Better Brite Chrome Shop

ERF Groundwater Sampling 10/16/89

Well	Cadmium (ug/l)	Chromium (ug/l)	Lead (ug/l)	Zinc (ug/l)	Specific Conductance (@25°F) umhos/cm
B-101	<20	<100	<100	<20	2320
B-101A	<20	<100	<100	<20	1340
B-102	<20	<100	<100	<20	2050
B-102A	<20	<100	<100	410	1100
B-103	<20	1000	<100	<20	601
B-104B	<20	<100	<100	<20	1299
B-105B	<20	30000	<100	<20	915
B-105B DUP	<20	28000	<100	<20	

A, B: indicates shallow wells

ERF Groundwater Sampling 10/16/89
Volatile Organic Compounds

Well #	1,1,1-trichloro ethane	Benzene	1,1 Di-chloro ethane	1,1 Di-chloro ethylene	Tri-chloro ethylene	1,2 Di-chloro ethylene
B-101	-	-	-	-	-	-
B-101A	15.0	-	1.2		1.0	-
B-102	-	-	-	-	-	-
B-103	-	-	-	-	-	-
B-102A	500.0	-	27.0	43.0	7.9	3.1
B-104B	53.0	-	16.0	5.0	-	-
B-105B	69.0	-	7.0	4.9	-	-
B-105B DUP	67.0	-	7.0	3.8	-	-

(Results reported in ug/l)

Better Brite Chrome Shop

ERF Investigation Groundwater Sampling 8-13-87

Well	Cadmium (ug/l)	Chromium (ug/l)	Field pH (su)	Specific Conductance (@25°F) umhos/cm
B-101	<0.2	44	11.16	1123
B-101A	1.4	<3	7.32	846
B-102	<0.2	120	10.33	1197
B-102A	0.9	<3	7.25	977
B-103	<0.2	6600	10.34	546
B-104A	1.8	15	7.11	1077
B-105B	1.1	62000	7.43	1067

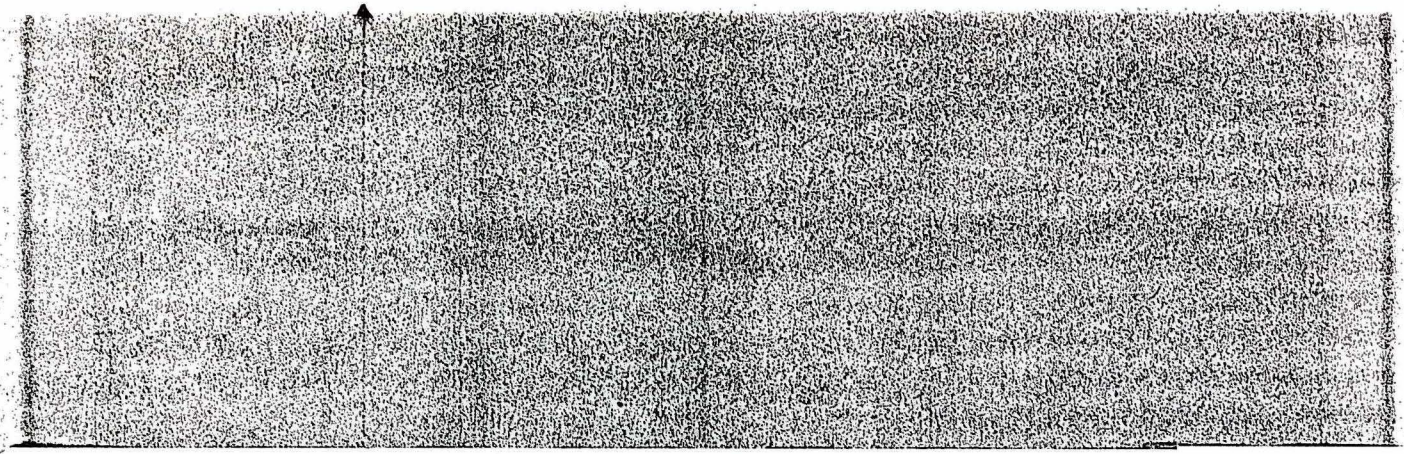
A, B: indicates shallow wells

ERF Investigation Groundwater Sampling 8-13-87
Volatile Organic Compounds

Well #	1,1,1-trichloro ethane	Benzene	1,1 Di-chloro ethane	1,1 Di-chloro ethylene	Tri-chloro ethylene
B-101A	5.1				
B-102		39.0			
B-103		7.6			
B-102A	MC*	MC	MC	MC	MC
B-104A	44.0		15.0	5.4	
B-105B	170.0		9.8	7.6	

*MC = May contain these compounds, three of four vials were received broken at the SLOH. GC/MS run on one vial only.

(Results reported in ug/l)



BETTER BRITE CHROME, CASE # 10062

METALS/CYANIDE ANALYSIS

Sample Number	Instrument	WATER S01		WATER S02		WATER S03		WATER S04		WATER S05		R01		SOIL S09		SOIL S10		SOIL S11		SOIL S12		D01		D02	
	Detection																								
Traffic Report Number	Limit	MEW541		MEW542		MEW543		MEW544		MEW545		MEW548		MEW549		MEW550		MEW551		MEW552		MEW560		MEW561	
aluminum	60.6													7400		6940		13800		3440				13400	
antimony	36																								
arsenic	33.3	1.5	B											3.3		3.5		2.5		2.1	B			2.3	
barium	3.4	50.7	B	76.7	B	78.4	B	112	B	57.2	B	31.2	B	35.2	B	46		71.4		27.9	B	51.5	B	108	
beryllium	1.5	3.5	B					1.8	B					0.57	B	0.92	B	0.82	B	0.65	B	1.8	B	0.71	B
cadmium	4.3																			116	J			2.8	J
calcium	60.1	115000		87300		123000		68000		13400		137	B	81700		9560		5820		26000		109000		5640	
chromium	8.3					11		33000		14.7				433		16.8		746		2250		12.2		922	
cobalt	6.7	7.2	B											8.4	B	5.8	B	7.7	B	6	B	7.2	B	15.5	
copper	4.8	19.7	B	8	B	8.8	B	6.6	B			11.7	B	51.2	J	20.3	J	24.9	J	50.6	J	11.7	B	27.4	J
iron	14.3	52.9	B	27.4	B	23.8	B	27.4	B	27.4	B	54.7	B	15000		11400		17800		9190		113		20600	
lead	22.9											3.7	BJ	5.8		64.3		12.9		7900				12.6	
magnesium	61.7	71800		73300		79100		76800		7490		82.7	B	48400		4520		5370		16100		76400		5630	
manganese	3.4	12.6	BJ	21.2	J	54.2	J	15.8	J	28.9	J	4.5	BJ	310		203		200		205		129		1060	
mercury	0.2																								
nickel	9.4													14.9		8.8		14.5		45.6				22.6	
potassium	261	2360	BJ	2350	B	2540	B	2530	B	27000				1440		866	B	1280		429	B	3000	B	1310	
selenium	5	2.5	B																	0.66	BJ				
silver	6.3																								
sodium	117	18000		22400		31400		37000		67700		446	B	209	B	86.4	B	95.7	B	80.7	B	29400		87	B
thallium	10																								
vanadium	4.6					5.6	B	40.3	B					23.6		21.5		30.2		20.5				37	
zinc	11.4	32.2	U	26.2	U	25.2	U	29.2	U			30.2		27.6	J	61.9	J	46.6	J	239	J	32.2	U	46.6	J
cyanide																									

11/88
Weissbach
Working Copy

BETTER BRITE CHROME SHOP CASE # 10062

VOLATILE ANALYSIS

Sample Number	Instrument	#102A WATER		#101A WATER		#104A WATER		#105B WATER		#103 WATER		#102 WATER		Rinsate WATER		T.Blank WATER		104A WATER	
Traffic Report Number	Detection Limit	EY514 501		EY515 502		EY516 503		EY517 504		EY518 505		EY519 506		EY521 RA1		EY522 508		EY533 D01	
~~acetone~~ *	~~10~~	~~1100~~	~~R~~	~~190~~	~~R~~	~~15~~	~~R~~	~~420~~	~~R~~	~~180~~	~~R~~	~~390~~	~~R~~	~~470~~	~~R~~	~~33~~		~~22~~	~~R~~
ethylene chloride	5			2	JU			4	JU	1	JU			6				3	JU
1,1-dichloroethene	5	27				2	J	1	J									2	J
1,1-dichloroethane	5	21		2	J	8		4	J									9	
trans-1,2-dichloroethene	5	2	J																
1,1,1-trichloroethane	5	400	E	19		29		48										31	
trichloroethene	5	4	J																
benzene	5											3	J						

SEMI-VOLATILE ANALYSIS

Sample Number	Instrument	SOIL 509		SOIL 510		SOIL 512	
Traffic Report Number	Detection Limit	EY523		EY524		EY526	
methyl phthalate	330					90	J
n-butylphthalate	330					59	J
bis(2-ethylhexy)phthalate	330	38	J	190	J	570	

Reported in ug/l

Annette -

This is QA'ed version.
Danielle

* DUE TO CONTAMINATION OF BLANKS DATA FOR ACETONE is unusable & questionable FOR METHYLENE CHLORIDE

(METHYLENE CHLORIDE was present in field blank also)

BETTER BRITE CHROME SHOP CASE # 10062

VOLATILE ANALYSIS

Sample Number	Instrument Detection Limit	#102A WATER		#101A WATER		#104A WATER		#105B WATER		#103 WATER		#102 WATER		Rinsate WATER		T.Blank WATER		104A WATER	
Traffic Report Number		EY514 501		EY515 502		EY516 503		EY517 504		EY518 505		EY519 506		EY521 R01		EY522 508		EY533 D01	
methylene chloride	5			2	JU			4	JU	1	JU			6				3	JU
acetone *	10	1100	R	190	R	15	R	420	R	180	R	390	R	470	R	33		22	R
1,1-dichloroethene	5	27				2	J	1	J									2	J
1,1-dichloroethane	5	21		2	J	8		4	J									9	
trans-1,2-dichloroethene	5	2	J																
1,1,1-trichloroethane	5	400	E	19		29		48										31	
trichloroethene	5	4	J																
benzene	5											3	J						

