APPENDIX III

CHEMICAL ANALYSES

APPENDIX IV
REVISED PROPOSAL

Bailey Manufacturing

RESULTS OF WATER ANALYSIS FOR PRIORITY POLLUTANT
PURGEABLE ORGANIC COMPOUNDS BY GC/MS

8/26/87

(all results in ug/L)

U-6294

Compound	E & E Lab. No. 87-	9249	9251	9253	9255	Method Blank
	Sample Identity	MW-1	MW-2	MW-3	MW-4	
chloromethane		<10	<10	<10	<10	<10
bromomethane		<10	<10	<10	<10	<10
vinyl chloride		<10	<10	<10	<10	<10
chloroethane		<10	<10	<10	<10	<10
methylene chloride		<5*	<5*	<5*	<5*	<5*
1,1-dichloroethene		<5	<5	<5	<5	<5
1,1-dichloroethane		<5	<5	<5	<5	<5
trans-1,2-dichloroethene		<5	<5	<5	<5	<5
chloroform		<5	<5*	<5*	<5	<5
1,2-dichloroethane		<5*	<5*	<5	<5	<5
1,1,1-trichloroethane		<5	<5	<5	<5	<5
carbon tetrachloride		<5	<5	<5	<5	<5
bromodichloromethane		<5	<5	<5	<5	<5
1,2-dichloropropane		<5	<5	<5	<5	<5
trans-1,3-dichloropropene		<5	<5	<5	<5	<5
trichloroethene		<5	<5	60	<5	<5
chlorodibromomethane		<5	<5	<5	<5	<5
1,1,2-trichloroethane		<5	<5	<5	<5	<5
benzene		<5	<5	<5	<5	<5
cis-1,3-dichloropropene		<5	<5	<5	<5	<5
2-chloroethylvinyl ether		<10	<10	<10	<10	<10
bromoform		<5	<5	<5	<5	<5
tetrachloroethene		<5	<5	<5	<5	<5
1,1,2,2-tetrachloroethane		<5	<5	<5	<5	<5
toluene		<5	<5	<5	<5	<5
chlorobenzene		<5	<5	<5	<5	<5
ethylbenzene		<5	<5	<5	<5	<5

*Compound present below measurable detection limit.

QUALITY CONTROL FOR PRECISION
RESULTS OF ANALYSIS OF REPLICATE
ANALYSES OF WATER SAMPLES

8/26/87

U-6294.1

Compound	E & E Lab. No. 87-9255	(ug/L) Original Analysis	(ug/L) Replicate Analysis	Relative Percent Difference (RPD)
chloromethane		<10	<10	--
bromomethane		<10	<10	--
vinyl chloride		<10	<10	--
chloroethane		<10	<10	--
methylene chloride		<5*	<5*	--
1,1-dichloroethene		<5	<5	--
1,1-dichloroethane		<5	<5	--
trans-1,2-dichloroethene		<5	<5	--
chloroform		<5	<5	--
1,2-dichloroethane		<5	<5	--
1,1,1-trichloroethane		<5	<5	--
carbon tetrachloride		<5	<5	--
bromodichloromethane		<5	<5	--
1,2-dichloropropane		<5	<5	--
trans-1,3-dichloropropene		<5	<5	--
trichloroethene		<5	<5	--
chlorodibromomethane		<5	<5	--
1,1,2-trichloroethane		<5	<5	--
benzene		<5	<5	--
cis-1,3-dichloropropene		<5	<5	--
2-chloroethylvinyl ether		<10	<10	--
bromoform		<5	<5	--
tetrachloroethene		<5	<5	--
1,1,2,2-tetrachloroethane		<5	<5	--
toluene		<5	<5	--
chlorobenzene		<5	<5	--
ethylbenzene		<5	<5	--

*Compound present below measurable detection limit.

QUALITY CONTROL FOR ACCURACY: PERCENT
RECOVERY OF SURROGATE SPIKES

8/26/87

U-6294.2

Compound	E & E Laboratory No. 87-	Amount Added (ug/L)	Amount Determined (ug/L)	Percent Recovery
1,2-dichloroethane-D4	9249	50	54	108
	9251	50	57	114
	9253	50	56	112
	9255	50	54	108
toluene-D8	9249	50	50	100
	9251	50	48	96
	9253	50	52	104
	9255	50	51	102
4-bromofluorobenzene	9249	50	47	94
	9251	50	48	96
	9253	50	49	98
	9255	50	49	98

These recoveries are acceptable to EPA Contract Lab Program (CLP) guidelines.

SEDIMENT ANALYSIS
GROUNDWATER EXPLORATION
SOIL EVALUATION FOR SEPTIC SYSTEMS
HYDROGEOLOGIC STUDY OF CONTAMINATED GROUNDWATER

SAMUEL S. HARRISON, PH.D.
CERTIFIED PROFESSIONAL GEOLOGIST

337-0175 HOME
724-4844 OFFICE

R.D. 1 MAPLE LANE ACRE
SAEGERTOWN, PA 16433

Send Copy with results,
Thanks SAH

CHAIN OF CUSTODY RECORD

Part I: To be Completed by Client (Also Complete Part III)

Company Name S. S. Harrison

Address RD 1

City Saegertown State PA Zip 16433

Contact Person S. S. Harrison Phone Number (814) 337-0175

Sampler SSH Date Sampled 8/26/87 Time 1:00

Sample Type (Please Circle): 1) Wastewater, 2) Drinking Water, 3) Monitoring Well, 4) Soil, 5) Sludge, 6) Solid Waste, 7) Oil, 8) Industrial Hygiene

Other (Please Specify) _____

Collector's Sample ID	Analyses Requested E4E#
MW #1	VOA 9249
MW #2	VOA 9251
MW #3	VOA 9253
MW #4	9255
	RM

Part II: To be Completed by Laboratory (Also Complete Part III)

Date of Arrival _____ Time of Arrival _____

Means of Delivery to Laboratory _____

Was (were) sample(s) under refrigeration at time of arrival? _____

Part III: Chain of Possession Signatures

	Signature	Organization	Inclusive Dates
1.	Sam Harrison	S. S. Harrison	8/26/87
2.	R Marsh	ECOLOGY & ENVIRONMENT	8-27-87
3.			
4.			

Microbac Laboratories, Inc.
ERIE TESTING LAB DIV.
2411 WEST 26TH STREET
ERIE,PA. 16506
(814)833-4790

8/26/87

AIR • FUEL • WATER • FOOD • WASTES

CERTIFICATE OF ANALYSIS

BAILEY MANUFACTURING CO.
DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 10/30/87
DATE RECEIVED 08/27/87
CUST P.O.#
ORDER NO 5181
INVOICE NO 25952

SUBJECT : MONITORING WELL #1 FOR ANALYSIS, 8/26/87

SAMPLE ID	TEST PERFORMED		RESULT	UNITS
	MONITORING WELL #1	8/26/87		
	CONDUCTIVITY		465	UMHOS/CM
	TECHNICIAN @ $30.00/HOUR		16 HRS/2 MAN CR	..
2	MONITORING WELL #1	8/26/87		
	CYANIDE,TOTAL		<0.001	MG/L
3	MONITORING WELL #1	8/26/87		
	ANTIMONY		<0.05	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		0.003	MG/L
	CHROMIUM		0.017	MG/L
	COPPER		<0.002	MG/L
	LEAD		<0.005	MG/L
	MERCURY		<0.0005	MG/L
	NICKEL		0.018	MG/L
	SELENIUM		<0.005	MG/L
	SILVER		<0.005	MG/L
	THALLIUM		<0.01	MG/L
	ZINC		0.038	MG/L

PC: SAM HARRISON

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ERIE,PA. 16506
(814)833-4790

8/26/87

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CERTIFICATE OF ANALYSIS

BAILEY MANUFACTURING CO.
DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 10/30/87
DATE RECEIVED 08/27/87
CUST P.O.#
ORDER NO 5180
INVOICE NO 25951

SUBJECT : MONITORING WELL #2 FOR ANALYSIS, RECD. 8/26/87

SAMPLE ID	TEST PERFORMED		RESULT	UNITS
1	MONITORING WELL #2	8/26/87		
	CONDUCTIVITY		1300	UMHOS/CM
2	MONITORING WELL #2	8/26/87		
	CYANIDE,TOTAL		0.08	MG/L
3	MONITORING WELL #2	8/26/87		
	ANTIMONY		<0.05	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		<0.001	MG/L
	CHROMIUM		0.038	MG/L
	COPPER		0.017	MG/L
	LEAD		<0.005	MG/L
	MERCURY		<0.0005	MG/L
	NICKEL		0.012	MG/L
	SELENIUM		<0.005	MG/L
	SILVER		<0.005	MG/L
	THALLIUM		0.011	MG/L
	ZINC		0.03	MG/L
4	MONITORING WELL #2	FILTERED, 8/26/87		
	ANTIMONY		<0.05	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		<0.001	MG/L
	CHROMIUM		0.013	MG/L
	COPPER		<0.002	MG/L

THIS CERTIFICATE OF ANALYSIS IS CONTINUED ON THE NEXT PAGE

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CERTIFICATE OF ANALYSIS

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DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 10/30/87
DATE RECEIVED 08/27/87
CUST P.O.#
ORDER NO 5180
INVOICE NO 25951

SUBJECT : MONITORING WELL #2 FOR ANALYSIS, RECD. 8/26/87

SAMPLE ID	TEST PERFORMED	RESULT	UNITS
MONITORING WELL #2	(CONT)		
	LEAD	<0.005	MG/L
	MERCURY	<0.0005	MG/L
	NICKEL	0.015	MG/L
	SELENIUM	<0.005	MG/L
	SILVER	<0.005	MG/L
	THALLIUM	<0.01	MG/L
	ZINC	0.05	MG/L

PC: SAM HARRISON

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BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 10/30/87
DATE RECEIVED 08/27/87
CUST P.O.#
ORDER NO 5178
INVOICE NO 25950

SUBJECT : MONITORING WELL #3 FOR ANALYSIS, RECD. 8/26/87

SAMPLE ID	TEST PERFORMED		RESULT	UNITS
1	MONITORING WELL #3	8/26/87		
	CONDUCTIVITY		1160	UMHOS/CM
2	MONITORING WELL #3	8/26/87		
	CYANIDE,TOTAL		<0.001	MG/L
3	MONITORING WELL #3	8/26/87		
	ANTIMONY		<0.05	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		0.002	MG/L
	CHROMIUM		0.100	MG/L
	COPPER		0.040	MG/L
	LEAD		0.008	MG/L
	MERCURY		<0.0005	MG/L
	NICKEL		0.043	MG/L
	SELENIUM		<0.005	MG/L
	SILVER		<0.005	MG/L
	THALLIUM		0.012	MG/L
	ZINC		0.177	MG/L
4	MONITORING WELL #3	FILTERED, 8/26/87		
	ANTIMONY		<0.05	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		<0.001	MG/L
	CHROMIUM		0.015	MG/L
	COPPER		0.004	MG/L

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BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 10/30/87
DATE RECEIVED 08/27/87
CUST P.O.#
ORDER NO 5178
INVOICE NO 25950

SUBJECT : MONITORING WELL #3 FOR ANALYSIS, RECD. 8/26/87

SAMPLE ID	TEST PERFORMED		RESULT	UNITS
MONITORING WELL #3		(CONT)		
	LEAD		0.005	MG/L
	MERCURY		<0.0005	MG/L
	NICKEL		0.012	MG/L
	SELENIUM		<0.005	MG/L
	SILVER		<0.005	MG/L
	THALLIUM		<0.01	MG/L
	ZINC		0.132	MG/L

CHAIN OF CUSTODY ATTACHED
PC: SAM HARRISON

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BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 10/30/87
DATE RECEIVED 08/27/87
CUST P.O.#
ORDER NO 5177
INVOICE NO 25949

SUBJECT : MONITORING WELL #4 FOR ANALYSIS, RECD. 8/27/87

SAMPLE ID	TEST PERFORMED		RESULT	UNITS
1	MONITORING WELL #4	8/26/87		
	CONDUCTIVITY		500	UMHOS/CM
2	MONITORING WELL #4	8/26/87		
	CYANIDE,TOTAL		0.06	MG/L
3	MONITORING WELL #4	8/26/87		
	ANTIMONY		<0.05	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		<0.001	MG/L
	CHROMIUM		0.038	MG/L
	COPPER		0.014	MG/L
	LEAD		0.005	MG/L
	MERCURY		<0.0005	MG/L
	NICKEL		0.023	MG/L
	SELENIUM		<0.005	MG/L
	SILVER		<0.005	MG/L
	THALLIUM		<0.01	MG/L
	ZINC		0.058	MG/L
4	MONITORING WELL #4	FILTERED, 8/26/87		
	ANTIMONY		<0.05	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		<0.001	MG/L
	CHROMIUM		0.015	MG/L
	COPPER		0.004	MG/L

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DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 10/30/87
DATE RECEIVED 08/27/87
CUST P.O.#
ORDER NO 5177
INVOICE NO 25949

SUBJECT : MONITORING WELL #4 FOR ANALYSIS, RECD. 8/27/87

SAMPLE ID	TEST PERFORMED	RESULT	UNITS
MONITORING WELL #4	(CONT)		
	LEAD	<0.005	MG/L
	MERCURY	<0.0005	MG/L
	NICKEL	0.017	MG/L
	SELENIUM	<0.005	MG/L
	SILVER	<0.005	MG/L
	THALLIUM	<0.01	MG/L
	ZINC	0.034	MG/L

PC: SAM HARRISON

SEDIMENT ANALYSIS
GROUNDWATER EXPLORATION
SOIL EVALUATION FOR SEPTIC SYSTEMS
HYDROGEOLOGIC STUDY OF CONTAMINATED GROUNDWATER

SAMUEL S. HARRISON, PH.D.
CERTIFIED PROFESSIONAL GEOLOGIST

337-0175 HOME
724-4844 OFFICE

R.D. 1 MAPLE LANE ACRES
SAEGERTOWN, PA 16433

Return a copy to S. S. Harrison
Thank you

CHAIN OF CUSTODY RECORD

Part I: To be Completed by Client (Also Complete Part III)

Company Name S. S. Harrison

Address R.D. 1

City Saegertown State PA Zip 16433

Contact Person _____ Phone Number _____

Sampler SSH Date Sampled 8/26/87 Time 1100 to 3:30 PM

Sample Type (Please Circle): 1) Wastewater, 2) Drinking Water, 3) Monitoring Well,
4) Soil, 5) Sludge, 6) Solid Waste, 7) Oil,
8) Industrial Hygiene
Other (Please Specify) _____

Collector's Sample ID	Analyses Requested
Mon. Well #1	cyanide, conductivity, metals
Mon. Well #2	" " "
Mon. Well #3	" " "
Mon. well #4	" " "
2 metal samples	

Part II: To be Completed by Laboratory (Also Complete Part III)

Date of Arrival _____ Time of Arrival _____

Means of Delivery to Laboratory _____

Was were) sample(s) under refrigeration at time of arrival? _____

Part III: Chain of Possession Signatures

	Signature	Organization	Inclusive Dates
1.	Sam Harrison	S. S. Harrison	8/26/87
2.	Andy M—	Microbac / Eric Testing	8-26-87
3.	J. Majchrzak	Microbac / Eric Testing	8/26/87
4.	Paul T. Jones	Microbac / Eric Testing	8/27/87

