.00	<6.00	8.88	8.31	<5.00	<6.00	<6.00	<6.00	<6.00	20.2	<5.00	<6.00	<6.00	<6.00
PCP ug/l	180	<1.00	<1.00	4830	163	4.74	<1.00	513	<1.00	2710	18600	<1.00	<1.00	<1.00	<1.00