SEMI-VOLATILE ANALYSIS

Sample Number	Instrument Detection Limit	SOIL 509		SOIL 510		SOIL 512	
Traffic Report Number		EY523		EY524		EY526	
imethyl phthalate	330					90	J
di-n-butylphthalate	330					59	J
bis(2-ethylhexy)phthalate	330	38	J	190	J	570	

* DUE TO CONTAMINATION OF BLANKS DATA FOR ACETONE IS UNUSABLE & QUESTIONABLE FOR METHYLENE CHLORIDE

(METHYLENE CHLORIDE WAS PRESENT IN FIELD BLANK ALSO)

BETTER BRITE CHROME, CASE # 10062

METALS/CYANIDE ANALYSIS

Sample Number	Instrument Detection Limit	WATER S01 (102A)		WATER S02 (101A)		WATER S03 (104A)		WATER S04 (105A)		WATER S05 (103)		R01 (Rinse)		SOIL S09 (by cyclone w side of Bldg)		SOIL S10 (Bkround)		SOIL S11 (Konrath)		SOIL S12 (SW corner of site, surface water runoff pt.)		D01 Water (104A)		D02 SOIL (Konrath)	
Traffic Report Number		MEW541		MEW542		MEW543		MEW544		MEW545		MEW548		MEW549		MEW550		MEW551		MEW552		MEW560		MEW561	
luminum	60.6													7400		6940		13800		3440				13400	
antimony	36																								
arsenic	33.3	1.5	B											3.3		3.5		2.5		2.1	B			2.3	
barium (200)	3.4	50.7	B	76.7	B	78.4	B	112	B	57.2	B	31.2	B	35.2	B	46		71.4		27.9	B	51.5	B	108	
beryllium	1.5	3.5	B					1.8	B					0.57	B	0.92	B	0.82	B	0.65	B	1.8	B	0.71	B
cadmium	4.3																			116	J			2.8	J
calcium	60.1	115000		87300		123000		68000		13400		137	B	81700		9560		5820		26000		109000		5640	
chromium	8.3					11		33000		14.7				433		16.8		746		2250		12.2		922	
cobalt	6.7	7.2	B											8.4	B	5.8	B	7.7	B	6	B	7.2	B	15.5	
copper	4.8	19.7	B	8	B	8.8	B	6.6	B			11.7	B	51.2	J	20.3	J	24.9	J	50.6	J	11.7	B	27.4	J
iron	14.3	52.9	B	27.4	B	23.8	B	27.4	B	27.4	B	54.7	B	15000		11400		17800		9190		113		20600	
lead < CRDL (100)	22.9											3.7	BJ	5.8		64.3		12.9		7900				12.6	
magnesium	61.7	71800		73300		79100		76800		7490		82.7	B	48400		4520		5370		16100		76400		5630	
manganese	3.4	12.6	BJ	21.2	J	54.2	J	15.8	J	28.9	J	4.5	BJ	310		203		200		205		129		1060	
mercury	0.2																								
nickel	9.4													14.9		8.8		14.5		45.6				22.6	
otassium	261	2360	BJ	2350	B	2540	B	2530	B	27000				1440		866	B	1280		429	B	3000	B	1310	
elenium	5	2.5	B																	0.66	BJ				
silver	6.3																								
sodium (5000)	117	18000		22400		31400		37000		67700		446	B	209	B	86.4	B	95.7	B	80.7	B	29400		87	B
thallium	10																								
vanadium	4.6					5.6	B	40.3	B					23.6		21.5		30.2		20.5				37	
zinc	11.4	32.2	U	26.2	U	25.2	U	29.2	U			30.2		27.6	J	61.9	J	46.6	J	239	J	32.2	U	46.6	J
cyanide																									

TO: Sample Management Office
Attn: Jeb Livingood

FROM: Annette Wassbach - WISCONSIN DNR-LMD
Green Bay, WI 54307

SUBJECT–MESSAGE: Better Brite Chrome Shop Case # 10062

Enclosed please find the inorganic and organic traffic report forms for the Site Inspection performed on July 19-20, 1988.

REPLY

SIGNED A Wassbach DATE 7-21-88

SENDER RETAIN THIS COPY

SIGNED _____ DATE _____

TO: USEPA Region I
Central Regional Laboratory

FROM: Annette Weierbach, Superfund
Lake Michigan District, WISC. DNR
Green Bay, WI 54307

SUBJECT–MESSAGE
Better Brite Chrome Shop Case #10062

Enclosed please find:

- CRL Sample Data Report
- Inorganic Traffic Report
- Organic Traffic Report
- 5 Chain of Custody Records

REPLY

SIGNED Annette Weierbach DATE 7-21-88

SENDER RETAIN THIS COPY

SIGNED _____ DATE _____

USEPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA, VA 22313
703/557-2490 FTS-557-2490

CASE NO: 10062 | SAS NO: (IF APPLICABLE)

ORGANIC TRAFFIC REPORT
(FOR CLP USE ONLY)

TYPE OF ACTIVITY (CIRCLE ONE) ①
SUPERFUND—PA (SI) ESI RIFS RD RA ER
NPLD O&M OTHER _____
NON-SUPERFUND—_____PROGRAM

SITE NAME: BETTER BRITE CHROME SHOP
CITY, STATE: DE PERE, WI
SITE SPILL ID: 5L

REGION NO: 5
SAMPLING COMPANY ②: WDNR
SAMPLER: (NAME) ANNETTE WEISSBACH

SHIP TO: ③
CompuChem Laboratories
3308 Chapel Hill/Nelson Hwy
PO Box 12652
RTP, NC 27709
ATTN: _____

SAMPLING DATE: ④
BEGIN: 7/20 END: 7/20/88

DATE SHIPPED: 7/20 CARRIER: F ⑤
AIRBILL NO: 6681350863

SAMPLE DESCRIPTION ⑥
(ENTER IN BOX A)
1. SURFACE WATER
2. GROUND WATER
3. LEACHATE
4. SOIL
5. SEDIMENT
6. OIL (SAS)
7. WASTE (SAS)

TRIPLE VOLUME REQUIRED FOR MATRIX SPIKE/DUPLICATE AQUEOUS SAMPLE

SHIP MEDIUM AND HIGH CONCENTRATION SAMPLES IN PAINT CANS

SEE REVERSE FOR ADDITIONAL INSTRUCTIONS

CLP SAMPLE NUMBER (FROM LABELS)	Ⓐ SAMPLE DESCRIPTION (FROM BOX 1) 1 2 3 4 5 6 7	Ⓑ CONCENTRATION L = LOW/MED. H = HIGH (SAS)	Ⓒ RAS ANALYSIS: VOLATILE	BASE/NEUT /ACID	PESTICIDE /PCB's		Ⓓ SPECIAL HANDLING	Ⓔ STATION LOCATION
EY514	2	L	✓	✓				S01
EY517	2	L	✓	✓				S04
EY515	2	L	✓	✓				S02
EY519	2	L	✓	✓				S06
EY522	3	L	✓					S08
EY521	3	L	✓	✓	✓			R01
EY526	4	L	✓	✓				S12
EY516	2	L	✓	✓				S03
EY518	2	L	✓					S05
EY525	4	L		✓				S11
EY523	4	L		✓				S09
EY524	4	L		✓				S10
EY533	2	L	✓	✓				D01
EY534	4	L		✓				D02

EPA Form 2075-7 (8-87)

☆U. S. GOVERNMENT PRINTING OFFICE: 1988—211-071

USEPA CONTRACT LABORATORY PROGRAM
SAMPLE MANAGEMENT OFFICE
P.O. BOX 818 ALEXANDRIA, VA 22313
703/557-2490 FTS-557-2490

CASE NO: 10062 | SAS NO: (IF APPLICABLE)

INORGANIC TRAFFIC REPORT

(FOR CLP USE ONLY)

TYPE OF ACTIVITY (CIRCLE ONE) ①
SUPERFUND—PA (SI) ESI RIFS RD RA ER NPLD O&M OTHER _____
NON-SUPERFUND—_____ PROGRAM

SITE NAME: BETTER BRITE CHROME SHOP
CITY, STATE: DE PERE, WI | SITE SPILL ID: 5L

REGION NO: 5 | SAMPLING COMPANY ② WDNR
SAMPLER: (NAME) ANNETTE WEISSBACH

SHIP TO: ③
Skinner & Sherman Inc.
300 Second Ave.
Walthan, Massachusetts 02254
ATTN: _____

SAMPLING DATE: ④
BEGIN: 7/20 END: 7/20/88

DATE SHIPPED: 7/20 CARRIER: F ⑤
AIRBILL NO: 66813508 52

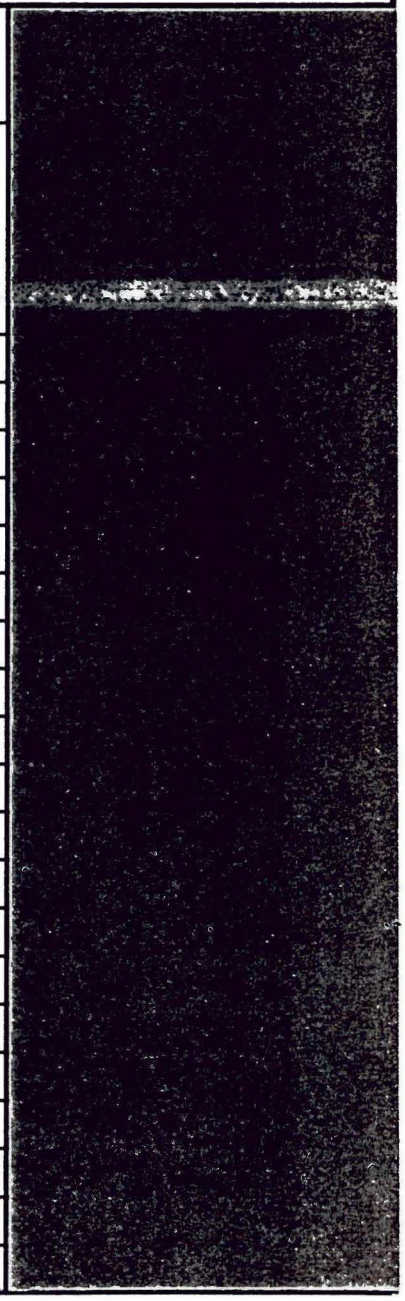
SAMPLE DESCRIPTION ⑥
(ENTER IN BOX A)
1. SURFACE WATER
2. GROUND WATER
3. LEACHATE
4. SOIL
5. SEDIMENT
6. OIL (SAS)
7. WASTE (SAS)