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(814)833-4790

AIR • FUEL • WATER • FOOD • WASTES

10/31/87

CERTIFICATE OF ANALYSIS

BAILEY MANUFACTURING CO.
DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 12/07/87
DATE RECEIVED 11/03/87
CUST P.O.#
ORDER NO 6962
INVOICE NO 26846

SUBJECT : MONITORING WELL SAMPLES (WELL #1) RECD. 11/2/87

SAMPLE ID	TEST PERFORMED		RESULT	UNITS
1	SAMPLING PERFORMED BY	ANDREW MASON, 10/31/87		
	TECHNICIAN @ $30.00/HOUR		8	..
2	MONITORING WELL #1	10/31/87		
	PH		7.5	UNITS
	CONDUCTIVITY		570	UMHOS/CM
3	MONITORING WELL #1	10/31/87		
	ANTIMONY		<0.04	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		0.135	MG/L
	CHROMIUM		0.017	MG/L
	COPPER		0.051	MG/L
	LEAD		0.0055	MG/L
	MERCURY		0.00057	MG/L
	NICKEL		0.111	MG/L
	SELENIUM		<0.005	MG/L
	SILVER		0.007	MG/L
	THALLIUM		0.0028	MG/L
	ZINC		1.02	MG/L

CHAIN OF CUSTODY ATTACHED

PC: SAM HARRISON

Microbac Laboratories, Inc.
ERIE TESTING LAB DIV.
2411 WEST 26TH STREET
ERIE,PA. 16506
(814)833-4790

10/31/87

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CERTIFICATE OF ANALYSIS

BAILEY MANUFACTURING CO.
DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 12/07/87
DATE RECEIVED 11/02/87
CUST P.O.#
ORDER NO 6963
INVOICE NO 26847

SUBJECT : MONITORING WELL SAMPLES (WELL #2) RECD. 11/2/87

SAMPLE ID	TEST PERFORMED		RESULT	UNITS
1	MONITORING WELL #2	10/31/87		
	PH		7.2	UNITS
	CONDUCTIVITY		1593	UMHOS/CM
2	MONITORING WELL #2	10/31/87		
	ANTIMONY		<0.04	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		0.002	MG/L
	CHROMIUM		0.017	MG/L
	COPPER		0.010	MG/L
	LEAD		0.0097	MG/L
	MERCURY		<0.0004	MG/L
	NICKEL		<0.005	MG/L
	SELENIUM		<0.005	MG/L
	SILVER		<0.005	MG/L
	THALLIUM		0.0066	MG/L
	ZINC		0.023	MG/L
3	MONITORING WELL #2 (FILTERED)	10/31/87		
	ANTIMONY		<0.04	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		0.003	MG/L
	CHROMIUM		0.018	MG/L
	COPPER		0.010	MG/L
	LEAD		0.0107	MG/L
	MERCURY		<0.0004	MG/L

THIS CERTIFICATE OF ANALYSIS IS CONTINUED ON THE NEXT PAGE

Microbac Laboratories, Inc.
ERIE TESTING LAB DIV.
2411 WEST 26TH STREET
ERIE,PA. 16506
(814)833-4790

10/31/87

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CERTIFICATE OF ANALYSIS

BAILEY MANUFACTURING CO.
DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE FICHNER

DATE REPORTED 12/07/87
DATE RECEIVED 11/02/87
CUST P.O.#
ORDER NO 6963
INVOICE NO 36847

SUBJECT : MONITORING WELL SAMPLES (WELL #2) RECD. 11/2/87

SAMPLE ID	TEST PERFORMED	RESULT	UNITS
3	MONITORING WELL #2 (FILTERED) (CONT)		
	NICKEL	<0.005	MG/L
	SELENIUM	<0.005	MG/L
	SILVER	<0.005	MG/L
	THALLIUM	0.005	MG/L
	ZINC	0.041	MG/L

PC: SAM HARRISON

Microbac Laboratories, Inc.
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2411 WEST 26TH STREET
ERIE, PA. 16506
(814)833-4790

10/31/87

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CERTIFICATE OF ANALYSIS

BAILEY MANUFACTURING CO.
DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 12/07/87
DATE RECEIVED 11/02/87
CUST P.O.#
ORDER NO 6964
INVOICE NO 26848

SUBJECT : MONITORING WELL SAMPLES (WELL #3) RECD. 11/2/87

SAMPLE ID	TEST PERFORMED		RESULT	UNITS
1	MONITORING WELL #3	10/31/87		
	PH		7.2	UNITS
	CONDUCTIVITY		1168	UMHOS/CM
2	MONITORING WELL #3	10/31/87		
	ANTIMONY		<0.04	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		0.002	MG/L
	CHROMIUM		0.016	MG/L
	COPPER		0.011	MG/L
	LEAD		0.0305	MG/L
	MERCURY		<0.0004	MG/L
	NICKEL		<0.005	MG/L
	SELENIUM		<0.005	MG/L
	SILVER		0.007	MG/L
	THALLIUM		0.0066	MG/L
	ZINC		0.020	MG/L
3	MONITORING WELL #3 (FILTERED)	10/31/87		
	ANTIMONY		0.052	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		0.002	MG/L
	CHROMIUM		0.016	MG/L
	COPPER		0.011	MG/L
	LEAD		0.0114	MG/L
	MERCURY		<0.0004	MG/L

THIS CERTIFICATE OF ANALYSIS IS CONTINUED ON THE NEXT PAGE

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10/31/87

AIR • FUEL • WATER • FOOD • WASTES

CERTIFICATE OF ANALYSIS

BAILEY MANUFACTURING CO.
DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 12/07/87
DATE RECEIVED 11/02/87
CUST P.O.#
ORDER NO 6964
INVOICE NO 36848

SUBJECT : MONITORING WELL SAMPLES (WELL #3) RECD. 11/2/87

SAMPLE ID	TEST PERFORMED	RESULT	UNITS
3	MONITORING WELL #3 (FILTERED) (CONT)		
	NICKEL	<0.005	MG/L
	SELENIUM	<0.005	MG/L
	SILVER	0.006	MG/L
	THALLIUM	0.0068	MG/L
	ZINC	2.05	MG/L

PC: SAM HARRISON

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BAILEY MANUFACTURING CO.
DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 12/07/87
DATE RECEIVED 11/02/87
CUST P.O.#
ORDER NO 6965
INVOICE NO 26849

SUBJECT : MONITORING WELL SAMPLES (WELL #3-DUPLICATES) 11/2

SAMPLE ID	TEST PERFORMED	RESULT	UNITS
1	MONITORING WELL #3 (DUPLICATE) 10/31/87		
	PH	7.3	UNITS
	CONDUCTIVITY	1168	UMHOS/CM
2	MONITORING WELL #3 (DUPLICATE) 10/31/87		
	ANTIMONY	<0.04	MG/L
	ARSENIC	<0.005	MG/L
	BERYLLIUM	<0.001	MG/L
	CADMIUM	0.002	MG/L
	CHROMIUM	0.016	MG/L
	COPPER	0.010	MG/L
	LEAD	0.0133	MG/L
	MERCURY	<0.0004	MG/L
	NICKEL	<0.005	MG/L
	SELENIUM	<0.005	MG/L
	SILVER	0.006	MG/L
	THALLIUM	0.0074	MG/L
	ZINC	0.030	MG/L
3	MONITORING WELL #3 (DUPLICATE) (FILTERED) 10/31/87		
	ANTIMONY	<0.04	MG/L
	ARSENIC	<0.005	MG/L
	BERYLLIUM	<0.001	MG/L
	CADMIUM	0.027	MG/L
	CHROMIUM	0.025	MG/L
	COPPER	0.031	MG/L
	LEAD	0.0107	MG/L
	MERCURY	<0.0004	MG/L

THIS CERTIFICATE OF ANALYSIS IS CONTINUED ON THE NEXT PAGE

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10/31/87

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CERTIFICATE OF ANALYSIS

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DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 12/07/87
DATE RECEIVED 11/02/87
CUST P.O.#
ORDER NO 6965
INVOICE NO 36849

SUBJECT : MONITORING WELL SAMPLES (WELL #3-DUPLICATES) 11/2

SAMPLE ID	TEST PERFORMED	RESULT	UNITS
3	MONITORING WELL #3 (DUPLICATE) (CONT)		
	NICKEL	0.073	MG/L
	SELENIUM	<0.005	MG/L
	SILVER	0.011	MG/L
	THALLIUM	0.0044	MG/L
	ZINC	0.873	MG/L

PC: SAM HARRISON

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10/31/87

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DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032

DATE REPORTED 12/07/87
DATE RECEIVED 11/03/87
CUST P.O.#
ORDER NO 6966
INVOICE NO 26850

SUBJECT : MONITORING WELL SAMPLES (WELL #4) RECD. 11/2/87

SAMPLE ID	TEST PERFORMED		RESULT	UNITS
1	MONITORING WELL #4	10/31/87		
	PH		7.6	UNITS
	CONDUCTIVITY		500	UMHOS/CM
2	MONITORING WELL #4	10/31/87		
	ANTIMONY		<0.04	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		0.002	MG/L
	CHROMIUM		0.023	MG/L
	COPPER		0.008	MG/L
	LEAD		0.013	MG/L
	MERCURY		<0.0004	MG/L
	NICKEL		<0.005	MG/L
	SELENIUM		<0.005	MG/L
	SILVER		<0.005	MG/L
	THALLIUM		0.0044	MG/L
	ZINC		0.029	MG/L
3	MONITORING WELL #4 (FILTERED)	10/31/87		
	ANTIMONY		<0.04	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		0.023	MG/L
	CHROMIUM		0.023	MG/L
	COPPER		0.022	MG/L
	LEAD		0.0050	MG/L
	MERCURY		<0.0004	MG/L

THIS CERTIFICATE OF ANALYSIS IS CONTINUED ON THE NEXT PAGE

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10/31/87

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CERTIFICATE OF ANALYSIS

BAILEY MANUFACTURING CO.
DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032

DATE REPORTED 12/07/87
DATE RECEIVED 11/03/87
CUST P.O.#
ORDER NO 6966
INVOICE NO 26350

SUBJECT : MONITORING WELL SAMPLES (WELL #4) RECD. 11/3/87

SAMPLE ID	TEST PERFORMED	RESULT	UNITS
3	MONITORING WELL #4 (FILTERED) (CONT)		
	NICKEL	0.049	MG/L
	SELENIUM	<0.005	MG/L
	SILVER	0.005	MG/L
	THALLIUM	0.0046	MG/L
	ZINC	0.751	MG/L

PC: SAM HARPTSON

SAMUEL S. HARRISON,
Certified Professional Geologist
~~431 SUNSET DRIVE~~ R. D. 1
Scranton
~~MEADVILLE~~, PENNSYLVANIA 16~~335~~ 433

Chain of Custody Form

TO Bailey Mfg
Forestville, NY

Chain of Custody

DATE 10/31/87

Samples from MW 1, 2, 3, 4 collected for metals and conductivity analyses

Collected by S. Harrison and A. Mason 10/31/87
S. Harrison A. Mason

Received by J. Mayerczyk Microbac Labs 11/2/87
Person DATE

Received by C. Kufner microbac 11/3/87

Microbac Laboratories, Inc.
Erie Testing Laboratory Division 2411 West 26th Street, Erie, Pennsylvania 16506 814/833-4790

Microbac

April 14, 1988

Mr. Sam Harrison, Ph.D.
R.D. #1
Maple Lane Acres
Saegertown, PA 16433

Dear Sam:

An error in calculation was discovered as a result of your April 8, 1988 inquiry pertaining to Bailey Manuf., N.Y. I apologize for this error and the inconvenience the elevated results might have caused.

The lead thallium, and antimony results for the monitoring wells collected and submitted to Microbac-Erie on 12/22/87 were all elevated by a factor of 6.25. I had mistakenly multiplied the reported instrumental response by a factor of 2.5 rather than divide : the samples were concentrated by this factor for analysis, not diluted.

The corrected results are as follows:

Work Order	Pb	Tl	Sb
#8255	0.0208	0.0054	<0.04
#8257	0.0084	0.0056	<0.04
#8269	0.066	0.0076	<0.04
#8270	0.0224	0.0016	<0.04
#8271	0.036	0.0004	<0.04
#8272	0.0028	0.0028	<0.04
#8273-3	0.0056	0.0024	<0.04
8273-4	0.0156	<0.0004	<0.04

Quality Control
(duplicates, spikes, reference stds.):

	#8255	#8255-Dup.	#8255-Spike	Reference
Lead	0.0224	0.0192	0.40, 96%rec.	1.0, 110%
Thallium	0.0068	0.0040	2.0, 107% rec	
Antimony	<0.04	<0.04	4.0, 123% rec	1.0, 150%

Please contact me if you have any further questions.

Sincerely,

Paula Trapp
Q.A. Manager

PT/jk

Microbac Laboratories, Inc.
ERIE TESTING LAB DIV.
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ERIE, PA. 16506
(814)833-4790

12/22/87

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CERTIFICATE OF ANALYSIS

BAILEY MANUFACTURING CO.
DIV. OF NEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062
ATTN: MIKE RICHNER

CUST # 2032

DATE REPORTED 01/03/88
DATE RECEIVED 12/23/87
CUST P.O.#
ORDER NO 8255
INVOICE NO 28057

SUBJECT : MONITORING WELL #1 FOR ANALYSIS, 12/22/87

SAMPLE ID	TEST PERFORMED		RESULT	UNITS
1	MONITORING WELL #1	12/22/87 @	10:50 A.M.	
	CONDUCTIVITY		578	UMHOS/CM
	PH		7.7	UNITS
2	MONITORING WELL #1	12/22/87 @	10:50 A.M.	
	CYANIDE,TOTAL		<0.001	MG/L
3	MONITORING WELL #1	12/22/87 @	10:50 A.M.	
	ANTIMONY		~~<0.25~~ <0.04	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		0.003	MG/L
	CHROMIUM		0.018	MG/L
	COPPER		0.010	MG/L
	LEAD		~~0.13~~ 0.0208	MG/L
	MERCURY		0.00025	MG/L
	NICKEL		<0.005	MG/L
	SELENIUM		<0.005	MG/L
	SILVER		0.005	MG/L
	THALLIUM		~~0.0338~~ 0.0054	MG/L
	ZINC		0.019	MG/L

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12/22/87

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CERTIFICATE OF ANALYSIS

BAILEY MANUFACTURING CO.
DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062
ATTN: MIKE RICHNER

CUST # 2032

DATE REPORTED 01/03/88
DATE RECEIVED 12/23/87
CUST P.O.#
ORDER NO 8269
INVOICE NO 26059

SUBJECT : MONITORING WELL #2 FOR ANALYSIS, 12/22/87

SAMPLE ID	TEST PERFORMED		RESULT	UNITS
1	MONITORING WELL #2	12/22/87 @	1:30 P.M.	
	CONDUCTIVITY		1468	UMHOS/CM
	PH		7.3	UNITS
2	MONITORING WELL #2	12/22/87		
	CYANIDE,TOTAL		0.006	MG/L
3	MONITORING WELL #2	12/22/87 @	1:30 P.M.	
	ANTIMONY		~~<0.25~~ <0.04	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		0.003	MG/L
	CHROMIUM		0.018	MG/L
	COPPER		0.008	MG/L
	LEAD		~~0.4125~~ 0.066	MG/L
	MERCURY		<0.0002	MG/L
	NICKEL		<0.005	MG/L
	SELENIUM		<0.005	MG/L
	SILVER		0.011	MG/L
	THALLIUM		~~0.0475~~ 0.0076	MG/L
	ZINC		0.016	MG/L