DOUBLE VOLUME REQUIRED FOR MATRIX SPIKE/DUPLICATE AQUEOUS SAMPLE

SHIP MEDIUM AND HIGH CONCENTRATION SAMPLES IN PAINT CANS

SEE REVERSE FOR ADDITIONAL INSTRUCTIONS

CLP SAMPLE NUMBER (FROM LABELS)	Ⓐ SAMPLE DESCRIPTION (FROM BOX 1) 1 2 3 4 5 6 7	Ⓑ CONCENTRATION L = LOW M = MED H = HIGH (SAS)	Ⓒ RAS ANALYSIS: TOTAL METALS	CYANIDE	DISSOLVED METALS	HIGH ONLY (SAS): SULFIDE	pH	CONDUCTIVITY	OXIDANTS	Ⓓ SPECIAL HANDLING	Ⓔ STATION LOCATION
MEW 548	3	L	✓							RINSATE	R01
MEW 542	2	L	✓								S02
MEW 544	2	L	✓								S04
MEW 541	2	L	✓								S01
MEW 552	~~4~~ 4	L	✓								S12
MEW 543	2	L	✓								S03
MEW 560	2	L	✓								D01
MEW 545	2	L	✓								S05
~~MEW 561~~	~~2~~	~~L~~									
MEW 561	4	L	✓								D02
MEW 549	4	L	✓								S09
MEW 550	4	L	✓								S10
MEW 551	4	L	✓								S11



ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 5
230 South Dearborn Street
Chicago, Illinois 60604

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
88XW01	

SAMPLERS: *(Signature)*

CASE # 10062

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	VOLATILES	SEMI-VOLATILES					REMARKS OTR #	REMARKS TAG #
R01	7/20	0830		X	Rinsate	2-40ml	✓						EY521	S-068377 ; S-068376
"	"	"		X	"	2-80oz		✓					EY521	S-068696 ; S-068695
D01	7/20	0840		X	Duplicate	2-40ml	✓						EY533	S-068812 ; S-06809
"	"	0845		X	"	2-80oz		✓					"	S-068600 ; S-068599
S04	7/20	0900		X	Sample 4 105-B	2-40ml	✓						EY517	S-068369 ; S-068368
"	"	0915		X	"	2-80oz		✓					"	S-068577 ; S-068701
S02	7/20	0755		X	Sample #2 101-A	2-40ml	✓						EY515	S-068365 ; S-068364
"	7/20	0805		X	"	2-80oz		✓					"	S-068573 ; S-068574

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
[signature]	7-20-88 17:15			/	
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
	/			/	
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	
	/		/	FEDERAL EXPRESS 6068135086 3 CUSTODY SEAL # 13180	

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

5- 16061

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 5
230 South Dearborn Street
Chicago, Illinois 60604

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
88AW01	

SAMPLERS: *(Signature)* R Crossbrook

CASE # 10062

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	VOLATILES	SEMI-VOLATILES					REMARKS QTR #	REMARKS TAG #
D02	7/19	1155		X	Duplicate	1		✓					EY534	S-068616
S09	7/19	1230		X	Sample 9	1		✓					EY523	S-068832
S10	7/19	1005		X	Sample 10	1		✓					EY524	S-068596
S11	7/19	1155		X	Sample 11	1		✓					EY525	S-068839
S12	7/19	1220		X	Sample 12	1		✓					EY526	S-068840

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
R Crossbrook	7-20-88 16.20				
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	
				FEDERAL EXPRESS 6681360863 CUSTODY SEAL # 1181	

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

5-16066

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 5
230 South Dearborn Street
Chicago, Illinois 60604

CHAIN OF CUSTODY RECORD

CASE # 10062

PROJ. NO.	PROJECT NAME
88XW01	

SAMPLERS: *(Signature)* [signature]

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	METALS							ITR #	TAG #
S01	7/20	0730		X	Sample #1 102A	1	✓							MEW541	5-068387
S02	7/20	0755		X	Sample #2 101A	1	✓							MEW542	5-068385
S03	7/20	0830		X	Sample #3 104A	1	✓							MEW543	5-068388
S04	7/20	0900		X	Sample #4 105B	1	✓							MEW544	5-068389
S05	7/20	0915		X	Sample #5 103	1	✓							MEW545	5-068390
R01	7/20	0820		X	Rinsate (after-101A)	1	✓							MEW548	5-068769
D01	7/20	1025		X	Duplicate (104A)	1	✓							MEW560	5-068613

REMARKS

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
[signature]	7-20-88 16:20				
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	
				FEDERAL EXPRESS 6681350852 CUSTODY SEAL # 13182	

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

5-16062

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 5
230 South Dearborn Street
Chicago, Illinois 60604

CHAIN OF CUSTODY RECORD

CASE #10062

PROJ. NO.	PROJECT NAME
88XW01	

SAMPLERS: *(Signature)* C. Crisstrech

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	METALS	ITR #	REMARKS TAG #
S09	7/20	1230		X	Sample #9	1	✓	MEW 549	5-068841
S10	7/20	1205		X	sample #10	1	✓	MEW 550	5-068597
S11	7/20	1155		X	sample #11	1	✓	MEW 551	5-068843
S12	7/20	1220		X	Sample #12	1	✓	MEW 552	5-068844
D02	7/20	1155		X	Duplicate	1	✓	MEW 561	5-068617

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
C. Crisstrech	7-20-88 16:20				
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	
					Federal Express 6681350852 custody Seal #13178

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

5-16072

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

CHAIN OF CUSTODY RECORD

REGION 5
230 South Dearborn Street
Chicago, Illinois 60604

CASE# 10062

PROJ. NO.	PROJECT NAME
88XW01	

SAMPLERS: *(Signature)*

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	VOLATILES	SEMI-VOLATILES					OTR#	TAG#
S01	7/20	0730		X	Sample 1 102 A	2-40mL	✓						EY514	S-068362; S-068363
"	"	0845		X	"	2-40mL	✓						"	S-068622; S-068623
"	"	0845		X	"	2-40mL	✓						"	S-068624; S-068625
"	"	0920		X	"	2-8oz		✓					"	S-068618; S-068621
"	"	"		X	"	2-8oz		✓					"	S-068620; S-068572
"	"	"		X	"	2-8oz		✓					"	S-068571; S-068619
S03	7/20	0830		X	Sample 3 104 A	2-40mL	✓						EY516	S-068366; S-068367
"	"	0845		X	"	2-8oz		✓					"	S-068576; S-068575
S05	7/20	0915		X	Sample 5 103	2-40mL	✓						EY518	S-068370; S-068371
S06	7/20	0935		X	Sample 6	2-40mL	✓						EY519	S-068373; S-068372
S08	7/20	—			TRIP BLANK	2-40mL	✓						EY522	S-068378; S-068379

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
[signature]	7-20-88 17.10				
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	
				FEDERAL EXPRESS 6681350863 CUSTODY SEAL # 13179	

Distribution: White — Accompanies Shipment; Pink — Coordinator Field Files; Yellow — Laboratory File

5- 16065

MONITORING WELL DATA SHEET

Site BetterBuilt Chrome Shop Date July 19, 1988

Location 519 Lande St. DePere License or Permit # 5600010118

Sampling Equipment (include model numbers) _____

Well Name	B101A	B101	B104A	B105B
~~DNR ID #~~ Hnn at wellhead	0ppm	2.0	2.7	0ppm
Diameter of well (inches)	2"	2"	2"	2"
Measured Depth to Water (ft)	6.26			
Correction	0.0	0.0		
Total Depth to Water (ft)	6.26	32.65	7.48	6.57
Depth to bottom of Well (ft)	20.75	62.14	21.96	20.92
Well depth-Water Depth=A (ft) (volume of water in well)	14.49	29.49	14.48	14.41
Volume to be purged = A x B*	9.44	19.20	9.44	9.39
Time purging begun	10:25	10:10	10:45	11:20
Time purging completed	10:34	10:35	11:20	16:35
Person Purging (initials)	AN	JR	RN	AW
Purged dry? (Y/N) Volume purged(gal) i.e. Y/2.5, N/13.7	Y/3.2g	Y/7.0g	Y 3.5g	Y/2.5gal
Person Sampling (initials)	RW/JR		AN/JR	AN/AW
End time sample withdrawn	7:55		8:45	9:15 am
Color	lt brown		lt Brown	Yellow
Odor	NO			NO
Turbidity / conductivity	yes / @950		/ @1185	/ 1015
Well cap & lock replaced (Y/N) elevation 7/20/88	6.4	DRY	8.1	11.52

Comments: discuss condition of well, casing, seal, etc. and any problems, including deviations from the sampling plan.

*B is determined from the following:

Inside Well Diameter (inches)	B 4 x vol (gal/ft)
1	0.163
1 1/4	0.255
1 1/2	0.367
2	0.652
3	1.469
4	2.61

MONITORING WELL DATA SHEET

Site Bette Brite Cleaners Shop Date July 19, 1988

Location 519 Lande St. DePere License or Permit # 5600101 18

Sampling Equipment (include model numbers) _____

Well Name	B102A	B102	B103	Duplicate 104A
DNR ID #	3.8 ppm	1.3 ppm	0. ppm	
Diameter of well (inches)	2"	2"	2"	
Measured Depth to Water (ft)	6.19	54.1	20.81	
Correction	0.0	0.0		
Total Depth to Water (ft)	6.19	54.1	20.81	
Depth to bottom of Well (ft)	21.2	64.81	58.19	
Well depth-Water Depth=A (ft) (volume of water in well)	15.01	10.7	37.38	
Volume to be purged = A x B*	dry 9.78	7 gal	24	
Time purging begun	9:45	9:45	10:45	
Time purging completed	10.05	10.03	11:10	
Person Purging (initials)	AN	JR	JR	
Purged dry? (Y/N) Volume purged(gal) i.e. Y/2.5, N/13.7	EW / 3.1 gal	EW / 3.0 gal	8 gal	
Person Sampling (initials)	AW/AN	JR/AW	AW/JR	
End time sample withdrawn	730-	9:35 no metal	9.15 VOC/metals	
Color	clear/then muddy		muddy	
Odor	NO			
Turbidity	very, very slight	yes	yes 530	
Well cap & lock replaced (Y/N) Water level 7-20-88	6.35	64.13	54.7	

Comments: discuss condition of well, casing, seal, etc. and any problems, including deviations from the sampling plan.

8:30 am

*B is determined from the following:

Inside Well Diameter (inches)	B 4 x vol (gal/ft)
1	0.163
1 1/4	0.255
1 1/2	0.367
2	0.652
3	1.469
4	2.61

WEATHER CONDITIONS REPORT FORM

Site BetterBrite Chrome Shop

Location 519 Lunde Street DePere, Wi. 54915

Instructions: Weather conditions should be monitored at least twice a day; once in the morning and once in the afternoon. Conditions should also be recorded if there is noticible change.

Date	Time	Observed Wind Current Speed (mph)	Direction (degree)	Humid	Temp	Comments	Operator Initials
7-19-88	9:33	~5mph	Variable	~50%	75°F	Sunny. No equipment all values Estimated	TLH
7-19-88	10:58	5-8 mph	SW-W		80°F	Same	TLH
7-19-88	11:17	10-12 mph	NE	~50%	80°F	Same	TLH
7-19-88	12:10	10-12 mph	NE	~50%	30.7°C	Partly Cloudy	TLH
7-20-88	7:00	calm			70°	Partly Sunny	TLH
7-20-88	8:55	5 mph	NE		20°C	Mostly Cloudy	TLH
7-20-88	11:19	~5mph	NE	~50%	25°C	Partly cloudy	TLH

PRE/POST SAMPLING EQUIPMENT DECONTAMINATION REPORT

Site: BetterBrite Chrome

Date: July 19-20, 1988

	Alconox Wash	Tap Rinse (3 times)	Acid Rinse 1:1 nitric	~~Distilled~~ Tap Rinse (3 times)	Acetone Rinse	Deionized (3 times)	Operator Initials	Comments
Bailers								7-20-88 All Bailers were washed w/ Alconox then rinsed w/ Tap then Acid Rinse (Nitric 10%) then w/ Tap then Acetone and finally complete and thorough triple rinse w/ Distilled. Bailers were cleaned at site then wrapped in aluminum Foil
~~Bailer Cord~~ discarded				7-19-88				
Transfer Bottles			Bailers were taken to Lab and cleaned following above procedure					
~~Beakers~~								
Filter Holder	Distilled Rinse							
Pump Tubing	"							
~~Popper~~ TLC	rinsed w/ Distilled		Transfer Bottles also rinsed ~~as~~ according to above					
Water Level Probe								
Bailer Field Decon Tubes								

SOIL SAMPLING
Field Data Sheet

Site: BETHLEHEM CHROME

Sample Type: Grab (X) Composite ( )

Date: July 19, 1988

Sample I.D. # DUPLICATE

Sampled by: Jim Reyburn

Station No.	Sampling Location	Time	Sampler Initials	Comments (color, odor, turbidity)
	KONRATH BACK YARD	11.58	JR.	SANDY LOAM

Sample Description (depth, device, method, etc.):
SHOVEL 0-6" JUST UNDER GRASS

SAME LOCATION AS SAMPLE #11

Observations:
LOCATED 5 feet South of ABANDONED well
IN MIDDLE OF KONRATH BACK YARD
7 feet NORTH OF TRENCH

SOIL SAMPLING
Field Data Sheet

Site: BetterBrite Chrome

Sample Type: Grab (X) Composite ( )

Date: July 19, 1988

Sample I.D. # 10 - BACKGROUND

Sampled by: Jim Reyburn

Station No.	Sampling Location	Time	Sampler Initials	Comments (color, odor, turbidity)
	OFF SW CORNER HOUSE LOT	12:01	JR	

Sample Description (depth, device, method, etc.):
Shovel 0-6" just below GRASS. JUST OFF SOUTH WEST CORNER of house lot.

Observations: TAKEN AS BACKGROUND.

SOIL SAMPLING
Field Data Sheet

Site: BetterBrite Chrome

Sample Type: Grab (X) Composite ( )

Date: July 19, 1988

Sample I.D. # 12

Sampled by: Jim Reyburn

Station No.	Sampling Location	Time	Sampler Initials	Comments (color, odor, turbidity)
	SW corner of site	12:19	JL.	SAMPLE - CLAY.

Sample Description (depth, device, method, etc.):

SHOVEL 0-6" SURFACE WATER RUNOFF POINT LOCATED SW ~~SW~~ SE CORNER OF PROPERTY - LEADING TO RR. DITCH

Observations:

SOIL SAMPLING
Field Data Sheet

Site: Better Bike - Ca.

Sample Type: Grab (X) Composite ( )

Date: 7-19-88

Sample I.D. # 9

Sampled by: Reyburn

Station No.	Sampling Location	Time	Sampler Initials	Comments (color, odor, turbidity)
	5 feet north sump on west side building.	12:29	R.	

Sample Description (depth, device, method, etc.):
IN AREA of cyclone with EPA removed the most heavily contaminated 0-2" surface stained yellow

Observations:
surface stained yellow - clay replaced by EPA

SOIL SAMPLING
Field Data Sheet

Site: Bethel Brick Chrome

Sample Type: Grab (X) Composite ( )

Date: July 19, 1988

Sample I.D. # 11

Sampled by: Jim Reyburn

Station No.	Sampling Location	Time	Sampler Initials	Comments (color, odor, turbidity)
	Konrath back yard.	11:58	JR.	sandy loam

Sample Description (depth, device, method, etc.):
stovel 0-6" just under grass

Observations:
Located 5 feet South of abandoned well in middle of back yard. 7' North ~~of~~ West of trench

FIELD DATA
Field Parameter/Sample Preparation

Site: BetterBrite Chrome Shop

Date: 20 ~~JK~~ July 1988

Analyzed by: _____

	Well Name or Station #	Time Filtered/ Analyzed	pH	Temp °C	Spec Cond @25°C	Acid (✓)	Cool (✓)	Analyst Initials	Comments (Color Odor Turbidity)
7	102A	7:42	6.8	17.8 ~~14.~~	1.00 19.7°C mmhos/cm	✓	✓	TS TH	slightly Turbid / brown
#2	101A	8:00	7.0	14.5	165°C 929 mmhos/cm	✓	✓	TS TH	slightly turbid / brown
	Rinse Blank	8:28	6.79	25.1	.002 25.6	✓	✓	TS TH	clear
7.3	104A	8:35	7.00	14.7	1.200 15.5	✓		TS TH	slightly Turbid / brown
	Rinse Blank								

pH meter (model #): Corning pH 105 (type, model, probe) Buffers: _____

Conductivity meter (model #): YSI 3000 TLC (type, model) Standard: _____

Comments:

FIELD DATA
Field Parameter/Sample Preparation

Site: Better Brite Chrome Shop

Date: ~~20~~ July 1988

Analyzed by: Hegeman & Sturm

	Well Name or Station #	Time Filtered/ Analyzed	pH	Temp °C	Spec Cond @25°C	Acid (✓)	Cool (✓)	Analyst Initials	Comments (Color Odor Turbidity)
7'	105B	9:09	7.4	13.5	0.975 15	✓	✓	TS TH	Yellow
5	103	9:25	8.2	13.8	0.516 15.5	✓	✓	TS TH	
Dup	104A	10:40	8.5	16.1	1.119 17.4	✓	✓	TS TH	Slightly turbid Brown
	101	10:45	11.9		Insufficient Sample				Clear
	Rinse Blank								

pH meter (model #): Corning pH 10S (type, model, probe) Buffers:

Conductivity meter (model #): YSI TLC 3008 (type, model) Standard:

Comments:

FIELD DATA
Field Parameter/Sample Preparation

Site: BetterBrite Chrome Shop

Date: 19 July 1988

Analyzed by: Hegeman & Sturm

	Well Name or Station #	Time Filtered/ Analyzed	pH	Temp °C	Spec Cond @25°C	Acid (✓)	Cool (✓)	Analyst Initials	Comments (Color Odor Turbidity)
#1	~~101~~ ~~102~~		~~11.3~~ ~~10.97~~	23	1.00 mv/cm				Slightly turbid
#2	102		8.6	20.8	1.60 mv/cm				
	Rinse Blank								

pH meter (model #): Corning pH 105 (type, model, probe) Buffers:

Conductivity meter (model #): YSI 3000 TLC Meter (type, model) Standard:

Comments: Cond. Distilled = 0.02 mv/cm Compensated to 25°C
pH Distilled = 5.46 su

WESTON • SPER
River Center, 111 North Canal Street, 8th Floor, Suite 855,
Chicago, IL 60606 • (312) 993-1067

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE REMOVAL AND PREVENTION
EPA CONTRACT 68-01-7367

Mr. Steven J. Faryan
Deputy Project Officer
Emergency Response Section
Western Response Unit
U.S. Environmental Protection Agency
11th Floor
230 South Dearborn Street
Chicago, Illinois 60604

September 30, 1988

TAT-05-G2-00670

Re: Better Brite Chrome, DePere, Wisconsin
TDD# 5-8804-14

Dear Mr. Faryan:

The U.S. Environmental Protection Agency (U.S. EPA) tasked the Technical Assistance Team (TAT) to develop a treatment system for removing chromium from the ground water at the Better Brite Plating Company (Better Brite Chrome) site in DePere, Wisconsin. Several alternative treatment options were considered for treating the ground water including reverse osmosis, ion exchange, and chemical treatment. A variance that would permit discharging into the sanitary sewer was also considered.