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12/22/87

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CERTIFICATE OF ANALYSIS

BAILEY MANUFACTURING CO.
DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062
ATTN: MIKE EICHNER

CUST # 2032

DATE REPORTED 01/03/88
DATE RECEIVED 12/23/87
CUST P.O.#
ORDER NO 8272
INVOICE NO 28062

SUBJECT : MONITORING WELL #3 FOR ANALYSIS, 12/22/87

SAMPLE ID	TEST PERFORMED		RESULT	UNITS
1	MONITORING WELL #3	12/22/87 @	2:15 P.M.	
	CONDUCTIVITY		878	UMHOS/CM
	PH		7.3	UNITS
2	MONITORING WELL #3	12/22/87 @	2:15 P.M.	
	CYANIDE,TOTAL		0.02	MG/L
3	MONITORING WELL #3	12/22/87 @	2:15 P.M.	
	ANTIMONY		~~<0.25~~ <0.04	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		0.003	MG/L
	CHROMIUM		0.024	MG/L
	COPPER		0.010	MG/L
	LEAD		~~0.0175~~ 0.0028	MG/L
	MERCURY		<0.0002	MG/L
	NICKEL		<0.005	MG/L
	SELENIUM		<0.005	MG/L
	SILVER		<0.002	MG/L
	THALLIUM		~~0.0175~~ 0.0028	MG/L
	ZINC		0.016	MG/L

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12/22/87

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CERTIFICATE OF ANALYSIS

BAILEY MANUFACTURING CO.
DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062
ATTN: MIKE RICHNER

CUST # 2032

DATE REPORTED 01/03/88
DATE RECEIVED 12/23/87
CUST P.O.#
ORDER NO 8257
INVOICE NO 28058

SUBJECT : MONITORING WELL #3 (DUPLICATE SAMPLES) 12/22/87

SAMPLE ID	TEST PERFORMED		RESULT	UNITS
1	MONITORING WELL #3	12/22/87		
	CONDUCTIVITY		875	UMHOS/CM
	PH		7.3	UNITS
2	MONITORING WELL #3	12/22/87		
	CYANIDE,TOTAL		0.02	MG/L
3	MONITORING WELL #3	12/22/87		
	ANTIMONY		~~<0.25~~ <0.04	MG/L
	ARSENIC		<0.005	MG/L
	BERYLLIUM		<0.001	MG/L
	CADMIUM		0.002	MG/L
	CHROMIUM		0.025	MG/L
	COPPER		0.010	MG/L
	LEAD		~~0.0525~~ 0.0084	MG/L
	MERCURY		<0.0002	MG/L
	NICKEL		<0.005	MG/L
	SELENIUM		<0.005	MG/L
	SILVER		0.005	MG/L
	THALLIUM		~~0.035~~ 0.0056	MG/L
	ZINC		0.019	MG/L

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12/22/87

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CERTIFICATE OF ANALYSIS

BAILEY MANUFACTURING CO.
DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 01/03/88
DATE RECEIVED 12/23/87
CUST P.O.#
ORDER NO 8273
INVOICE NO 28063

SUBJECT : MONITORING WELL #4 FOR ANALYSIS, RECD. 12/22/87

SAMPLE ID	TEST PERFORMED	RESULT	UNITS
	MONITORING WELL #4 12/22/87 @ 11:45 A.M.		
	CONDUCTIVITY	525	UMHOS/CM
	PH	7.4	UNITS
2	MONITORING WELL #4 12/22/87 @ 11:45 A.M.		
	CYANIDE, TOTAL	0.01	MG/L
3	MONITORING WELL #4 12/22/87 @ 11:45 A.M.		
	ANTIMONY	~~<0.25~~ <0.04	MG/L
	ARSENIC	<0.005	MG/L
	BERYLLIUM	<0.001	MG/L
	CADMIUM	0.002	MG/L
	CHROMIUM	0.019	MG/L
	COPPER	0.010	MG/L
	LEAD	~~0.035~~ 0.0056	MG/L
	MERCURY	<0.0002	MG/L
	NICKEL	<0.005	MG/L
	SELENIUM	<0.005	MG/L
	SILVER	<0.005	MG/L
	THALLIUM	~~0.015~~ 0.0024	MG/L
	ZINC	0.034	MG/L
4	MONITORING WELL #4 (FILTERED) 12/22/87 @ 12:30 P.M.		
	ANTIMONY	~~<0.25~~ <0.04	MG/L
	ARSENIC	<0.005	MG/L
	BERYLLIUM	<0.001	MG/L
	CADMIUM	0.006	MG/L
	CHROMIUM	0.021	MG/L

THIS CERTIFICATE OF ANALYSIS IS CONTINUED ON THE NEXT PAGE

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CERTIFICATE OF ANALYSIS

BAILEY MANUFACTURING CO.
DIV. OF MEGATECH CORP.
BENNETT STATE ROAD
FORESTVILLE NY 14062 CUST # 2032
ATTN: MIKE RICHNER

DATE REPORTED 01/03/88
DATE RECEIVED 12/23/87
CUST P.O.#
ORDER NO 8373
INVOICE NO 28063

SUBJECT : MONITORING WELL #4 FOR ANALYSIS, RECD. 12/22/87

SAMPLE ID	TEST PERFORMED	RESULT	UNITS
MONITORING WELL #4 (FILTERED) (CONT)			
	COPPER	0.012	MG/L
	LEAD	~~0.0975~~ 0.0156	MG/L
	MERCURY	<0.0002	MG/L
	NICKEL	0.005	MG/L
	SELENIUM	<0.005	MG/L
	*SILVER	<0.005	MG/L
	THALLIUM	~~<0.0025~~ <0.0004	MG/L
	ZINC	0.016	MG/L

RESULTS OF WATER ANALYSIS FOR PRIORITY POLLUTANT
PURGEABLE ORGANIC COMPOUNDS BY GC/MS

12/22/87

(all results in ug/L)

U-7079

Compound	E & E Lab. No. 87-	13765	13768	13771	13774	Method Blank
	Sample Identity	Baily MW 1	Baily MW 2	Baily MW 3	Baily MW 4	
chloromethane		<10	<10	<10	<10	<10
bromomethane		<10	<10	<10	<10	<10
vinyl chloride		<10	<10	<10	<10	<10
chloroethane		<10	<10	<10	<10	<10
methylene chloride		<5*	<5*	<5*	<5*	<5*
1,1-dichloroethene		<5	<5	<5	<5	<5
1,1-dichloroethane		<5	<5	<5	<5	<5
trans-1,2-dichloroethene		<5	<5	<5	<5	<5
chloroform		<5	<5*	<5	<5	<5
1,2-dichloroethane		<5	<5	<5	<5	<5
1,1,1-trichloroethane		<5	<5	<5	<5	<5
carbon tetrachloride		<5	<5	<5	<5	<5
bromodichloromethane		<5	<5	<5	<5	<5
1,2-dichloropropane		<5	<5	<5	<5	<5
trans-1,3-dichloropropene		<5	<5	<5	<5	<5
trichloroethene		<5*	11	75	<5*	<5
chlorodibromomethane		<5	<5	<5	<5	<5
1,1,2-trichloroethane		<5	<5	<5	<5	<5
benzene		<5	<5	<5	<5	<5
cis-1,3-dichloropropene		<5	<5	<5	<5	<5
2-chloroethylvinyl ether		<10	<10	<10	<10	<10
bromoform		<5	<5	<5	<5	<5
tetrachloroethene		<5	<5	<5	<5	<5
1,1,2,2-tetrachloroethane		<5	<5	<5	<5	<5
toluene		<5	<5	<5	<5	<5
chlorobenzene		<5	<5	<5	<5	<5
ethylbenzene		<5	<5	<5	<5	<5

*Compound present below measurable detection limit.

12/22/87

QUALITY CONTROL FOR ACCURACY:
PERCENT RECOVERY OF WATER MATRIX SPIKE
(Sample #13771)

U-7079.1

Compound	(ug/L)			Percent Recovery	EPA QC Limits (advisory)
	Original Result	Amount Added	Amount Determined		
1,1-Dichloroethene	<5	50	35	70	61 - 145
Trichloroethene	75	50	110	70	71 - 120
Chlorobenzene	<5	50	44	88	75 - 130
Toluene	<5	50	37	74	76 - 125
Benzene	<5	50	34	68	76 - 127

12/22/87

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY OF SURROGATE SPIKES

U-7079.2

Compound	E & E Laboratory No. 87-	Amount Added (ug/L)	Amount Determined (ug/L)	Percent Recovery
1,2-dichloroethane-D4	13765	50	48	96
	13768	50	51	102
	13771	50	47	94
	13774	50	49	98
toluene-D8	13765	50	53	106
	13768	50	52	104
	13771	50	45	90
	13774	50	48	96
4-bromofluorobenzene	13765	50	53	106
	13768	50	53	106
	13771	50	47	94
	13774	50	52	104

These recoveries are acceptable to EPA Contract Lab Program (CLP) guidelines.

RESULTS OF ADDITIONAL WATER ANALYSIS FOR PRIORITY POLLUTANT
PURGEABLE ORGANIC COMPOUNDS BY GC/MS

(all results in ug/L)

12/22/87

U-7079.3

Compound	E & E Lab. No. 87-	13772	13773	Method Blank		
	Sample Identity	Bailey MW #3 Dup.	Bailey MW #3 Field Blank			
chloromethane		<10	<10	<10		
bromomethane		<10	<10	<10		
vinyl chloride		<10	<10	<10		
chloroethane		<10	<10	<10		
methylene chloride		<5*	<5*	<5*		
1,1-dichloroethene		<5	<5	<5		
1,1-dichloroethane		<5	<5	<5		
trans-1,2-dichloroethene		<5	<5	<5		
chloroform		<5	<5	<5		
1,2-dichloroethane		<5	<5	<5		
1,1,1-trichloroethane		<5	<5	<5		
carbon tetrachloride		<5	<5	<5		
bromodichloromethane		<5	<5	<5		
1,2-dichloropropane		<5	<5	<5		
trans-1,3-dichloropropene		<5	<5	<5		
trichloroethene		65	<5	<5		
chlorodibromomethane		<5	<5	<5		
1,1,2-trichloroethane		<5	<5	<5		
benzene		<5	<5	<5		
cis-1,3-dichloropropene		<5	<5	<5		
2-chloroethylvinyl ether		<10	<10	<10		
bromoform		<5	<5	<5		
tetrachloroethene		<5	<5	<5		
1,1,2,2-tetrachloroethane		<5	<5	<5		
toluene		<5	<5	<5		
chlorobenzene		<5	<5	<5		
ethylbenzene		<5	<5	<5		

*Compound present below measurable detection limit.

QUALITY CONTROL FOR ACCURACY: PERCENT RECOVERY OF SURROGATE SPIKES

12/22/87

U-7079.4

Compound	E & E Laboratory No. 87-	Amount Added (ug/L)	Amount Determined (ug/L)	Percent Recovery
1,2-dichloroethane-D4	13772	50	57	114
	13773	50	56	112
toluene-D8	13772	50	46	92
	13773	50	44	88
4-bromofluorobenzene	13772	50	48	96
	13773	50	47	94

These recoveries are acceptable to EPA Contract Lab Program (CLP) guidelines.

CHAIN OF CUSTODY RECORD

Part I: To be Completed by Client (Also Complete Part III)

Company Name Samuel S. Hausman

Address R.D.1

City Saegertown State PA Zip 16433

Contact Person SSH Phone Number

Sampler Andy Mason / S.S.H. Date Sampled 12/22/87 Time

Sample Type (Please Circle): 1) Wastewater, 2) Drinking Water, (3) Monitoring Well,
4) Soil, 5) Sludge, 6) Solid Waste, 7) Oil,
8) Industrial Hygiene
Other (Please Specify)

Collector's Sample ID	Analyses Requested
MW 1	VOA
MW 2	
MW 3	
MW 4	

Part II: To be Completed by Laboratory (Also Complete Part III)

Date of Arrival Time of Arrival

Means of Delivery to Laboratory

Was (were) sample(s) under refrigeration at time of arrival?

Part III: Chain of Possession Signatures

	Signature	Organization	Inclusive Dates
1.	Sam Hausman	S. Hausman	12/22/87
2.	David Baier	Ecology & Environment	12/23/87
3.			
4.			
5.			

OCCIDENTAL CHEMICAL

AUG 28 1986

MATERIAL SAFETY DATA SHEET

INDUSTRIAL AND SPECIALTY CHEMICALS
360 RAINBOW BLVD. SOUTH
NIAGARA FALLS, N.Y. 14302

I. PRODUCT INFORMATION (REFER ALSO TO SECTION XII)

PRODUCT NAME: HYDROCHLORIC ACID

CHEMICAL NAME: HYDROCHLORIC ACID

CHEMICAL FORMULA: HCL

CAS REGISTRY NO.: 007647-01-0

COMMON NAME OR SYNONYM: CHLOROHYDRIC ACID; HCL; MURIATIC ACID

CHEMICAL FAMILY: INORGANIC ACID

II. HEALTH DATA

Carcinogenicity: NTP -NO IARC -NO OSHA -NO

FIRST AID MEASURES:

Inhalation: MOVE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED, PERFORM ARTIFICIAL RESPIRATION. KEEP AFFECTED PERSON WARM AND AT REST. GET MEDICAL ATTENTION AS SOON AS POSSIBLE.

Skin: IMMEDIATELY FLUSH SKIN WITH WATER AND WASH WITH SOAP AND WATER. IF CLOTHING PENETRATED, IMMEDIATELY USE SAFETY SHOWER, PREFERABLY REMOVING CLOTHING UNDER SHOWER. FLUSH EXPOSED AREAS WITH LARGE AMOUNTS OF WATER FOR AT LEAST 15 MINUTES. GET PROMPT MEDICAL ATTENTION. WASH CLOTHING BEFORE RE-USE.

Eyes: IMMEDIATELY FLUSH EYES WITH A DIRECTED STREAM OF WATER FOR AT LEAST 15 MINUTES WHILE FORCIBLY HOLDING EYELIDS APART TO ENSURE COMPLETE IRRIGATION OF ALL EYE AND LID TISSUE. GET IMMEDIATE MEDICAL ATTENTION !!!

Ingestion: IF PERSON IS CONSCIOUS, IMMEDIATELY ADMINISTER LARGE QUANTITIES OF WATER. DO NOT INDUCE VOMITING. AVOID HAVING AN UNCONSCIOUS PERSON VOMIT. GET IMMEDIATE MEDICAL ATTENTION.

SPECIAL PRECAUTIONS:

WARNING - CORROSIVE AT CONCENTRATIONS ABOVE 15%.

EFFECTS OF OVEREXPOSURE:

Inhalation: VAPORS HAVE AN IRRITATING EFFECT ON THE RESPIRATORY TRACT CAUSING COUGHING, BURNING OF THROAT, CHOKING SENSATION, BRONCHITIS, AND PULMONARY EDEMA. ACUTE INHALATION TOXICITY: LC50(RAT,1HR): 3124 PPM.

Skin: MAY PRODUCE IRRITATION AND BURNS OF THE SKIN AND MUCOUS MEMBRANES, THE SEVERITY BEING DETERMINED BY CONCENTRATION AND DURATION OF EXPOSURE. TOXICITY: CORROSIVITY(RABBIT): 0.01-15% CONCENTRATION: NONCORROSIVE; >15% CONCENTRATION: CORROSIVE.