Based on the options evaluated, the TAT recommends installing the chemical treatment system along with an insulated steel sided building at the Better Brite Chrome site. Prior to purchasing the treatment system, a written commitment to maintain the system should be obtained from the Wisconsin Department of Natural Resources or the City of DePere. The U.S. EPA should provide the financing to maintain the system for the first year of operation with the state and local municipalities providing the funding thereafter. In addition to the treatment system, the on-site pond should be drained, the contaminated soils scraped, and the site brought to grade with top soil and seeded.

The cost of the aforementioned treatment system and site work would be $103,000.00 with an annual maintenance cost of $20,000.00. The total estimated cost including TAT and U.S. EPA cost is $199,000.00.

WESTON·SPER

Should you have any questions or require additional information, please feel free to contact us.

Very truly yours,

ROY F. WESTON, INC.

Richard H. Mehl Jr.

Richard H. Mehl Jr.
Environmental Engineer

Sally Matz

FOR Scott Springer
Technical Assistance Team
Leader, Region V

RHM/bjh

CHROME TREATMENT SYSTEM

FOR

BETTER BRITE PLATING

DEPERE, WISCONSIN

Prepared For:

U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, Illinois

CONTRACT NO. 68-01-7367

TAT-05-G2-00670

TDD NO. 5-8804-14

Prepared By:

WESTON-SPER
Technical Assistance Team
Region V

September 1988

TABLE OF CONTENTS

1.0 INTRODUCTION

The U.S. Environmental Protection Agency (U.S. EPA) tasked the Technical Assistance Team (TAT) to develop a treatment system for removing chromium from the ground water at the Better Brite Plating Company (Better Brite Chrome) site in DePere, Wisconsin (Figure 1). The treatment system must be capable of treating chromium contaminated ground water with concentrations up to 1,200 parts per million (ppm) at a rate of 2,000 gallons per day (gpd); the effluent must meet the City of DePere pretreatment standard of 7 ppm. The system should be automated to eliminate or limit operator assistance and be contained in a heated building for protection. The U.S. EPA will finance the operation and maintenance of the system for the first year, with the local and/or state agencies financing the system thereafter. The system should remain operational until the chromium concentration in the ground water decreases to 7 ppm.

2.0 SITE LOCATION AND HISTORY

Better Brite Chrome is located at 519 Lande Street in DePere, Wisconsin (population 14,892). The site, which covers 1.5 acres, is situated one-quarter mile west of the Fox River in a primarily residential area. It is bordered by Lande Street to the north, residential homes to the south and west, and railroad tracks and residences to the east (Figure 2). A small pond that collects site runoff is located on the east side of the site. A building that previously housed in-ground storage tanks also remains on-site.

Better Brite Chrome began its plating operation in late 1970 and operated until October 1985, when the company filed for bankruptcy. The source of ground water contamination is attributed to several reported spills during the course of operations and from several leaking in-ground plating liquid storage tanks. According to John Zenner, the most recent owner of the facility, between 20,000 and 60,000 gallons of plating solution may have leaked from the in-ground storage tanks during the seven years of plating operation.

3.0 TREATMENT APPROACHES

Three alternative technologies were considered for treating the chromium contaminated ground water at the Better Brite Chrome site: reverse osmosis, ion exchange, and chemical treatment. In addition, a U.S. EPA Resource Conservation and Recovery Act (RCRA) variance was considered. These options will be explored in greater detail in the following sections.

REVERSE OSMOSIS

A reverse osmosis (RO) unit purifies ground water by forcing contaminated water through a semi-permeable membrane under

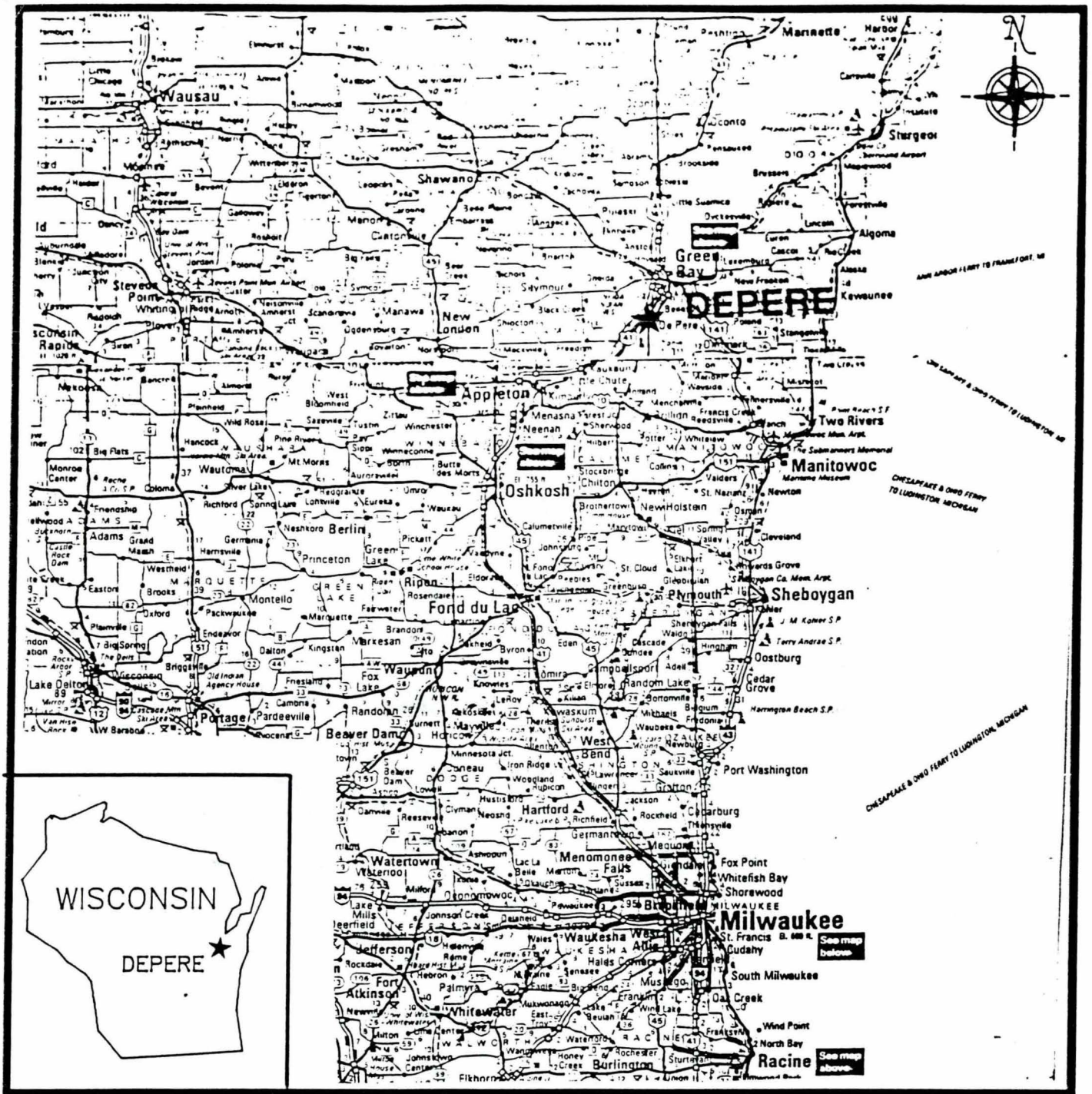


FIGURE 1

SITE LOCATION MAP

BETTER BRITE CHROME

DEPERE, WISCONSIN

NOT TO SCALE

WESTON MANAGERS DESIGNERS/CONSULTANTS

DRAWN BY RHM	DATE 9-30-88	PCS # 1493
APPROVED BY L. AXE	DATE 9-30-88	TDD # 5-8804-14

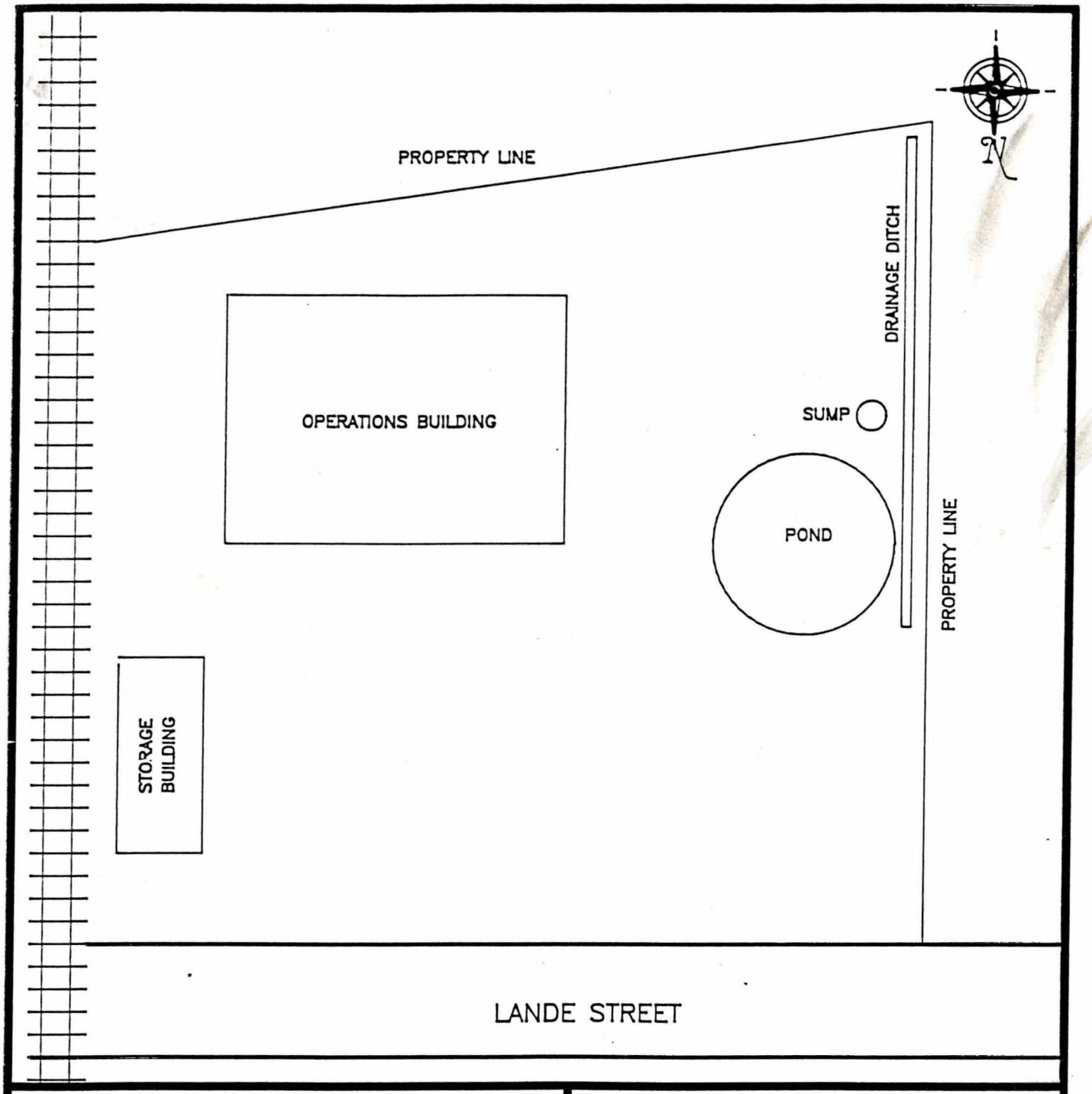


FIGURE 2
SITE MAP
BETTER BRITE CHROME
DEPERE, WISCONSIN

NOT TO SCALE

WESTON
MANAGERS DESIGNERS/CONSULTANTS

DRAWN BY RHM	DATE 9-30-88	PCS # 1493
APPROVED BY L. AXE	DATE 9-30-88	TDD # 5-8804-14

high pressure. Under ideal conditions this system could remove 80 to 90 percent of the total chromium; however, to reduce the chromium concentration to 7 ppm at least a 99 percent removal efficiency is required. Another potential problem is that as the chromium concentrates on the membrane, it can oxidize the membrane, requiring frequent membrane replacement. Also, the RO unit would require extensive pretreatment to remove any suspended solids such as calcium. For these reasons treating the chrome-contaminated ground water with a RO unit would be an impractical alternative and therefore will not be considered.

ION EXCHANGE

Ion exchange treatment involves exchanging an ion possessing a high ionic affinity with an ion possessing a low ionic affinity. In such a treatment process, the contaminated water passes across resins having exchangeable ions. The ions removed from the water attach to the resins and are exchanged for ions having a a lower affinity to the resin.

The exchange reaction is reversible and is dependent upon the concentration of the contaminant involved. Where it is necessary to remove both cations (positively charged ions) and anions (negatively charged ions), it will be necessary to have a two resin system.

Ion exchange is an effective method for removing heavy metals from water with contaminant concentrations of up to 1,500 mg/l. Higher concentrations of contaminants will result in rapid depletion of the resins and high regeneration costs; however, with lower contaminant concentrations, ion exchange is a viable treatment option. Ion exchange can also be used to recover chemicals for reuse or resale.

Recent laboratory analyses have indicated that the total chromium in the ground water at the Better Brite Chrome site is comprised of approximately 90 percent hexavalent chromium and 10 percent trivalent chromium, thus a two resin system will be required.

While the ion exchange system will be effective in removing the chromium from the ground water, the regenerant from the regeneration cycle must be treated. It is estimated that for every 1,000 gallons treated, 400 gallons of regenerant is produced. The regenerant will consist of an acidified brine with chromium. This excessive generation of waste material would result in cost prohibitive disposal costs. This is shown in detail in the cost analysis section. In

addition, there is no use for the treated effluent nor will there be a need to recover the chromium. Therefore, for the Better Brite Chrome site, the economic benefits of ion exchange are diminished.

CHEMICAL TREATMENT

Chemical treatment represents a proven and effective method for removing chromium from ground water. Chemical treatment involves reducing hexavalent chromium to its trivalent state using sodium bisulfate or ferric chloride. The remaining trivalent chromium is precipitated out at a high pH and flocculated with an inorganic coagulant such as lime or alum. The flocs then separate out in a clarifying tank. The treated effluent can then be discharged to a sanitary sewer. The remaining sludge is thickened with polymers, dried and disposed of in an appropriate landfill.

Advantages of chemical treatment include its proven effectiveness, minimal safety and health hazards, ease of operation, and relatively low disposal costs. The disadvantages of the system include high capital costs, bulky equipment, and required operator assistance.

Two companies were contacted for varied approaches on treating the contaminated ground water using chemical treatment: Aqua Treat, Inc. (ATI) of Chicago Heights, Illinois, and TSR Engineering (TSR) of Broadview, Illinois.

ATI proposes using a 25 gallon per minute (gpm) continuous flow wastewater treatment system that utilizes the existing collection sump and 25 gpm pump (Figure 3). The proposed system would chemically treat the chromium contaminated ground water with ferric chloride, and consist of a series of mixing, flocculation, clarifying and sludge thickening tanks. The waste sludge would be dried to a 50 percent solids concentration on a sludge drying conveyor with a hot water boiler. The system effluent would be screened with a polyethylene cloth screen before being discharged into the sanitary sewer. A backup set of pH sensing probes in the mix/reaction tanks would be included to compensate for the lack of a full time operator.

TSR proposes using a similar system except that the ground water will be chemically treated with sodium metabisulfate instead of ferric chloride. The TSR system uses a filter press to dry the sludge instead of a boiler, and a mixed media filter will filter the effluent instead of a polyethylene cloth filter. TSR recommends that the majority of the instrumentation be duplicated. The duplication of the instrumentation and chemical feed systems would insure proper operation of the system in the event of an equipment

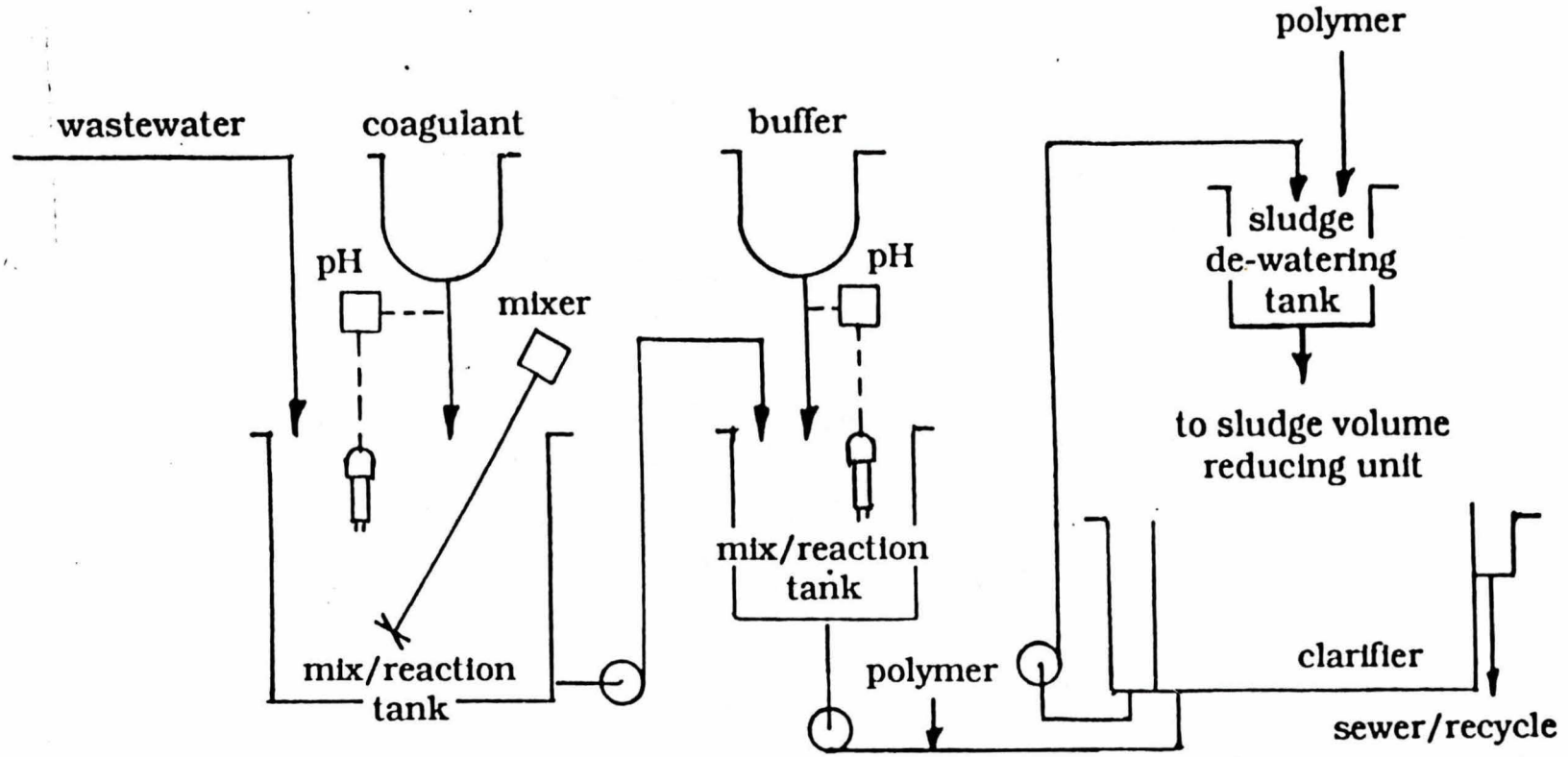


FIGURE 3

SYSTEM FLOWCHART

BETTER BRITE CHROME

DEPERE, WISCONSIN

NOT TO SCALE

WESTON

MANAGERS DESIGNERS/CONSULTANTS

DRAWN BY RHM	DATE 9-30-88	PCS # 1493
APPROVED BY L. AXE	DATE 9-30-88	TDD # 5-8804-14

failure. Both systems would be equipped with alarm systems and automatic shutoffs that notify the appropriate personnel of problems, such as high water level and chemical deficiencies. Also both systems require an operator to occasionally refill the chemical holding tanks and perform routine maintenance. The TSR system also requires an operator to load and run the filter press twice a week.

RCRA VARIANCE

A U.S. EPA RCRA variance that would allow chromium contaminated ground water above the City of DePere pretreatment standard of 7 ppm to be discharged into the sanitary sewer was evaluated.