Eyes: CONTACT WITH THE EYES MAY CAUSE SEVERE BURNS. UNLESS REMOVED QUICKLY BY THOROUGH IRRIGATION WITH WATER, PROLONGED OR PERMANENT VISUAL IMPAIRMENT OR LOSS OF SIGHT MAY RESULT.

Ingestion: INGESTION OF CONCENTRATED HYDROCHLORIC ACID CAUSES SEVERE BURNS OF THE MOUTH, ESOPHAGUS AND STOMACH. ACUTE ORAL TOXICITY: LD50 (RABBIT): 900 MG/KG.

III. FIRE AND EXPLOSION HAZARD DATA

FLASH POINT: N/A °C / N/A °F

FLAMMABLE LIMITS: (In Air % by Vol.) Lower N/A Upper N/A

AUTO IGNITION TEMPERATURE: N/A °C / N/A °F

EXTINGUISHING MEDIA:
USE WATER SPRAY, FOG, FOAM, DRY CHEMICALS, CO2 OR OTHER AGENTS AS APPROPRIATE FOR SURROUNDING FIRE.

SPECIAL FIRE FIGHTING PROCEDURES & PERSONAL PROTECTION:
USE SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE EQUIPMENT.

UNUSUAL FIRE AND EXPLOSION HAZARDS:
REACTS WITH ACTIVE METALS (POTASSIUM, SODIUM, CALCIUM, POWDERED ALUMINUM, ZINC, MAGNESIUM) TO PRODUCE FLAMMABLE HYDROGEN GAS.

IV. SPECIAL PROTECTION

VENTILATION: PROVIDE GOOD GENERAL ROOM VENTILATION TO MINIMIZE EXPOSURE. USE LOCAL EXHAUST AT POINTS OF VAPOR EMISSION.

RESPIRATORY: USE NIOSH/MSHA APPROVED ORGANIC VAPOR ACID-GAS TYPE RESPIRATOR FOR AREAS WHERE AIRBORNE EXPOSURE IS EXCESSIVE.

GLOVES: WEAR PROTECTIVE GLOVES SUCH AS RUBBER OR NEOPRENE TO MINIMIZE SKIN CONTACT. WASH THOROUGHLY AFTER HANDLING.

EYE PROTECTION:
WEAR SAFETY GLASSES WITH SIDE SHIELDS OR CHEMICAL GOGGLES.

OTHER PROTECTIVE EQUIPMENT:
EYE WASH AND SAFETY SHOWER SHOULD BE IN CLOSE PROXIMITY. USE OF RUBBERIZED COVERALLS AND RUBBER SHOES ARE SUGGESTED.

V. PHYSICAL DATA

BOILING POINT: (760 mm Hg) (20BE') 80 °C (20BE') 176 °F

SPECIFIC GRAVITY: 1.16 (H_2O = 1)

VAPOR PRESSURE: (mm Hg 20°C) 210MM @20C

pH 1 @ 10 GM/L

VAPOR DENSITY: (Air = 1) N/A

PERCENT VOLATILE: (By Volume) N/A

SOLUBILITY IN WATER (% by Wt.): COMPLETE

EVAPORATION RATE: (Butyl Acetate = 1) N/A

APPEARANCE AND COLOR: CLEAR, COLORLESS TO YELLOW

OTHER: BOILING POINT (22 BE'):55C. MELTING PT (22 BE'): -66C.

VI. HAZARDOUS INGREDIENTS

INGREDIENTS PRESENTING A SIGNIFICANT HAZARD:	%	THRESHOLD LIMIT VALUE (See Section XI)
HYDROCHLORIC ACID	31.4 - 35.2	OSHA CEIL : 7.0000 MG/M3 ACGIH CEIL : 7.0000 MG/M3

HCL CONTENT OF 20 BAUME ACID IS 31.4% AND 22 BE' IS 35.2%.

VII. HAZARDOUS REACTIVITY

INCOMPATIBILITY:
REACTS WITH MOST METALS TO PRODUCE HYDROGEN GAS.
MIXING WITH STRONG OXIDIZERS CAN YIELD CHLORINE.

HAZARDOUS DECOMPOSITION PRODUCTS:
FLAMMABLE HYDROGEN GAS CAN BE PRODUCED BY THE REACTION WITH MOST METALS. CHLORINE WILL BE RELEASED BY MIXING WITH STRONG OXIDIZERS.

CONDITIONS TO AVOID:
CONTACT WITH METALS AND STRONG OXIDIZERS, HEAT OR FIRE, RUNOFF TO SEWER, INHALATION OF GAS, SPARKS WHERE HYDROGEN MAY BE PRESENT. REACTS EXOTHERMICALLY WITH ALKALIES AND ACTIVE METALS.

VIII. HANDLING AND STORAGE

HANDLING AND STORAGE PRECAUTIONS:
STORE IN A COOL, DRY, WELL-VENTILATED AREA AWAY FROM OXIDIZING AGENTS.
USE EQUIPMENT DESIGNED FOR ACID SERVICE FOR HANDLING AND STORAGE.

IX. ENVIRONMENTAL PROTECTION

PROCEDURE IN CASE OF SPILL OR RELEASE:
GET PROTECTIVE EQUIPMENT. CONTAIN SPILL AND PUMP INTO MARKED CONTAINERS FOR RECLAMATION OR DISPOSAL. FOR SMALL SPILLS, NEUTRALIZE WITH SODA ASH OR DILUTE CAUSTIC SODA SOLUTION AND FLUSH TO A SEWER SYSTEM IN ACCORDANCE WITH REGULATORY PERMIT REQUIREMENTS. IF POSSIBLE, CLEAN UP SPILL AREA ON A DRY BASIS AND THEN FLUSH WITH PLENTY OF WATER

WASTE DISPOSAL METHOD:
DISPOSE OF SPILLED OR WASTE PRODUCT, CONTAMINATED SOIL AND OTHER CONTAMINATED MATERIALS IN LICENSED LANDFILLS OR TREATMENT FACILITIES IN ACCORDANCE WITH ALL FEDERAL, STATE AND LOCAL REGULATIONS.

X. REGULATORY STATUS

This information should not be considered to be an all-inclusive regulatory bibliography of the product. Users are advised to check with state and local authorities concerning applicable regulations regarding transportation, handling, use or disposal of this product.

SEC 311 OF THE CLEAN WATER ACT LISTS MURIATIC ACID AS A HAZARDOUS SUBSTANCE WHICH, IF DISCHARGED INTO OR UPON WATER, MAY REQUIRE IMMEDIATE RESPONSE TO MITIGATE DANGER TO PUBLIC HEALTH.
SPILLS OF MURIATIC ACID OF 5000 OR MORE POUNDS MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER, 1-800-424-8802.
SHIPMENT REGULATED BY U.S DOT AS A CORROSIVE MATERIAL. CORROSIVE LABEL REQUIRED. ASSIGNED UN# 1789 AS AN INTERNATIONAL IDENTIFICATION NUMBER (49 CFR SEC 172.101). CONTAINED ON A COMPOSITE LIST AS REQUIRED UNDER SEC 101(14) OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY ACT (SUPERFUND) WHICH INCLUDES SUBSTANCES DESIGNATED PURSUANT TO SEC. 3001 OF THE SOLID WASTE DISPOSAL ACT (RCRA), SEC. 307 OF THE CLEAN WATER ACT, SEC 112 OF THE CLEAN AIR ACT, SEC. 7 OF TSCA AND SEC 102 OF CERCLA. DESIGNATED HAZARDOUS BY OSHA 29CFR SEC 1910 SUBPART Z. DESIGNATED HAZARDOUS BY ACGIH. MURIATIC ACID IS A GENERALLY REGARDED AS SAFE (GRAS) SUBSTANCE AND AS SUCH CERTIFIED FOOD GRADE MATERIAL CAN BE USED AS A FOOD ADDITIVE AS EXEMPTED BY THE FOOD, DRUG AND COSMETIC ACT (21 CFR SEC 582).
OSHA STANDARD 29 CFR SEC 1919.1200 HAZARD COMMUNICATION REQUIRES THAT INFORMATION BE PROVIDED TO EMPLOYEES CONCERNING HAZARDOUS CHEMICALS BY MEANS OF A HAZARD COMMUNICATION PROGRAM INCLUDING CONTAINER LABELS, MATERIAL SAFETY DATA SHEETS, TRAINING AND ACCESS TO WRITTEN RECORDS.

XI. ADDITIONAL INFORMATION

SEE OCC BULLETIN 152 "HANDLING RUBBER LINED TANK CARS" AND BULLETIN 156 "TANK CAR LOADING AND UNLOADING PLATFORMS" FOR ADDITIONAL INFORMATION ON HANDLING.
SEE OCC PRODUCT DATA SHEET 720 AND 103 FOR PRODUCT SPECIFICATIONS, PACKAGING AND OTHER INFORMATION. MURIATIC ACID IS LISTED IN THE TSCA CHEMICAL SUBSTANCE INVENTORY UNDER CAS # 7647-01-0.
HAZARD RATINGS ACCORDING TO THE HAZARDOUS MATERIALS IDENTIFICATION SYSTEM DEVELOPED BY THE NATIONAL PAINT AND COATINGS ASSOCIATION ARE:
HEALTH 3; FLAMMABILITY 0; REACTIVITY 1; PERSONAL PROTECTION G.

For Non-Emergency Information Call 716-286-3000

OCC SUBSTANCE NO. 570 DATE 06/30/85

RECLAIM IF POSSIBLE USING BROOM, SHOVEL, ETC., OR DILUTE SPILL WITH WATER THEN NEUTRALIZE WITH DILUTE ACID. USE VACUUM TRUCK TO PICK-UP NEUTRALIZED MATERIAL FOR PROPER DISPOSAL. PROPERLY NEUTRALIZED LIQUID RESIDUE MAY BE DISPOSED OF IN WASTE WATER TREATMENT FACILITES WHICH ALLOW THE DISCHARGE OF NEUTRAL SALT SOLUTIONS. AFTER ALL VISIBLE TRACES HAVE BEEN REMOVED, FLUSH AREA WITH LARGE AMOUNTS OF WATER.

WASTE DISPOSAL METHOD;
CHAUTAUQUA CHEMICALS RECOMMENDS DISPOSAL OF DRY RESIDUES IN AN APPROVED HAZARDOUS WASTE MANAGEMENT FACILITY. CARE MUST BE TAKEN WHEN USING OR DISPOSING OF CHEMICAL MATERIALS AND/OR THEIR CONTAINERS TO PREVENT ENVIRONMENTAL CONTAMINATION. IT IS YOUR DUTY TO DISPOSE OF THE CHEMICAL MATERIALS AND/OR THEIR CONTAINERS IN ACCORDANCE WITH THE CLEAN AIR ACT, THE CLEAN WATER ACT, THE RESOURCE CONSERVATION AND RECOVERY ACT, AS WELL AS ANY OTHER RELEVANT FEDERAL, STATE, OR LOCAL LAWS/REGULATIONS REGARDING DISPOSAL.

****
SECTION 7 SPECIAL PROTECTION INFORMATION
****

RESPIRATORY PROTECTION- USE NIOSH/MSHA- APPROVED DUST/MIST FILTER RESPIRATOR FOR ROUTINE WORK PURPOSES WHEN EXPOSURE TO MISTS EXCEED THE PERMISSIBLE EXPOSURE LIMITS. THE RESPIRATOR USE LIMITATIONS MADE BY NIOSH/MSHA OR THE MANUFACTURER MUST BE OBSERVED.

VENTILATION- LOCAL EXHAUST - SUFFICIENT TO MAINTAIN DUST/MIST LEVELS BELOW PERMISSIBLE EXPOSURE LIMIT.

EYE PROTECTION- CLOSE FITTING CHEMICAL SAFETY GOGGLES WITH FACE SHIELD

GLOVES- NITRILE, NEOPRENE, NATURAL RUBBER

OTHER PROTECTIVE EQUIPMENT- RUBBER BOOTS WITH SAFETY TOES, RUBBER APRON PVC CLOTHING, PLASTIC HARD HAT SHOULD BE USED WHEN NECESSARY TO PREVENT SKIN CONTACT. PERSONAL PROTECTIVE CLOTHING AND USE OF EQUIPMENT MUST BE IN ACCORDANCE WITH 29CFR 1910.133 & 29CFR 1910.132.

****
SECTION 8 SPECIAL PRECAUTIONS
****

HANDLING AND STORAGE;

1. WHEN HANDLING, WEAR SAFETY GOGGLES.
2. WEAR NIOSH/MSHA- APPROVED, DUST-TYPE RESPIRATORS, WHERE DUST OF MIST MAY BE GENERATED.
3. STORE IN A DRY PLACE, KEEP CONTAINER CLOSED WHEN NOT IN USE.
4. NEVER TOUCH EYES OR FACE WITH HANDS OR GLOVES THAT MAY BE CONTAMINATED WITH COMPOUND.

OTHER PRECAUTIONS;

1. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.
2. DO NOT BREATHE MIST.

CHAUTAUQUA CHEMICALS CO. INC.

MATERIAL SAFETY DATA SHEET

CHAUTAUQUA CHEMICALS CO., INC.
43 FOREST AVE.
JAMESTOWN, NY 14701 (716) 664-4114

FOR CHEMICAL EMERGENCY
spill, leak, fire, exposure, or accident
CALL CHEMTREC-DAY OR NIGHT
800-424-9300

****

TRADE NAME;
QC-41

FORMULA;
MIXTURE

CHEMICAL FAMILY;
MILD ALKALIES

DOT SHIPPING NAME;
COMPOUND IRON OR STEEL CLEANING
NOIBN DRY

****

SECTION 1 PHYSICAL DATA

****

APPEARANCE AND ODOR;
BUFF WHITE POWDER

PH OF SOLUTIONS;
ALKALINE

SOLUBILITY IN WATER
COMPLETE

****

SECTION 2 HAZARDOUS INGREDIENTS

****

INGREDIENT	CAS#	TLV
SODIUM TETRABORATE (BORAX)	1303-96-4	5MCM
SODIUM METASILICATE	13870-28-5	2MCM

(MCM= MILLIGRAMS PER CUBIC METER...TLV= THRESHOLD LIMIT VALUE)

****

SECTION 3 FIRE AND EXPLOSION HAZARD DATA

****

FLASH POINT;
NONE

SPECIAL FIRE FIGHTING PROCEDURES;
NONE

UNUSUAL FIRE AND EXPLOSION HAZARDS;
NONE

****

SECTION 4 EFFECTS OF OVEREXPOSURE

****

*****ACUTE*****

EYE CONTACT- MATERIAL AND/OR DUST/MIST MAY CAUSE IRRITATION OR BURNS.

SKIN CONTACT- CONTACT WITH SKIN MAY CAUSE IRRITATION. DUST OR MIST FROM SOLUTION CAN CAUSE IRRITANT DERMATITIS.

INGESTION- INGESTION EITHER IN SOLID OR LIQUID FORM CAN CAUSE DAMAGE TO THE MUCOUS MEMBRANES OR TISSUES WITH WHICH CONTACT IS MADE.

INHALATION- INHALATION OF DUST OR MISTS CAN CAUSE DAMAGE TO THE UPPER RESPIRATORY TRACT AND TO THE LUNG TISSUE DEPENDING ON THE SEVERITY OF EXPOSURE.

*****CHRONIC*****

THE EFFECTS OF LONG-TERM, LOW LEVEL EXPOSURES TO THIS PRODUCT HAVE NOT BEEN DETERMINED. SAFE HANDLING OF THIS MATERIAL ON A LONG -TERM BASIS SHOULD EMPHASIZE THE AVOIDANCE OF ALL EFFECTS FROM REPETITIVE ACUTE EXPOSURE.