If a variance was granted then the drain and pump system that is currently operating at Better Brite Chrome could continue to discharge into the DePere sanitary system.

The advantages of a variance include no additional capital costs and limited routine maintenance. Also according to David Benner, the City of DePere Wastewater Treatment Plant Manager, the chromium discharged from the Better Brite Chrome site does not have an impact on the five million gpd treatment plant.

Although a variance is a viable option, it does not comply with the directions set forth under the Superfund Amendment Reauthorization Act of 1986, and the Comprehensive Environmental Response, Compensation, and Liability Act of 1980.

4.0 RECOMMENDATIONS

After evaluating the options presented in this report, the TAT recommends that a chemical treatment system be implemented at the Better Brite Chrome site. Of the two chemical treatment systems considered, the system proposed by ATI appears to be the better option. Compared to the TSR system, the ATI system has a lower capital cost, will require less operator assistance and is capable of drying the waste sludge to a 50 percent weight reduction. However, before the system is purchased, a tour of existing operating systems should be conducted. A list of companies currently using the ATI system is included in Attachment A.

Prior to implementing a treatment system, the U.S. EPA should obtain a written commitment from the Wisconsin Department of Natural Resources or the City of DePere to maintain the treatment system. The U.S. EPA should provide the financing to maintain the system for the first year of operation, with the local and/or state agencies providing the funding thereafter.

In order to protect the treatment system from the weather, an insulated steel sided building should be constructed. The building should be capable of maintaining an inside temperature of 60° Fahrenheit in the cold weather months. In addition to the chemical treatment system, the on-site pond should be drained, and the contaminated soils scraped and disposed of at a RCRA approved landfill. To verify that the surface contamination has been removed 10 soil samples should be collected and analyzed for hazardous substance list metals and total cyanide. To prevent erosion the site should be brought to grade with topsoil and seeded.

5.0 COST ESTIMATE

Cost estimates are presented for ion exchange and two chemical treatment systems. The costs included are for capital equipment, transportation and disposal, maintenance, personnel, utilities, and chemical costs. The cost of an insulated steel building is also included. The size and cost of the building will vary depending on the required floor space. Cost for an RO system will not be considered, while the cost for a RCRA variance is negligible. The support costs for draining the on-site pond, scraping the contaminated soils, analyzing 10 soil samples, and seeding the site will be considered separately.

SUPPORT COSTS

Personnel	Days	Costs
1 Response Manager @ 59.47/hr.	3	$1,427.28
1 Field Clerk @ $33.52/hr. $38.92/hr.OT	3	622.80
1 Operator @ $33.52/hr., $49.72/hr. OT	3	804.48
1 Technician @ $29.14/hr., $43.25/hr. OT	3	699.36
Per Diem 4 @ $69/day	3	828.00
22.09% G & A on per diem		182.91
	Subtotal	$4,564.83

Equipment	Days	Costs
1 Front End Loader @ $480.57/Day	3	$1,441.71

Equipment Continued	Days	Costs
1 Pickup (3/4 Ton) @ $48.96/Day	3	146.88
1 Passenger Sedan @ $60/Day	3	180.00
	Subtotal	$1,768.59

Materials		Costs
Extent Of Contamination 10 Samples @ $300/Sample		$3,000.00
4" Topsoil Over 1 Acre 532 yd^3 of soil @ $5/$yd^3$ delivered		2,660.00
Fill For Pond 20 ft X 20 ft X 4 ft 593 yd^3 of Soil @ $5/$yd^3$ Delivered		2,965.00
Seeding		1,000.00
PPE 2 @ $85.20/Day	3	511.20
16.1% G & A		1,631.93
	Subtotal	$11,768.13

Disposal		Costs
30 cu. Yds of Soil @ $150.00/yd		$4,500.00
2.0% G & A		90.00
	Subtotal	$4,590.00

Transportation		Costs
210 Miles @ $4.00/Loaded Mile		$840.00
2.0% G & A		16.80
	Subtotal	$856.80

Analytical		Costs
10 Samples @ $200.00/Sample		$2,000.00
2.0% G & A		40.00
	Subtotal	$2,040.00

Support Costs Summary

Item	Costs
Personnel	$ 4,564.83
Equipment	1,768.59
Materials	11,768.13
Disposal	4,590.00
Transportation	856.80
Analytical	2,040.00
Total	$25,588.35

Ion Exchange

Item	Costs
2-6,000 Gallon Storage Tanks	$ 5,000.00
15 ft X 15 ft X 10 ft Building Including Foundation	20,000.00
Transportation (59 loads) 300 Miles @ $4/mile	70,800.00
Disposal of 292,000 gal/yr. @ $0.35/gal	102,200.00
Fixed Equipment, Engineering & Training	50,000.00
Resin Costs $50/Week	2,600.00
Maintenance Personnel $20/Hour @ 4 hrs/Week	4,160.00
Utilities $20/Week	1,040.00
Installation Costs	1,884.00
Ion Exchange Total	$257,684.00 or $258,000.00

Annual Costs $181,000.00

Chemical Treatment With Filter Press MA Meta Bi Sulfite.

Item	Costs
Rolloff Box	$ 3,000.00
20 ft x 30 ft x 16 ft Building including Foundation	37,000.00
Transportation (1 Load) 300 Miles @ $4/Loaded Mile	1,200.00
Disposal 15 Tons/yd @ $127/Ton	1,905.00
Fixed Equipment, Engineering, & Training	100,000.00
Chemicals $50/Week	2,600.00
Maintenance Personnel $20/Hour @ 8 Hours/Week	8,320.00
Utilities $50/Week	2,600.00
Installation Costs	6,150.51
Chemical Treatment With Filter Press Total	$162,775.51 or $163,000.00
Annual Costs	$17,000.00

Chemical Treatment With Sludge Dryer

Item	Costs
Rolloff Box	$ 3,000.00
15 ft x 30 ft x 12 ft Building Including Foundation	25,000.00
Transportation (1 Load) 300 Miles @ $4/Loaded Mile	1,200.00
Disposal 15 Tons/year @ $127/Ton	1,905.00
Fixed Equipment, Engineering & Training	49,000.00
Chemicals $50/Week	2,600.00
Maintenance Personnel $20/Hour @ 8 Hours/Week	8,320.00
Utilities $100/Week	5,200.00
Installation Costs	6,150.51
Chemical Treatment With Sludge Dryer Total	$102,375.51 or $103,000.00
Annual Cost	$20,000.00

BETTER BRITE CHROME
CLEANUP COST ESTIMATE SUMMARY

Clean-Up Contractor Costs			
Support Costs Total	$ 25,588.35		
Capital Cost of Chemical Treatment System W/Sludge dryer	102,375.51		
20 % Contingency	25,592.77		
Subtotal		$153,556.63	
TAT Costs			
TAT (Field Work) 100 Hours @ $65.00/Hour	$ 6,500.00		
TAT (Office Work) 100 Hours @ $45.00/Hour	$ 4,500.00		
Subtotal		$164,556.63	
15% Contingency		$24,685.50	
Extramural Costs			$189,240.13
U.S.EPA Costs 100 Hours @ $91.00/Hour	$ 9,100.00		
PROJECT TOTAL			$198,340.13
			or $199,000.00

ATTACHMENT A

Aqua Treat, Inc. — *Industrial Water Pollution Control*

USER'S LIST

SOUTHWEST AUTO RADIATOR OAK LAWN, ILLINOIS	300 gallon batch system, cleaning up radiator shop wastewaters.
WALTZ BROS. INC. WHEELING, ILLINOIS	200 gallon batch system, cleaning up spent coolant and wash wastewaters.
HANSEN-STERLING DRUM, CO. CHICAGO, ILLINOIS	20 gpm continuous recycle/pressurized dissolved air flotation modified to a dissolved air flotation system and full flow 40 gpm continuous.
J & J AUTO RADIATOR CHICAGO, ILLINOIS	300 gallon batch system, cleaning up radiator shop and wash wastewater complete with sludge treatment and drying unit.
LOUISIANA GRAVURE CYL. SERV. WEST MONROE, LOUISIANA	500 gallon batch system, cleaning up plating and wash wastewaters.
KEYSTONE GRAVURE CYL. SERV. LANSDALE, PENNSYLVANIA	250 gallon batch system, cleaning up plating and wash wastewaters.
PIEDMONT GRAVURE CYL. SERV. DURHAM, NORTH CAROLINA	4000 gallon batch system, modified to a dissolved air flotation unit.
GILBRETH INTERNATIONAL CORP. BENSALEM, PENNSYLVANIA	1000 gallon batch system, cleaning up plating and wash wastewaters complete with a sludge treatment and drying unit.
NORTHEASTERN GRAVURE SERV. SARATOGA SPRINGS, NEW YORK	250 gallon batch system, cleaning up plating and wash wastewaters.
REX RADIATOR & WELDING, INC. CHICAGO, ILLINOIS	1000 gallon batch system, cleaning up radiator and wash wastewater complete with a sludge treatment and drying unit.
GILBRETH INTERNATIONAL CORP. BRISTOL, PENNSYLVANIA	1000 gallon batch system, cleaning up plating and wash wastewaters complete with a sludge treatment and drying unit.
INDIANA RADIATOR SHOP, INC. EAST CHICAGO, INDIANA	10/20 gallon continuous, cleaning up radiator shop and wash wastewaters complete with a sludge treatment and drying unit.
J. L. FEW ASSOCIATES, INC. NOBLESVILLE, INDIANA	150 gallon batch module, cleaning up spent coolant and wash wastewaters complete with sludge treatment and drying.
REX RADIATOR & WELDING, INC. BENSENVILLE, ILLINOIS Steve Rex 42/-1531	500 gallon batch module, cleaning up radiator shop and wash wastewater complete with sludge treatment and drying.

7-1-88

Office: P.O. Box 702 • Chicago Heights, IL 60411 • (312) 756-3129
Plant: Van Siding Road • Kankakee, IL 60901 • (315) 932-3015

TERMS AND CONDITIONS OF SALE

ORDER ACCEPTANCE:
No contract to furnish the goods, services or equipment described herein shall be deemed to exist unless and until the Purchaser's order is received and approved by AQUA-TREAT Credit Department and acceptance is confirmed in writing by an authorized representative of AQUA-TREAT, INC.