****
***** EMERGENCY AND FIRST AID PROCEDURES *****
****

EYE CONTACT- IMMEDIATELY, FLUSH EYES WITH A DIRECT STREAM OF WATER FOR AT LEAST 15 MINUTES. FORCIBLY HOLD EYELIDS APART TO ENSURE COMPLETE IRRIGATION OF ALL EYE AND LID TISSUE. GET MEDICAL ATTENTION.

SKIN CONTACT- IMMEDIATELY FLUSH CONTAMINATED SKIN WITH WATER. IF THIS CHEMICAL PENETRATES CLOTHING, IMMEDIATELY REMOVE THE CLOTHING AND FLUSH THE SKIN WITH WATER. GET PROMPT MEDICAL ATTENTION IF IRRITATION OCCURS. WASH CLOTHING BEFORE REUSE.

INGESTION- IF PERSON IS CONSCIOUS IMMEDIATELY ADMINISTER LARGE QUANTITIES OF WATER. DO NOT INDUCE VOMITING. GET IMMEDIATE MEDICAL ATTENTION!!!

INHALATION- MOVE THE EXPOSED PERSON TO FRESH AIR AT ONCE. IF BREATHING HAS STOPPED PERFORM ARTIFICIAL RESPIRATION. KEEP THE AFFECTED PERSON WARM AND AT REST. GET MEDICAL ATTENTION AS SOON AS POSSIBLE.

****
SECTION 5 REACTIVITY DATA
****

STABILITY;
STABLE

HAZARDOUS POLYMERIZATION;
WILL NOT OCCUR

CONDITIONS TO AVOID-
NONE

INCOMPATIBILITY (MATERIALS TO AVOID)-
NONE

****
SECTION 6 SPILL OR LEAK PROCEDURES
****

STEPS TO BE TAKEN IF MATERIAL IS SPILLED OR RELEASED;

Auto Dec

X MAR 2 8 1983

ENGELHARD

MINERALS & CHEMICALS DIVISION

REVISION DATE September 17, 1982

RECEIVED DEC 1 2 1985

Essentially similiar to OSHA-20

MATERIAL SAFETY DATA SHEET

Section I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NUMBER
ENGELHARD CORPORATION MINERALS & CHEMICALS DIVISION	(201) 321-5000

ADDRESS (Number, Street, City, State and ZIP Code)

MENLO PARK CN 28, EDISON, N.J. 08818

CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
MAGNESIUM ALUMINUM SILICATE	ALL ATTAPULGITE BASED PRODUCTS
CHEMICAL FAMILY ATTAPULGITE (FULLER'S EARTH)	FORMULA 3 mg. 0.1.5 $Al_2O_2.9H_2O$ (COLLOIDAL) 3 mg. 0.1.5 Al_2O_3 $SiO_2.6H_2O$ (HEAT ACTIVATED)

Section II — HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES & SOLVENTS

PIGMENTS	%	TLV (Units)	SOLVENTS	%	TLV (Units)
N.A.			N.A.		
CATALYST N.A.			ADDITIVES N.A.		
VEHICLE N.A.			OTHERS N.A.		

Section III — PHYSICAL DATA as assigned Catagory D.

BOILING POINT (°F)	N.A.	SPECIFIC GRAVITY (H_2O =1)	2.36 (COLLOIDAL) 2.45 (ACTIVATED)
VAPOR PRESSURE (mm Hg.)	N.A.	PERCENT VOLATILE BY VOLUME (%)	N.A.
VAPOR DENSITY (AIR =1)	N.A.	EVAPORATION RATE (.....=1)	N.A.
SOLUBILITY IN WATER	INSOLUBLE		
APPEARANCE AND ODOR	TAN COLOR - ODORLESS		
	POWDER OR PARTICLE		

Section IV — FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (METHOD USED) NON-FLAMMABLE	FLAMMABLE LIMITS N.A.	Lel	Uel

EXTINGUISHING MEDIA N.A.

SPECIAL FIRE FIGHTING PROCEDURES NONE

UNUSUAL FIRE AND EXPLOSION HAZARDS NONE

Section V — HEALTH HAZARD DATA

THRESHOLD LIMIT VALUE ATTAPULGITE IS CLASSIFIED AS A NUISANCE DUST BY THE AMERICAN CONFERENCE OF GOVERNMENTAL INDUSTRIAL HYGIENISTS (ACGIH) WITH A TLV OF 10mg/m^3 TOTAL DUST OR 5mg/m^3 RESPIRABLE FRACTION (PER THEIR 1981 PUBLICATION). MATERIAL MAY CONTAIN 1-3% "FREE-SILICA". SEE CURRENT ACGIH PUBLICATION FOR CALCULATING APPROPRIATE TLV ADJUSTMENT. PENDING THE ESTABLISHMENT OF ITS OWN TLV, ENGELHARD EMPLOYS THE TLV SET BY ACGIH IN ITS ATTAPULGITE OPERATIONS.

EFFECTS OF OVEREXPOSURE PROLONGED AND CONTINUOUS EXPOSURE TO AN EXCESSIVE CONCENTRATION OF DUST OF ANY KIND INCLUDING ATTAPULGITE MAY HAVE AN ADVERSE PULMONARY EFFECT ON SOME PEOPLE.

EMERGENCY FIRST AID PROCEDURES NO SPECIAL FIRST AID IS REQUIRED. CONSULT A PHYSICIAN IF A QUESTION ARISES.

Section VI — REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID N.A.
	STABLE	X	

OMPATABILITY (*Materials to avoid*) NONE

HAZARDOUS DECOMPOSITION PRODUCTS N.A.

HAZARDOUS POYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID N.A.
	WILL NOT OCCUR	X	

Section VII — SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED VACUUN OR SCOOP UP THE SPILLED MATERIAL IN A CONTAINER FOR RECLAMATION OR DISPOSAL.

STE DISPOSAL METHOD RAW (UNUSED) MATERIAL MAY BE DISPOSED OF IN A SANITARY LANDFILL, HOWEVER, SPENT MATERIAL MAY BE CONTAMINATED AND MAY REQUIRE SPECIAL DISPOSAL METHODS. CONSULT WITH APPROPRIATE REGULATORY AUTHORITIES.

Section VIII — SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION (*Specify type*) NIOSH APPROVED PARTICULATE RESPIRATOR

VENTILATION	LOCAL EXHAUST	X	SPECIAL
	MECHANICAL (*General*)		OTHER

PROTECTIVE GLOVES NONE EYE PROTECTION NONE

OTHER PROTECTIVE EQUIPMENT NONE

Section IX — SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING MINIMIZE DUST GENERATION AND EXPOSURE.

OTHER PRECAUTIONS NONE

McGean-Rohco, Inc.
1250 Terminal Tower, Cleveland, Ohio 44113, 216/621-6425

MATERIAL SAFETY DATA SHEET

Product Name: INTERLOX ZINC PHOSPHATE 906		Emergency Phone No.: *313/872-1800
Plant Address: 38521 Schoolcraft Avenue, Livonia, MI 48150		Chemtrec Phone No. 800/424-9300
Prepared By: M. Arthur Detrisac	Issue Date:	Revised Date: 11-19-86

INGREDIENTS AND HAZARDOUS COMPONENTS

Material	%	TLV	C.A.S. #	Suspect Carcinogen
Phosphoric Acid	30	1mg/M³	7664-38-2	No
Nitric Acid	14.5	5mg/M³	7697-37-2	No
Nickel	<1	0.1/mg M³	3333-67-3	No

PHYSICAL DATA

Boiling Point: 230°F	Freezing Point: UK	Specific Gravity: 1.645	pH: 0.1
Vapor Pressure at 20° C: UK	Vapor Density (Air = 1): UK	% Volatiles by Volume: None	Odor: Bland
Evaporation Rate (Butyl Acetate = 1) NA		Solubility in Water: 100%	
Appearance and Form: Green liquid-odorless.			

FIRE AND EXPLOSION HAZARD DATA

Flash Point: NA	Flammable Limits In Air:
Test Method: NA	% By Volume Upper: NA Lower:
Extinguishing Media: NA	
Special Fire Fighting Procedures: NA	
Unusual Fire and Explosion Hazards: NA	
DOT Classification: Corrosive Material NA 1760	Note: UK = Unknown NA = Not Applicable

HEALTH DATA

Effects of Overexposure and Primary Entries to Body:	TLV = 1/mg M^3 based on nickel content. Severe skin and eye irritant.
Emergency and First Aid Procedures:	Flush skin and eyes with plenty of water and get medical attention for eyes. Remove contaminated clothing and launder before reuse.

REACTIVITY DATA

☐ Stable ☒ Unstable	Conditions to Avoid:
Incompatability — Materials to Avoid:	Do not mix with strong alkali.
Hazardous Decomposition Products:	Contact with metal may give off NO_X fumes.
ardous Polymerization:	☐ May Occur ☒ Will Not Occur

SPILL OR LEAK PROCEDURES

Spills:	Wash with plenty of water to chemical sewer for treatment of heavy metals.
Waste Disposal Methods:	Neutralize and treat for heavy metals zinc and nickel. DISPOSER MUST COMPLY WITH FEDERAL, STATE AND LOCAL DISPOSAL LAWS.

SPECIAL PROTECTION INFORMATION

Respirator: None		
Ventilation: Local-normal rate.		
Gloves: Neoprene	Eye and Face: Chemical Goggles	Other: Rubber Apron
Handling and Storage:	Store in cool area away from strong reducing agents and alkalis.	

McGean-Rohco, Inc.

1250 Terminal Tower, Cleveland, Ohio 44113, 216-621-6125

Plating Process Chemicals

MATERIAL SAFETY DATA SHEET

13020

Product Name: ALKALOX CLEANER 89		Emergency Phone No.: **313-872-1800
Plant Address: 38521 Schoolcraft Avenue, Livonia, Michigan 48150		Chemtrec Phone No. 800/424-9300
Prepared By:	Issue Date: 5/20/82	Revised Date: 7-10-85

INGREDIENTS AND HAZARDOUS COMPONENTS

Material	%	TLV	C.A.S. #	Suspect Carcinogen
Caustic Soda	41	2mg/m^3	1310-73-2	--

PHYSICAL DATA

Boiling Point: NA	Freezing Point: NA	Specific Gravity: NA	pH: 10% Sol.-14.0
Vapor Pressure at 20° C: NA	Vapor Density (Air = 1): NA	% Volatiles by Volume: NA	Odor: WOODY
Evaporation Rate (Butyl Acetate = 1) NA		Solubility in Water: 100%	
Appearance and Form: DARK BROWN POWDER			

FIRE AND EXPLOSION HAZARD DATA

Flash Point: NA	Flammable Limits in Air: % By Volume Upper: Lower: NA
Test Method: NA	
Extinguishing Media: NA	
Special Fire Fighting Procedures: NA	
Unusual Fire and Explosion Hazards: MAY REACT WITH AMPHOTERIC METALS SUCH AS ALUMINUM. CAN GENERATE HYDROGEN WHICH IS FLAMMABLE OR EXPLOSIVE.	
DOT Classification: Corrosive Material UN 1759	Note: UK = Unknown NA = Not Applicable

**AFTER 5:00 P.M., CALL EITHER 559-2775 or 455-6587.

HEALTH HAZARD DATA

Effects of Overexposure and Primary Entries to Body:
Corrosive to eyes, skin, and human tissue.

Emergency and First Aid Procedures: IMMEDIATELY flush with plenty of water for at least fifteen (15) minutes. If medical attention has not been obtained, continue flushing. REMOVE contaminated clothes. INGESTION-give milk and plenty of water; call physician immediately. DO NOT INDUCE VOMITING.

REACTIVITY DATA

☐ Stable ☒ Unstable **Conditions to Avoid:** Exothermic heat of solution.

Incompatability — Materials to Avoid:
Strong acids.

Hazardous Decomposition Products:
None

Hazardous Polymerization:
None ☐ May Occur ☒ Will Not Occur

SPILL OR LEAK PROCEDURES

Spills: Sweep up and dispose as caustic soda.

Waste Disposal Methods:
Dilute with water and neutralize.

*DISPOSER MUST COMPLY WITH FEDERAL, STATE, AND LOCAL DISPOSAL OR DISCHARGE LAWS.

SPECIAL PROTECTION INFORMATION

Respirator: Use a dust mask.

Ventilation:
Local exhaust - normal rate.

Gloves:	Eye and Face:	Other:
Neoprene	Face mask or chemical goggles.	Rubber aprons and boots.

Handling and Storage: Store in dry area away from amphoteric metals, e.g. aluminum and zinc. Also store away from strong acids. Do not add to hot water. The chemical may boil or spatter while adding to water. Add slowly with constant agitation to prevent spatter, boil over, and ensure complete solublizing.

McGean-Rohco, Inc.

1250 Terminal Tower, Cleveland, Ohio 44113, 216/621-6425

MATERIAL SAFETY DATA SHEET

Product Name: HORSOL SOLUBLE OIL 931 U		Emergency Phone No.: **313-872-1800
Plant Address: 38521 Schoolcraft Avenue, Livonia, Michigan 48150		Chemtrec Phone No. 800/424-9300
Prepared By: M. Arthur Detrisac	Issue Date: 5/79	Revised Date: 4/85

AUG 14 1985

INGREDIENTS AND HAZARDOUS COMPONENTS

Material	%	TLV	C.A.S. #	Suspect Carcinogen
HEXYLENE GLYCOL	2	125/ MG/M³	107-41-51	

PHYSICAL DATA

Boiling Point: 300°F.	Freezing Point: NA	Specific Gravity: 0.94	pH: 10% - 9.5
Vapor Pressure at 20° C: NA	Vapor Density (Air = 1): NA	% Volatiles by Volume: NA	Odor: OILY
Evaporation Rate (water) NA		Solubility in Water: 100%	
Appearance and Form: DARK BROWN LIQUID			

FIRE AND EXPLOSION HAZARD DATA

Flash Point: ABOVE 350°F	Flammable Limits in Air: NA
Test Method: C.O.C.	% By Volume Upper: Lower:
Extinguishing Media: SODA, CARBON DIOXIDE	
Special Fire Fighting Procedures: NONE	
Unusual Fire and Explosion Hazards: NA	
DOT Classification: NA	Note: UK = Unknown NA = Not Applicable

**AFTER 5:00 P.M., CALL EITHER 559-2775 or 455-6587

HEALTH HAZARD DATA

ute of Overexposure and Primary Entries to Body:

SIMILAR PRODUCTS HAVE HAD A LONG HISTORY OF MANUFACTURE AND USE WITHOUT INCIDENT.

Emergency and First Aid Procedures:

WASH WITH LARGE VOLUMES OF WATER. CONTAMINATED CLOTHING MUST BE WASHED BEFORE REUSE.

REACTIVITY DATA

☒ Stable ☐ Unstable Conditions to Avoid: NA

Incompatability — Materials to Avoid: STRONG OXIDIZING AND REDUCING AGENTS.

Hazardous Decomposition Products: OXIDES OF NITROGEN

Hazardous Polymerization: ☐ May Occur ☒ Will Not Occur

SPILL OR LEAK PROCEDURES

Spills: FLUSH WITH WATER TO SEWER.

Waste Disposal Methods: TREAT AS OILY WASTE.

*DISPOSER MUST COMPLY WITH FEDERAL, STATE AND LOCAL DISPOSAL OR DISCHARGE LAWS.

SPECIAL PROTECTION INFORMATION

Respirator: NA

Ventilation: MECHANICAL, NORMAL RATE

Gloves:	Eye and Face:	Other:
RUBBER	GOGGLES	NA

Handling and Storage:

STORE INDOORS OR OUTDOORS AWAY FROM OPEN FLAME.

X

RECEIVED DEC 12 1985

U.S. DEPARTMENT OF LABOR
OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION
MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME: Talco Company

ADDRESS: 5201 Unruh Avenue, Philadelphia, PA 19135

CHEMICAL NAME AND SYNONYMS: Zinc

CHEMICAL FAMILY: Zinc

EMERGENCY TELEPHONE NUMBER:
Chemtrec -- 800-424-9300
Talco Co -- 215-333-6800

TRADE NAME AND SYNONYMS:
Special High Grade

FORMULA: Zn

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES AND SOLVENTS	%	TLV (UNITS)	ALLOYS AND METALLIC COATINGS	%	TLV (UNITS)
PIGMENTS:	NA		BASE METAL:	NA	
CATALYST:	NA		ALLOYS:	NA	
VEHICLE:	NA		METALLIC COATINGS:	NA	
SOLVENTS:	NA		FILLER METAL PLUS COATING OR CORE FLUX:	NA	
ADDITIVES:	NA		OTHERS:	NA	
OTHERS:	NA				

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS OR GASES: NA

SECTION III - PHYSICAL DATA

BOILING POINT (°C):	907°	SPECIFIC GRAVITY (H_2O=1):	7.13
VAPOR PRESSURE (mm Hg.):	NA	PERCENT, VOLATILE BY VOLUME (%):	NA
VAPOR DENSITY (AIR=1):	NA	EVAPORATION RATE (_____)=1:	NA
SOLUBILITY IN WATER:	Insoluble.		

APPEARANCE AND ODOR: Various shapes and sizes, silver white metal, no odor.

SECTION IV - FIRE AND EXPOSION HAZARD DATA

FLASH POINT (METHOD USED): NA

FLAMMABLE LIMITS: NA

EXTINGUISHING MEDIA: Dry Chemical.

SPECIAL FIRE FIGHTING PROCEDURES: Use approved self-contained breathing apparatus.

UNUSUAL FIRE AND EXPLOSION HAZARDS: Water contact with molten metal may cause explosion.

(CONTINUED ON PAGE 2)

MSDS 20C

Material Safety Data Sheet

PPG INDUSTRIES, Inc.
Chemicals Group
One Gateway Center
Pittsburgh, PA 15222

Chemicals PPG INDUSTRIES

Approved by U.S. Dept. of Labor as "Essentially similar" to Form OSHA-20

Date: June, 1980	Edition: Third MAR - 1 1983
Chemical Name and Synonyms: Sodium Hydroxide; Caustic Soda CAS No.: 1310-73-2	Trade Name and Synonyms: Pels® Caustic Soda Beads; anhydrous sodium hydroxide
Chemical Family: Alkali	Formula: NaOH
DOT Shipping Name: Caustic Soda, Bead	DOT Hazard Class: Corrosive Material

SECTION 1 · PHYSICAL DATA

Boiling Point @ 760 mm Hg: 1390°C	Vapor Density (Air=1): Not Applicable	Specific Gravity (H_2O=1): 2.130	pH of Solutions: All solutions are strongly basic
Freezing/Melting Point: 310 to 320°C 590 to 608°C	Solubility (Weight % in Water): appreciable 347g/100g water@100°C	Bulk Density: Compacted = 73 lb/ft³ Loose = 70 lb/ft³	Volume % Volatile: Not Applicable
Vapor Pressure: Not Applicable	Evaporation Rate (_____=1): Not Applicable	Heat of Solution: Exothermic	Appearance and Odor: White to slightly colored solid; no odor

SECTION 2 · HAZARDOUS INGREDIENTS

	%	Hazard Data
Sodium Hydroxide	100	Corrosive

SECTION 3 · FIRE AND EXPLOSION HAZARD DATA

Flash Point °F (Method Used)	Flammable Limits in Air (% by Volume)	Extinguishing Media:
None	Not Applicable LEL: UEL:	Not Applicable

Special Fire Fighting Procedures: None

Unusual Fire and Explosion Hazards: Contact with some metals particularly magnesium, aluminum and zinc (galvanized) can rapidly generate hydrogen, which is explosive.

SECTION 4 · HEALTH HAZARD DATA

Permissible Exposure Limits (TLV): 2 Mg/M³ (dust) - 8-hour TWA - OSHA 29CFR 1910.1000, May 28, 1975. The American Conference of Industrial Hygienists (ACGIH) has published a 2mg/m³ ceiling.

Toxicity Data See Section 5	Classification (Poison, Irritant, Etc.)
LC_{50} Inhalation	Inhalation: Irritant
LD_{50} Dermal	Skin/Eye: Corrosive
LD_{50} Ingestion	Ingestion: Corrosive
Fish, LC_{50} (Lethal Concentration)	Aquatic:

Human Exposure Information/Data: See Section 5

24-HOUR EMERGENCY ASSISTANCE: (304) 843-1300

EMERGENCY AND FIRST AID PROCEDURES:

Inhalation: Remove to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. If breathing is difficult, give oxygen. Contact a physician.

Eye or Skin Contact: Immediately flush eyes with plenty of water for at least 15 minutes. Hold eyelids open during this flushing with water. Call a physician. Immediately flush skin with plenty of water while removing contaminated clothing and boots. Call a physician. If skin feels slippery, caustic may still be present in sufficient quantities to cause rash c burn. Continue washing until slick skin feeling is gone. Thoroughly clean contaminated clothing and boots before reuse or discard.

Ingestion: If conscious, drink a quart of water. DO NOT induce vomiting. Take immediately to a hospital or physician. If unconscious, or in convulsions, take immediately to a hospital or physician. DO NOT induce vomiting or give anything by mouth to an unconscious person.

Notes to Physician (Including Antidotes):

SECTION 6 · REACTIVITY DATA

Stability: Stable	Conditions to Avoid: Contact with materials listed below.
Hazardous Polymerization: Will not occur	Conditions to Avoid: None

Incompatibility (Materials to Avoid): Organic materials and concentrated acids--may cause violent reactions; caustic soda reacts with magnesium, aluminum, zinc (galvanized), tin, chromium, brass and bronze generating hydrogen which is explosive. Also, caustic soda may react with various food sugars to generate carbon monoxide (see comments, page 4).

Hazardous Decomposition Products: Reaction with various food sugars may form carbon monoxide.

SECTION 7 · SPILL OR LEAK PROCEDURES

Steps to be Taken if Material is Spilled or Released: Dike area to contain spill. Only trained personnel with proper protective equipment should be permitted in area. Reclaim if possible. Or, dilute spill with large amounts of water then neutralize with dilute acid. Use vacuum truck to pick up neutralized material for disposal (see below). After all visible traces have been removed, flush area with large amounts of water.

Waste Disposal Method: Dispose of in approved hazardous waste facility. Care must be taken when using or disposing of chemical materials and/or their containers to prevent environmental contamination. It is your duty to dispose of the chemical materials and/or their containers in accordance with the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act and all state or local law/regulations regarding disposal.

SECTION 8 · SPECIAL PROTECTION INFORMATION

Respiratory Protection: NIOSH/MSHA-approved dust type respirator. Respiratory protection program must be in accordance with 29CFR 1910.134.

Ventilation (Type): Local Exhaust - Sufficient to maintain dust levels below permissible exposure limit.

Eye Protection: Close fitting chemical safety goggles	**Gloves:** Rubber or PVC

Other Protective Equipment: Rubber boots with safety toes, rubber aprons, PVC clothing, plastic hard hat; eye-wash fountain and safety shower in immediate area. Personnel protective clothing and use of equipment must be in accordance with 29CFR 1910.133.

SECTION 9 · SPECIAL PRECAUTIONS

Precautions to be Taken During Handling and Storing:

- When handling wear close-fitting chemical safety goggles, rubber gloves, rubber boots, rubber apron, polyvinyl chloride clothing and plastic hard hat.
- Wear NIOSH/MSHA-approved, dust-type respirator, where dusts or mists may be generated.
- Store in a dry place indoors.
- Never touch eyes or face with hands or gloves that may be contaminated with PELS caustic soda beads.
- Never enter a PELS caustic soda storage tank or container (truck or rail car) even if it appears empty.
- Avoid contact with organic materials and concentrated acids--may cause violent reaction; caustic soda reacts with magnesium, aluminum, zinc (galvanized), tin, chromium, brass and bronze, generating hydrogen which is explosive. Also, caustic soda may react with various sugars to generate carbon monoxide.
- When making solutions, add PELS slowly to surface of cold water while stirring, to avoid violent spattering.
- Keep containers closed when not in use.

Other Precautions:

- DO NOT GET IN EYES, ON SKIN, ON CLOTHING.
  Can cause severe injury or blindness.
- AVOID BREATHING MIST.
- DO NOT TAKE INTERNALLY.
- WASH THOROUGHLY AFTER HANDLING.
- FOR ADDITIONAL PRODUCT INFORMATION, CONTACT PPG INDUSTRIES, INC.

References:

1. Dangerous Properties of Industrial Materials, N. Irving Sax, Fifth Edition, 1979

2. Occupational Exposure to Sodium Hydroxide, NIOSH, 1975

Comments: Hazardous carbon monoxide gas can form upon contact with food and beverage products in enclosed vessels and can cause death. Follow appropriate tank entry procedures (see ANSI Z177.1 - 1977).

B. L. Finocchio
Mgr., Product Safety

SECTION 5 · EFFECTS OF OVEREXPOSURE

This section covers effects of overexposure for inhalation, eye/skin contact, ingestion and other types of overexposure information in the order of the most hazardous and the most likely route of overexposure.

EYE CONTACT - Causes severe burns; small quantities can result in permanent damage or loss of vision.

SKIN CONTACT - Corrosive action causes burns and frequently deep ulceration with ultimate scarring. Prolonged contact destroys tissue. Dust or mist from solutions can cause irritant dermatitis.

SWALLOWING - Ingestion either in solid or liquid form can cause very serious damage to the mucous membranes or other tissues with which contact is made, and may be fatal.

INHALATION - Inhalation of dusts or mists can cause damage to the upper respiratory tract and to the lung tissue depending on severity of exposure. Effects can range from mild irritation of mucous membranes to severe pneumonitis.

CHAUTAUQUA CHEMICALS CO. INC.

NOV 25 1985

MATERIAL SAFETY DATA SHEET

CHAUTAUQUA CHEMICALS CO., INC.
43 FOREST AVE.
JAMESTOWN, NY 14701 (716) 664-4114

FOR CHEMICAL EMERGENCY
spill, leak, fire, exposure, or accident
CALL CHEMTREC-DAY OR NIGHT
800-424-9300

****

TRADE NAME;
QC-88M

FORMULA;
MIXTURE

CHEMICAL FAMILY;
ALKALINE CLEANER

DOT SHIPPING NAME;
CORROSIVE SOLID, N.O.S.

****

SECTION 1 PHYSICAL DATA

****

APPEARANCE AND ODOR;
TAN POWDER

PH OF SOLUTIONS;
STRONGLY BASIC

SOLUBILITY IN WATER
COMPLETE

HEAT OF SOLUTION;
EXOTHERMIC

****

SECTION 2 HAZARDOUS INGREDIENTS

****

INGREDIENT	CAS#	TLV
SODIUM HYDROXIDE (CAUSTIC SODA)	1310-73-2	2 MCM
TETRA SODIUM PYROPHOSPHATE	7722-88-5	5 MCM
SODIUM METASILICATE	13870-28-5	2 MCM

(MCM= MILLIGRAMS PER CUBIC METER...TLV= THRESHOLD LIMIT VALUE)

****

SECTION 3 FIRE AND EXPLOSION HAZARD DATA

****

FLASH POINT;
NONE

SPECIAL FIRE FIGHTING PROCEDURES;
NONE

UNUSUAL FIRE AND EXPLOSION HAZARDS;
CONTACT WITH SOME METALS PARTICULARLY MAGNESIUM, ALUMINUM, AND ZINC (GALVANIZED) CAN RAPIDLY GENERATE HYDROGEN, WHICH IS EXPLOSIVE.

****

SECTION 4 HEALTH HAZARD DATA

****

INHALATION;
IRRITANT

EYE;
CORROSIVE

SEE NEXT SECTION

SKIN;
CORROSIVE
SEE NEXT SECTION

SEE NEXT SECTION

INGESTION
CORROSIVE
SEE NEXT SECTION

****
SECTION 5 EFFECTS OF OVEREXPOSURE
****

*****ACUTE*****

EYE CONTACT- CAUSES SEVERE BURNS; SMALL QUANTITIES CAN RESULT IN PERMANENT DAMAGE AND/OR LOSS OF VISION.

SKIN CONTACT- CORROSIVE ACTION CAUSES BURNS AND FREQUENTLY DEEP ULCERATIONS WITH SUBSEQUENT SCARRING. PROLONGED CONTACT DESTROYS TISSUE. DUST OR MIST FROM SOLUTIONS CAN CAUSE IRRITANT DERMATITIS.

INGESTION- INGESTION EITHER IN SOLID OR LIQUID FORM CAN CAUSE VERY SERIOUS DAMAGE TO THE MUCOUS MEMBRANES OR TISSUES WITH WHICH CONTACT IS MADE, AND MAY BE FATAL.

INHALATION- INHALATION OF DUST OF MISTS CAN CAUSE DAMAGE TO THE UPPER RESPIRATORY TRACT AND TO THE LUNG TISSUE DEPENDING ON SEVERITY OF EXPOSURE. EFFECTS CAN RANGE FROM MILD IRRATATION OF MUCOUS MEMBRANES, SEVERE PNEUMONITIS AND DESTRUCTION OF LUNG TISSUE.

*****CHRONIC*****

THE EFFECTS OF LONG-TERM, LOW LEVEL EXPOSURES TO THIS PRODUCT HAVE NOT BEEN DETERMINED. SAFE HANDLING OF THIS MATERIAL ON A LONG -TERM BASIS SHOULD EMPHASIZE THE AVOIDANCE OF ALL EFFECTS FROM REPETITIVE ACUTE EXPOSURE.

****
***** EMERGENCY AND FIRST AID PROCEDURES *****
****

INHALATION- REMOVE TO FRESH AIR. IF NOT BREATHING, GIVE ARTIFICIAL RESPIRATION, PREFERABLY MOUTH-TO-MOUTH. IF BREATHING IS DIFFICULT, GIVE OXYGEN. CONTACT A PHYSICIAN.

EYE OR SKIN CONTACT- IMMEDIATELY FLUSH EYES WITH PLENTY OF WATER FOR AT LEAST 15 MINUTES. HOLD EYELIDS OPEN DURING THIS FLUSHING WITH WATER, CALL A PHYSICIAN. IMMEDIATELY FLUSH SKIN WITH PLENTY OF WATER WHILE REMOVING CONTAMINATED CLOTHING AND BOOTS. CALL A PHYSICIAN. IF SKIN FEELS SLIPPERY, CAUSTIC MAY STILL BE PRESENT IN SUFFICIENT QUANTITIES TO CAUSE RASH BURN. CONTINUE WASHING UNTIL SLICK SKIN FEELING IS GONE. THOROUGHLY CLEAN CONTAMINATED CLOTHING AND BOOTS BEFORE REUSE, OR DISCARD.