TERMS OF PAYMENT:
Thirty per-cent (30%) of the price shall be paid within ten (10) days after this contract has been accepted by both parties. Sixty per-cent (60%) of the price shall be paid upon delivery of equipment to the site. Ten per-cent (10%) of the price shall be paid upon start-up of installed system.

DELIVERY:
All quoted shipping dates are approximate only. In event of delay, AQUA-TREAT shall not be liable for any penalties, charges or damages for failure to meet such dates.
Delivery shall be made F.O.B. point of manufacture unless otherwise stated on the face hereof.
AQUA-TREAT shall not be liable for loss, damage or shortage occurring during transit. The Purchaser shall report to the carrier all claims for loss, damage or shortage occurring during transit and file all claims related thereto.

TAXES:
AQUA-TREAT's price for the goods, services or equipment described herein does not include any allowance for Federal, State or Local sales or user taxes, gross receipts, gross income or other taxes now in effect or hereafter enacted; and determined to be applicable to the sale by AQUA-TREAT, the purchase by the Purchaser or delivery by AQUA-TREAT to the Purchaser. Such taxes shall be for the account of the Purchaser and shall be paid by the Purchaser either to AQUA-TREAT or to the appropriate government authority as law requires. Taxes payable by AQUA-TREAT on it's net income, corporate franchise or capital stock are excluded from this provision.

WARRANTY:
AQUA-TREAT warrants that the goods, services or equipment furnished pursuant hereto will; one (1) conform to the approved or recorded drawings if any; two (2) be of good workmanship, and quality; three(3) be free from defects in material and workmanship, provided it has had normal use and used in accordance with manufacturer's instructions, for a period of 12 months from the date of start-up or 18 months from date of shipment, whichever occurs first. In the event that any defects in material and/or workmanship are detected within the specified period, AQUA-TREAT's obligation under this warranty is limited to furnishing a replacement part F.O.A. factory. Labor of installation shall be the obligation of others. AQUA-TREAT shall be given the opportunity to inspect such alleged defects prior to taking any action. Components purchased by AQUA-TREAT shall be limited to the usual guarantee or warranty extended by the manufacturer or supplier of such components.

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WARRANTY CONTINUED:

AQUA-TREAT MAKES NO WARRANTY OF MERCHANTABILITY NOR ANY OTHER WARRANTY, EXPRESS OR IMPLIED, EXCEPT AS STATED ABOVE. IT IS ALSO UNDERSTOOD AND AGREED THAT PURCHASER WILL MAKE NO CLAIM AGAINST AQUA-TREAT FOR SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF OR RELATED TO THE USE AND OPERATION OF THE EQUIPMENT FURNISHED HEREUNDER.

DESIGN AND CONSTRUCTION:
AQUA-TREAT reserves the right to make such changes in details of design, arrangement or manufacture as shall, in AQUA-TREAT's judgment, constitute improvement.
AQUA-TREAT reserves the right to furnish substitute materials or components for materials or components which cannot reasonably be obtained because of restrictions imposed by or in connection with government authority. AQUA-TREAT assumes no responsibility for installation of equipment or parts that are shipped unmounted.

CHANGE ORDERS:
Any change of an order must in writing from our customer. Changes of an order involving custom-built equipment, after a formal acknowledgement has been made by our home office, are subject to a $200.00 list price addition for each different model. Added costs may be assessed for changes which necessitate new engineering and/or wiring drawings.

CANCELLATIONS:
Cancellations after the home office acknowledges receipt of order are subject to reasonable charges determined by AQUA-TREAT based upon expenses incurred and commitments made to AQUA-TREAT's suppliers.

GENERAL:
It is understood and agreed that there are no other understandings or agreements relative to this order except those set forth above and on the face hereof, and any conditions proposed by the Purchaser shall be deemed to have been superseded by the conditions set forth herein.

AQUA-TREAT, INC.

SUMMARY OF BORING ELEVATIONS AND GROUND WATER LEVELS

TABLE 2

WELL DATA			DATE: 6-10-87		DATE: 8-10-87		DATE: 8-28-87		DATE:		DATE:		DATE:	
WELL NUMBER	GROUND SURFACE ELEVATION	TOP OF PVC. ELEV.	DEPTH	ELEVATION	DEPTH	ELEVATION	DEPTH	ELEVATION	DEPTH	ELEVATION	DEPTH	ELEVATION	DEPTH	ELEVATION
Zinc Site														
W-1	603.1	605.09	17.39	587.70	17.8	587.29	17.8	587.29						
W-1A	603.1	605.07	6.23	598.84	6.6	598.47	7.0	598.07						
W-2	602.8	604.85	22.84	582.01	11.0	593.85	23.2	581.65						
W-2A	602.8	604.77	5.81	598.96	6.4	598.37	6.6	598.17						
W-3	602.6	602.52	14.75	587.77	15.4	587.12	15.2	587.32						
W-3A	602.8	602.53	3.19	599.34	4.6	597.93	4.6	597.93						
Chrome Site														
B-101	608.9	610.67			dry	--------	dry	-------						
B-101A	608.8	610.74			5.6	605.14	5.6	605.14						
B-102	609.2	611.15			dry	--------	dry	-------						
B-102A	609.0	611.13			5.6	605.53	5.9	605.23						
B-103	608.8	610.64			48.1	562.54	53.9	556.74						
B-104A	607.5	609.79			6.7	603.09	7.3	602.49						
B-105B	601.3	603.38			3.5	599.88	3.8	599.58						

DEPARTMENT OF NATURAL RESOURCES

INORGANIC WATER CHEMISTRY – WATER SUPPLY
FORM 3300-64 1-82

FACILITY I.D. NUMBER: 405045380 | WATER SYSTEM NAME: De Pere

COUNTY: Brown | COUNTY CODE: 05 | P.O. OR MUNICIPALITY: De Pere

COLLECTION DATE: 10/02/86 (M M D D Y Y) | TIME (24 HR. CLOCK): 1430 (H H M M) | FIELD NO.:

SAMPLE SOURCE ADDRESS: Grant St Well | (OR) WELL NO: 002

SAMPLING POINT DESCRIPTION: Sample tap

SEND REPORT TO:
NAME: DEPARTMENT OF NATURAL RESOURCES
ADDRESS: LAKE MICHIGAN DISTRICT HEADQUARTERS
P.O. BOX 10448
CITY, STATE, ZIP CODE: GREEN BAY, WI 54307-0448

COLLECTED BY: M. Gansberg

ACCOUNT NUMBER: 070030 FOR LAB USE ONLY

WATER SYSTEM TYPE (✓ ONE)
- [x] M COMMUNITY – MUNICIPAL
- [ ] O COMMUNITY – OTHER THAN MUNICIPAL
- [ ] N NON-COMMUNITY
- [ ] P PRIVATE

IF SURFACE SOURCE (✓ HERE) . . . . . [ ]

RECEIVED DNR
DEC – 2 1986
Lake Mich. Dist.

SAMPLE TYPE (✓ ONE)
SDWA:
- [ ] R REGULAR DISTRIBUTION SAMPLE
- [ ] C CHECK SAMPLE
  DATE INITIAL SAMPLE COLLECTED: __/__/__ (M M D D Y Y)

SPECIAL PURPOSE:
- [ ] N NEW WELL SAMPLE
- [x] I INVESTIGATIONS & COMPLAINTS

MAXIMUM CONTAMINANT LEVELS ARE INDICATED IN BRACKETS [ ]
ALL MCL'S ARE HEALTH LIMITS EXCEPT THOSE INDICATED BY [*] WHICH ARE AESTHETIC LIMITS.

	131 TEMPERATURE (°C) FIELD		
	096 pH - FIELD		
[ ]	002 ALKALINITY, TOTAL (as $CaCO_3$)		mg/l
[ ]	022 ARSENIC (As) [50.]		µg/l
[ ]	023 BARIUM (Ba) [1000.]		µg/l
[x]	031 CADMIUM (Cd) [10.]	< 0.2	µg/l
[ ]	032 CALCIUM (Ca)		mg/l
[ ]	035 CHLORIDE (Cl) [250.*]		mg/l
[x]	040 CHROMIUM, TOTAL (Cr) [50.]	< 3	µg/l
[ ]	043 COLOR [15*]		cu
[ ]	044 COPPER (Cu) [1000.*]		µg/l
[ ]	065 FLUORIDE (F) [2.2]		mg/l
[ ]	130 FOAMING AGENTS (MBAS) [0.5*]		mg/l
[ ]	068 HARDNESS, TOTAL (as $CaCO_3$)		mg/l
[ ]	073 IRON (Fe) [0.3*]		mg/l
[x]	074 LEAD (Pb) [50.]	< 3	µg/l
[ ]	076 MAGNESIUM (Mg)		mg/l
[ ]	079 MANGANESE (Mn) [50.*]		µg/l
[ ]	080 MERCURY (Hg) [2.]		µg/l
[ ]	095 $NO_3 + NO_2$ (as N) [10.]		mg/l
[ ]	097 pH - LAB		
[ ]	110 SELENIUM (Se) [10.]		µg/l
[ ]	112 SILVER (Ag) [50.]		µg/l
[ ]	113 SODIUM (Na)		mg/l
[ ]	116 SULFATE (SO_4) [250*]		mg/l
[ ]	138 TOTAL RESIDUE		mg/l
[ ]	118 TURBIDITY [1.]		NTU
[x]	120 ZINC (Zn) [5000.*]	< 20	µg/l

OTHER (NOTIFICATION OF STATE LABORATORY REQUIRED PRIOR TO SAMPLE COLLECTION)

[x] 082 Nickel < 20 µg/l

[ ] _____

[ ] _____

[ ] _____

BAS

COMMENTS:

Pb re-test
- outlier 11/4/86
BAS

DATE RECEIVED AND SAMPLE NO.:

DATE REPORTED: Oct 1986 031287

R. H. LAESSIG, PHD, DIRECTOR
WISCONSIN STATE LABORATORY OF HYGIENE
MADISON, WISCONSIN 53706

CC. DIST. - OWNER

NOV 24 1986