INGESTION- IF CONSCIOUS, DRINK LARGE QUANTITIES OF WATER OR ACIDIC BEVERAGES (TOMATO OR ORANGE JUICE, CARBONATED SOFT DRINKS). DO NOT INDUCE VOMITING. TAKE IMMEDIATELY TO A HOSPITAL OF PHYSICIAN. IF VOMITING OCCURS, ADMINISTER ADDITIONAL WATER. II UNCONCIOUS, OR IN CONVULSIONS, TAKE IMMEDIATELY TO A HOSPITAL. DO NOT ATTEMPT

TO INDUCE VOMITING OR GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

SECTION 6 REACTIVITY DATA

STABILITY;
STABLE

HAZARDOUS POLYMERIZATION;
WILL NOT OCCUR

CONDITIONS TO AVOID- CONTACT WITH MATERIALS LISTED BELOW

INCOMPATIBILITY (MATERIALS TO AVOID)- CONCENTRATED ACIDS -- MAY CAUSE VIOLENT REACTIONS. CAUSTIC SODA REACTS WITH MAGNESIUM, ALUMINUM, ZINC, TIN, CHROMIUM, BRASS, AND BRONZE GENERATING HYDROGEN WHICH IS EXPLOSIVE.

HAZARDOUS DECOMPOSITION PRODUCTS- CAUSTIC SODA REACTS WITH VARIOUS FOOD SUGARS TO FORM CARBON MONOXIDE.

SECTION 7 SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IF MATERIAL IS SPILLED OR RELEASED;
ONLY TRAINED PERSONNEL EQUIPPED WITH NIOSH/MSHA APPROVED, FULL FACEPIECE COMBINATION DUST/MIST AND ACID GAS RESPIRATORS SHOULD BE PERMITTED IN AREA. FOR DRY MATERIAL, USE APPROPRIATE METHODS, SHOVELS, BROOMS, AND VACUUMS TO CLEAN UP THE SPILL. IF MIXED WITH WATER, OR LIKELY TO BECOME MIXED WITH WATER OR ANY LIQUID, DIKE AREA TO CONTAIN SPILL. RECLAIM IF POSSIBLE, OR, DILUTE SPILL WITH LARGE AMOUNTS OF WATER THEN NEUTRALIZE WITH DILUTE ACID. USE VACUUM TRUCK TO PICK-UP NEUTRALIZED MATERIAL FOR PROPER DISPOSAL. PROPERLY NEUTRALIZED LIQUID RESIDUE MAY BE DISPOSED OF IN WASTE WATER TREATMENT FACILITES WHICH ALLOW THE DISCHARGE OF NEUTRAL SALT SOLUTIONS. AFTER ALL VISIBLE TRACES HAVE BEEN REMOVED, FLUSH AREA WITH LARGE AMOUNTS OF WATER.

WASTE DISPOSAL METHOD;
CHAUTAUQUA CHEMICALS RECOMMENDS DISPOSAL OF DRY RESIDUES IN AN APPROVED HAZARDOUS WASTE MANAGEMENT FACILITY. CARE MUST BE TAKEN WHEN USING OR DISPOSING OF CHEMICAL MATERIALS AND/OR THEIR CONTAINERS TO PREVENT ENVIRONMENTAL CONTAMINATION. IT IS YOUR DUTY TO DISPOSE OF THE CHEMICAL MATERIALS AND/OR THEIR CONTAINERS IN ACCORDANCE WITH THE CLEAN AIR ACT, THE CLEAN WATER ACT, THE RESOURCE CONSERVATION AND RECOVERY ACT, AS WELL AS ANY OTHER RELEVANT FEDERAL, STATE, OR LOCAL LAWS/REGULATIONS REGARDING DISPOSAL.

SECTION 8 SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION- USE NIOSH/MSHA- APPROVED DUST/MIST FILTER RESPIRATOR FOR ROUTINE WORK PURPOSES WHEN EXPOSURE TO MISTS EXCEED

THE PERMISSIBLE EXPOSURE LIMITS. THE RESPIRATOR USE LIMITATIONS MADE BY NIOSH/MSHA OR THE MANUFACTURER MUST BE OBSERVED.

VENTILATION- LOCAL EXHAUST - SUFFICIENT TO MAINTAIN DUST/MIST LEVELS BELOW PERMISSIBLE EXPOSURE LIMIT.

EYE PROTECTION- CLOSE FITTING CHEMICAL SAFETY GOGGLES WITH FACE SHIELD

GLOVES- NITRILE, NEOPRENE, NATURAL RUBBER

OTHER PROTECTIVE EQUIPENT- RUBBER BOOTS WITH SAFETY TOES, RUBBER APRON PVC CLOTHING, PLASTIC HARD HAT SHOULD BE USED WHEN NECESSARY TO PREVENT SKIN CONTACT. PERSONAL PROTECTIVE CLOTHING AND USE OF EQUIPMENT MUST BE IN ACCORDANCE WITH 29CFR 1910.133 & 29CFR 1910.132.

SECTION 9 SPECIAL PRECAUTIONS

HANDLING AND STORAGE;

1. WHEN HANDLING, WEAR SAFETY GOGGLES AND FACE SHIELD, RUBBER BOOTS, RUBBER APRON, POLYVINYL CHLORIDE CLOTHING AND PLASTIC HARD HAT.
2. WEAR NIOSH/MSHA- APPROVED, DUST-TYPE RESPIRATORS, WHERE DUST OF MIST MAY BE GENERATED.
3. STORE IN A DRY PLACE, KEEP CONTAINER CLOSED WHEN NOT IN USE.
4. NEVER TOUCH EYES OR FACE WITH HANDS OR GLOVES THAT MAY BE CONTAMINATED WITH THIS CLEANER.
5. WHEN MAKING SOLUTIONS, ADD THIS CLEANER SLOWLY TO SURFACE OF COLD WATER WHILE STIRRING, TO AVOID VIOLENT SPATTERING.

OTHER PRECAUTIONS;

1. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.
2. DO NOT BREATHE MIST.
3. DO NOT SWALLOW.
4. WASH THOROUGHLY AFTER HANDLING.
5. DO NOT EAT, DRINK, OR SMOKE IN WORK AREAS.

X

McGean-Rohco, Inc.

1250 Terminal Tower, Cleveland, Ohio 44113, 216/621-6425

MATERIAL SAFETY DATA SHEET

Product Name: Ecolozinc 2001-B		Emergency Phone No.: 216/441-4900
Plant Address: 2910 Harvard Ave., Cleveland, OH 44109		Chemtrec Phone No. 800/424-9300
Prepared By: TSCA Coordinator	Issue Date: 1/80	Revised Date: 4/85

JUL 20 1985

INGREDIENTS AND HAZARDOUS COMPONENTS

Material	%	TLV	C.A.S. #	Suspect Carcinogen
Methyl Alcohol	15	260	67-56-1	NA
		mg/M³		

PHYSICAL DATA

Boiling Point: 100°C	Freezing Point: UK	Specific Gravity: 1.03	pH: 6-7
Vapor Pressure at 20° C: 27 mm Hg	Vapor Density (Air = 1): 0.67	% Volatiles by Volume: 85	Odor: vanilla
Evaporation Rate (Butyl Acetate = 1) >1		Solubility in Water: complete	
Appearance and Form: light yellow liquid			

FIRE AND EXPLOSION HAZARD DATA

Flash Point: 110°F.	Flammable Limits In Air: % By Volume Upper: UK Lower:
Test Method: C.C.C.	
Extinguishing Media: carbon dioxide, foam, water	
Special Fire Fighting Procedures: NA	
Unusual Fire and Explosion Hazards: None	
DOT Classification: NA	Note: UK = Unknown NA = Not Applicable

HEALTH HAZARD DATA

Effects of Overexposure and Primary Entries to Body:

Primary entry by inhalation and skin.
May irritate skin, eyes. Vapors could cause drowsiness and nausea.
Toxic if swallowed.

Emergency and First Aid Procedures:

Wash skin with soap and water. Flush eyes with water for at least 15 minutes.
If any irritation persists, see a physician.
For inhalation remove to fresh air. Artificial respiration & oxygen if needed.
If ingested, induce vomiting.

REACTIVITY DATA

☒ Stable ☐ Unstable **Conditions to Avoid:**

Incompatability — Materials to Avoid:

None known

Hazardous Decomposition Products:

None known

Hazardous Polymerization:

☐ May Occur ☒ Will Not Occur

SPILL OR LEAK PROCEDURES

Spills:

Flush with water.

Waste Disposal Methods:

Incinerate
Follow all Local, State and Federal Regulations.

SPECIAL PROTECTION INFORMATION

Respirator:

If above TLV - self contained breathing apparatus.

Ventilation:

Sufficient to keep below TLV

Gloves:	Eye and Face:	Other:
Rubber	Chemical Goggles	Sufficient to prevent skin contact.

Handling and Storage:

Keep away from heat, sparks and flame. Use adequate ventilation.
Keep containers tightly closed in cool location. Open bungs carefully for venting.

McGean-Rohco, Inc.
1250 Terminal Tower, Cleveland, Ohio 44113, 216/621-8425

MATERIAL SAFETY DATA SHEET

Product Name: Rodlp ZN-235		Emergency Phone No.: 216/441-4900
Plant Address: 2910 Harvard Ave., Cleveland, OH 44109		Chemtrec Phone No. 800/424-9300
Prepared By: TSCA Coordinator	Issue Date:	Revised Date:

INGREDIENTS AND HAZARDOUS COMPONENTS

JUL 20 1985

Material	%	TLV	C.A.S. #	Suspect Carcinogen
Nitric Acid	15	5	7697-37-2	NA
Chromic Nitrate	8	* 0.5	13548-38-4	NA
Ammonium Bifluoride	<5	** 2.5	1341-49-7	NA
		Mg/M3		
* As Cr ** As F				

PHYSICAL DATA

Boiling Point: >100°C	Freezing Point: UK	Specific Gravity: 1.21	pH: strongly acidic
Vapor Pressure at 20° C: 18mm Hg	Vapor Density (Air = 1): 0.62	% Volatiles by Volume: 95	Odor: Pungent
Evaporation Rate (Butyl Acetate = 1) <1		Solubility in Water: complete	
Appearance and Form: Green Liquid			

FIRE AND EXPLOSION HAZARD DATA

Flash Point: NA	Flammable Limits in Air:
Test Method: NA	% By Volume — Upper: NA — Lower:
Extinguishing Media: NA	
Special Fire Fighting Procedures: If involved in fire, use self contained breathing apparatus.	
Unusual Fire and Explosion Hazards: HF fumes and oxides of nitrogen could be released	
DOT Classification: Corrosive — UN-1760	Note: UK = Unknown NA = Not Applicable

HEALTH HAZARD DATA

Effects of Overexposure and Primary Entries to Body:

Primary entry through skin and inhalation of mists.
Can cause severe burns to skin and eyes. Can cause ulceration of mucous membranes.

Emergency and First Aid Procedures:

Flush skin and eyes with water for at least 15 minutes. Get medical attention.
For inhalation, remove to fresh air and get medical attention.

REACTIVITY DATA

☒ Stable ☐ Unstable Conditions to Avoid:

Incompatability — Materials to Avoid:

NA

Hazardous Decomposition Products:

NA

Hazardous Polymerization:

☐ May Occur ☒ Will Not Occur

SPILL OR LEAK PROCEDURES

Spills:

Neutralize with lime. Flush with water

Waste Disposal Methods:

Neutralize with lime to a pH of 7.8. This will precipitate the chrome and fluoride. Send to landfill. Sewer the liquid.

Follow all local, state and federal regulations

SPECIAL PROTECTION INFORMATION

Respirator: Use only NIOSH or MSHA approved respirator. See NIOSH Publication #80-144

Ventilation: Mechanical - sufficient to keep below TLV limits

Gloves:	Eye and Face:	Other:
Rubber	Chemical goggles & face shield	Sufficient to prevent skin contact.

Handling and Storage:

Store in a well ventilated area away from heat.
Open bungs carefully to vent any fumes present safely away from fire.

McGean-Rohco, Inc.

1250 Terminal Tower, Cleveland, Ohio 44113, 216/621-6425

MATERIAL SAFETY DATA SHEET

Product Name: ZW-600		Emergency Phone No.: 216/441-4900
Plant Address: 2910 Harvard Ave., Cleveland, OH 44109		Chemtrec Phone No. 800/424-9300
Prepared By: TSCA Coordinator	Issue Date: 6/80	Revised Date: 5/85

JUL 20 1985

INGREDIENTS AND HAZARDOUS COMPONENTS

Material	%	TLV	C.A.S. #	Suspect Carcinogen
NA	NA	NA	NA	NA

PHYSICAL DATA

Boiling Point: >100°C	Freezing Point: UK	Specific Gravity: 1:01	pH: 5-6
Vapor Pressure at 20° C: 18 mm Hg	Vapor Density (Air = 1): 0.62	% Volatiles by Volume: 80	Odor: none
Evaporation Rate (Butyl Acetate = 1) <1		Solubility in Water: complete	
Appearance and Form: straw colored. liquid			

FIRE AND EXPLOSION HAZARD DATA

Flash Point: NA	Flammable Limits In Air:
Test Method: NA	% By Volume Upper: NA Lower:
Extinguishing Media: NA	
Special Fire Fighting Procedures: NA	
Unusual Fire and Explosion Hazards: None	
DOT Classification: NA	Note: UK = Unknown NA = Not Applicable

ZH-600

HEALTH HAZARD DATA

Effects of Overexposure and Primary Entries to Body:

Primary entry through cuts

No hazards known

Emergency and First Aid Procedures:

Flush eyes and skin with water

REACTIVITY DATA

☒ Stable ☐ Unstable Conditions to Avoid:

Incompatability — Materials to Avoid:

none known

Hazardous Decomposition Products:

none known

Hazardous Polymerization:

☐ May Occur ☒ Will Not Occur

SPILL OR LEAK PROCEDURES

Spills:

flush with water

Waste Disposal Methods:

Flush with water to sewer

Follow all Local, State and Federal Regulations

SPECIAL PROTECTION INFORMATION

Respirator:

Not required

Ventilation:

mechanical

Gloves:	Eye and Face:	Other:
rubber	chemical goggles	sufficient to prevent skin contact

Handling and Storage:

Normal handling and storage

Occupational Safety and Health Administration

MATERIAL SAFETY DATA SHEET

Required under USDL Safety and Health Regulations for Ship Repairing, Shipbuilding, and Shipbreaking (29 CFR 1915, 1916, 1917)

SECTION I

MANUFACTURER'S NAME	EMERGENCY TELEPHONE NO.
ABRASIVE FINISHING INC.	313-475-9111
ADDRESS (Number, Street, City, State, and ZIP Code)	
11770 DEXTER ROAD CHELSEA, MI 48118	
CHEMICAL NAME AND SYNONYMS	TRADE NAME AND SYNONYMS
	SP-3
CHEMICAL FAMILY	FORMULA
METALLIC OXIDES	PROPRIETARY

SECTION II - HAZARDOUS INGREDIENTS

PAINTS, PRESERVATIVES, & SOLVENTS	%	TLV (Units)	ALLOYS AND METALLIC COATINGS	%	TLV (Units)
PIGMENTS	0		BASE METAL	0	
CATALYST	0		ALLOYS	0	
VEHICLE	0		METALLIC COATINGS	0	
SOLVENTS	0		FILLER METAL PLUS COATING OR CORE FLUX	0	
ADDITIVES	0		OTHERS	0	
OTHERS	0				

HAZARDOUS MIXTURES OF OTHER LIQUIDS, SOLIDS, OR GASES	%	TLV (Units)
NONE		

SECTION III - PHYSICAL DATA

BOILING POINT (°F.)	N/A	SPECIFIC GRAVITY (H_2O=1)	2-7
VAPOR PRESSURE (mm Hg.)	N/A	PERCENT, VOLATILE BY VOLUME (%)	N/A
VAPOR DENSITY (AIR=1)	N/A	EVAPORATION RATE (_____ =1)	N/A
SOLUBILITY IN WATER	INSOLUABLE		
APPEARANCE AND ODOR	DARK BROWN	NO ODOR	

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

FLASH POINT (Method used)	FLAMMABLE LIMITS	Lel	Uel
N/A			

EXTINGUISHING MEDIA: NONE NEEDED

SPECIAL FIRE FIGHTING PROCEDURES: N/A

UNUSUAL FIRE AND EXPLOSION HAZARDS: NONE

(Continued on reverse side)

THRESHOLD LIMIT VALUE	UNKNOWN
EFFECTS OF OVEREXPOSURE	NONE
EMERGENCY AND FIRST AID PROCEDURES	NONE NEEDED

SECTION VI - REACTIVITY DATA

STABILITY	UNSTABLE		CONDITIONS TO AVOID
	STABLE	X	

INCOMPATABILITY *(Materials to avoid)*: NONE

HAZARDOUS DECOMPOSITION PRODUCTS: NONE

HAZARDOUS POLYMERIZATION	MAY OCCUR		CONDITIONS TO AVOID: N/A
	WILL NOT OCCUR	X	

SECTION VII - SPILL OR LEAK PROCEDURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

SHEVEL UP AS YOU WOULD GRAVEL

WASTE DISPOSAL METHOD

INERT LAND FILL

SECTION VIII - SPECIAL PROTECTION INFORMATION

RESPIRATORY PROTECTION *(Specify type)*: NONE NEEDED

VENTILATION	LOCAL EXHAUST	NONE NEEDED	SPECIAL: NONE NEEDED
	MECHANICAL *(General)*	NONE NEEDED	OTHER

PROTECTIVE GLOVES: NONE NEEDED	EYE PROTECTION: SAFETY GLASSED

OTHER PROTECTIVE EQUIPMENT: NONE

SECTION IX - SPECIAL PRECAUTIONS

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORING

NONE

OTHER PRECAUTIONS: N/A

PROPOSAL FOR A HYDROGEOLOGIC STUDY OF BAILEY MFG. PROPERTY FORESTVILLE, NY

Submitted To:

Mr. Donald Cook, President
MEGAS Management Group
Bemus Point, NY 14712
(716) 483-1363

Submitted By:

Samuel S. Harrison, Ph.D.
Certified Professional Geologist #2573
Certified Ground Water Professional
R.D. 1 Maple Lane Acres
Saegertown, PA 16433
(814) 337-0175

September 28, 1986
(Revised March 5, 1987)
(Revised June 17, 1987)

PROLOGUE

It may be helpful for those reviewing this proposal if I provide some background information. First, it is the intention of Mr. Don Cook of Megatech that I will be the one to actually conduct the hydrogeologic study which I am proposing herein. Thus, I will be at the site during all phases of the investigation and I will also prepare the assessment report. Possible exceptions to this are that routine monitoring after the wells are completed (e.g., monitoring water levels in wells) may be conducted by an assistant under my direction.

My experience and qualifications for doing this work are as follows. I have BS, MS, and Ph.D. degrees in geology, with the emphasis on hydrogeology and environmental geology. I am a Certified Professional Geologist (#2573, American Institute of Professional Geologists) and a Certified Ground Water Professional (#177, Association of Ground Water Scientists and Engineers). I have been consulting in the areas of hydrogeology and environmental geology for approximately 15 years. My consulting work has been concentrated on groundwater and hazardous waste studies in western New York and northwestern Pennsylvania. I have been designing and installing piezometers and monitoring wells since 1980. This work includes two abandoned dump sites which have subsequently become superfund sites. I have conducted hydrogeologic assessments of scores of sites from the proposal to final report stage. Particularly pertinent for this study, most of the monitoring wells I have installed have been in glaciofluvial and glaciolacustrine sediments such as are present at this site. The method of well installation I use involves drilling with a cable tool rig and pulling back the casing, which I believe results in monitoring wells which are superior to wells constructed using hollow stem augers. I have worked for industrial clients, private citizens (individual families and groups), and government agencies. My main criterion in selecting clients is that they agree to let me find out and report what is there (with respect to the hydrogeology) and that I not be expected to slant or bias my work. In addition to consulting work just described, I have been teaching college-level courses in hydrogeology and environmental geology (which includes lab and classroom work with soils and geophysical instrumentation) for 19 years and I chair a department of environmental science. My resume is attached (Appendix A) for your inspection.

PROPOSED HYDROGEOLOGIC INVESTIGATION OF BAILEY MANUFACTURING PROPERTY, FORESTVILLE, NY

Introduction:

This proposal is being prepared in response to a request by the DEC that a hydrogeologic study be conducted at the Bailey Manufacturing property. The requirements for that study were spelled out by Jack Krajewski in an attachment to a letter from Jeffrey Lacey dated August 7, 1986 to Mr. Anthony Mancinelli, attorney for Donald Cook of Megatech Corporation and Bailey Manufacturing. Subsequently a proposal (dated March 5, 1987) was prepared and submitted. On May 15, 1987, a response to the proposal, written by Jack Krajewski, was sent to Don Cook with suggestions that the proposal be revised in accordance with the Phase II Generic Work Plan for the State Superfund Program. At my request, Jack Krajewski promptly sent further details on what revisions were needed in the proposal. The client, Mr. Cook, and I are anxious to begin the study which DEC has requested. We had planned to begin the investigation in early June. It is essential that the work begin by late July at the latest.

In general, the concern is that process water used at the Bailey Manufacturing plant may have contaminated the groundwater into which it has been discharged. More specifically, preliminary testing has narrowed the possible contaminants to priority pollutant metals and cyanide. This proposal and the subsequent study are designed to address that concern.

Objective:

-Conduct a hydrogeologic study of Bailey Manufacturing Property in Forestville, NY.

-Assess the extent and degree (if any) of contamination of the groundwater on the property as a result of discharges from Bailey Manufacturing. This assessment will be based on information provided by test pits, onsite groundwater monitoring wells, seismic refraction and earth resistivity surveys, and chemical analyses of soil, sediment, and groundwater collected from the site.

Scope:

The scope of the investigation has been largely perscribed by Jack Krajewski in an attachment to a letter from Jeffrey Lacey, Assistant Council for DEC, Division of Environmental Enforcement, dated August 7, 1986. The minimum requirements outlined in that letter were as follows:

1. Literature Review - A review of existing literature containing information regarding the hydrogeology and/or geology of the site and its vicinity must be made.

2. Site Walkover - Perform a walkover of the entire site noting the location of the plant, its support facilities and the location of any waste disposal areas. These items should be noted on a site map in the final report.

3. Geophysical Survey - A survey using a technique capable of defining a contamination plume and subsurface geology (i.e. resistivity, electromagnetics) must be conducted.

4. Monitoring Wells - Install four (4) monitoring wells, one (1) upgradient and three (3) downgradient into the upper aquifer. The wells should be screened at the top of the aquifer so that accurate water levels can be read.

5. Hydraulic Gradient - Water levels in the monitoring wells will be read at least once a month between the first and last groundwater sampling events.

6. Geology - At the upgradient well location, continuous split spoon samples will be taken from the surface down to the first aquiclude or bedrock. At the down gradient wells soil samples need only be taken to the depth of the well. All soil sample descriptions will be recorded on a log by a geologist.

7. Sampling and Analysis - Groundwater will be sampled twice at the four monitoring wells and any leachate outbreaks. The two sampling events will coincide with the seasonally high and low groundwater conditions. The samples will be analyzed for the priority pollutant metals, cyanide, pH and specific conductivity. Soil/waste samples will be taken one time in any areas discovered during the site walkover where indications of waste disposal have been noted. Soils will be analyzed for priority pollutant metals and cyanide.

The quality assurance/quality control for the analytical work shall be the Department of Environmental Conservation Contract Laboratory Protocal (CLP) or another EPA-approved protocol approved by this Department.

8. Reportables and Deliverables - The report of the investigation should be a bound volume. It should include an executive summary, the scope of work (in detail), a site assessment, an appendix with all field data, i.e. boring logs, monitoring well data, analytical data, etc. and any other maps, plans or tables necessary to describe the work performed.

Three (3) copies of the final report should be submitted. (Note: the number of copies of the final report has been increased to 5 in a letter from Jack Krajewski dated 6/9/87).

Site Reconnaissance:

The Bailey Manufacturing facility is located at the edge of an

upland at an elevation of approximately 860 ft (see Figure 1). There is a steep slope just behind the plant which drops approximately 15 ft to a terrace into which the water from the plant, which is the source of possible contamination, is discharged just below ground level. The ground continues to drop in elevation in a series of terraces down to Walnut Creek, which is roughly 40 ft lower than the upland on which the plant is located. Judging from a drillers log for a water well recently drilled just in front of the plant and the general geomorphic setting, it appears that the site is underlain by sediment having relatively high hydraulic conductivity. This is further evidenced by the static in the well in front of the plant which is roughly 45 ft below ground.

Because Walnut Creek is perennial at this location, it seems likely that it is the discharge zone for groundwater which is derived from recharge on the study site. Although this is a reasonable hypothesis, the depth to bedrock beneath the plant is not known, though it is known to be greater than 55 ft. Thus, the axis of the bedrock valley may not be coincident with Walnut Creek and thus groundwater flow at the level of the top of the bedrock may be roughly parallel to but east of the creek. Test pits and geophysical studies will be conducted to try to determine the depth to bedrock and the slope of the water table before the final location of the monitoring wells is determined.

Access to the site is quite good. Although there are some slopes between the terraces which are too steep for equipment such as a drilling rig, the terraces themselves are relatively flat and the vegetation which covers these terraces can be cut or removed if necessary to provide access for equipment.

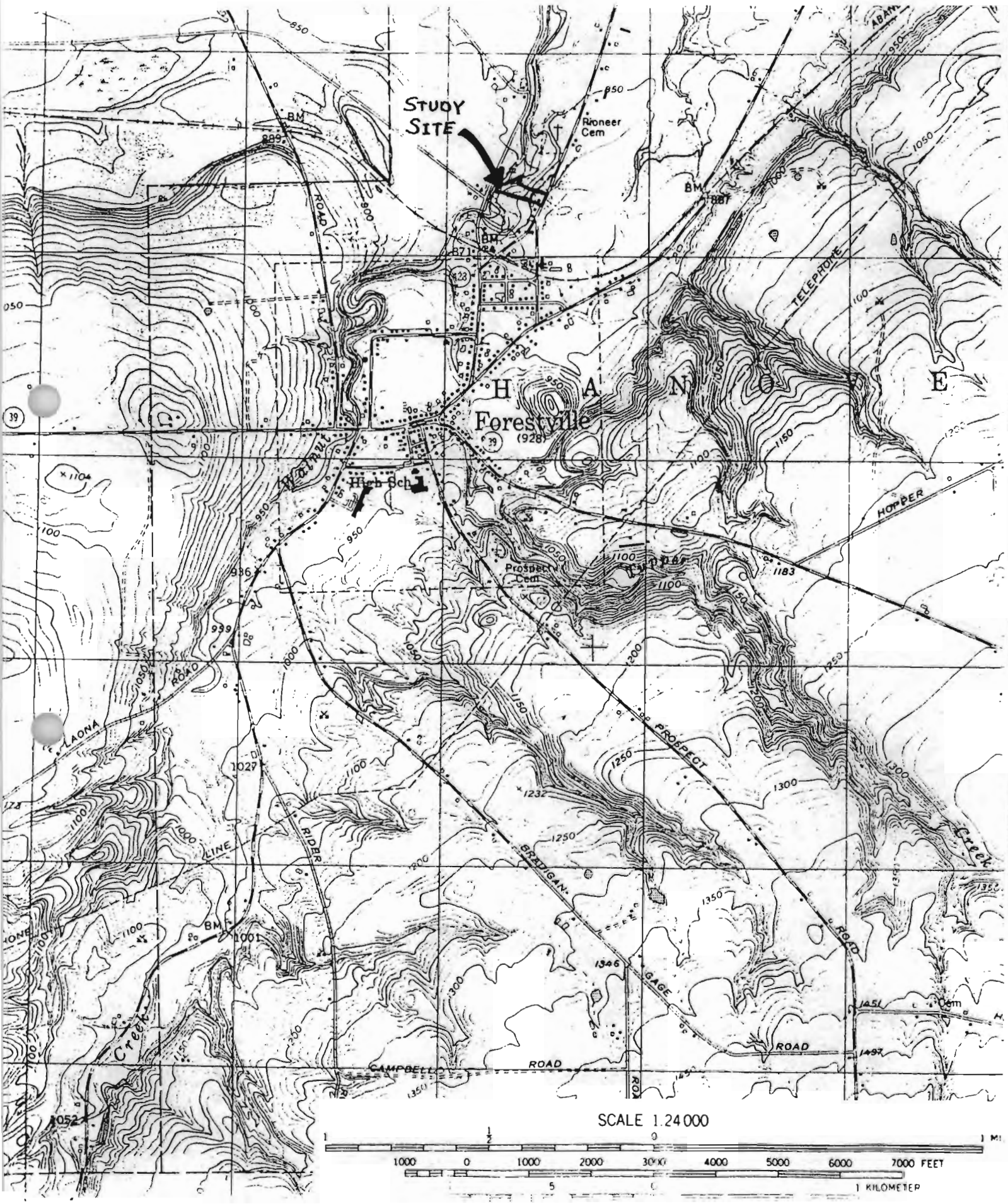
Test Pits:

The first subsurface work done at the site will be to dig test pits with a backhoe over the portion of the site which has received the plant effluent. In several similar investigations I have found these test pits to provide very valuable information regarding lithology, the elevation of the water table, and the depth to bedrock. If the water table is intersected by the pit, a 4-inch diameter perforated pipe will be installed before backfilling the pit. This will provide a means of monitoring the elevation of the water table. The success of the pits in providing direct information the water table and depth to bedrock depends, of course, on these two features being within the limit of excavation of the backhoe (~12 ft).

Geophysics:

The purpose of geophysical work on the site will be to provide

Figure 1. Map showing location of study site.



indirect information regarding the possible contaminant plume and the depth to bedrock. Geophysical surveys often provide a means of extending data collected by more direct means such as test pits and monitoring wells.

There is some preliminary indication that earth resistivity may be a useful tool for tracing the possible contaminant plume. A Soiltest Strata Scout earth resistivity unit will be used in an attempt to delineate the lateral extent of the plume if a traceable plume exists. A Wenner arrangement will be used , with the depth of the probe assumed to be roughly equivalent to the "a" spacing of the electrodes. Once an appropriate "a" spacing is determined, a horizontal traverse of the site will be made in an attempt to delineate the possible plume. Depth probes will also be conducted in the area where the plant effluent has been discharged in attempt to gain information regarding the depth to bedrock and the upper and lower boundaries of the plume.

A seismic refraction survey will also be conducted using a Soiltest Terra Scout refraction unit on the site in the general area of the effluent discharge. From this data an attempt will be made to determine the depth to bedrock in between and beyond points where bedrock depth has been determined directly by test pits.

where bedrock shallow enough to be detected by refraction unit, depth of bedrock known from pits and wells

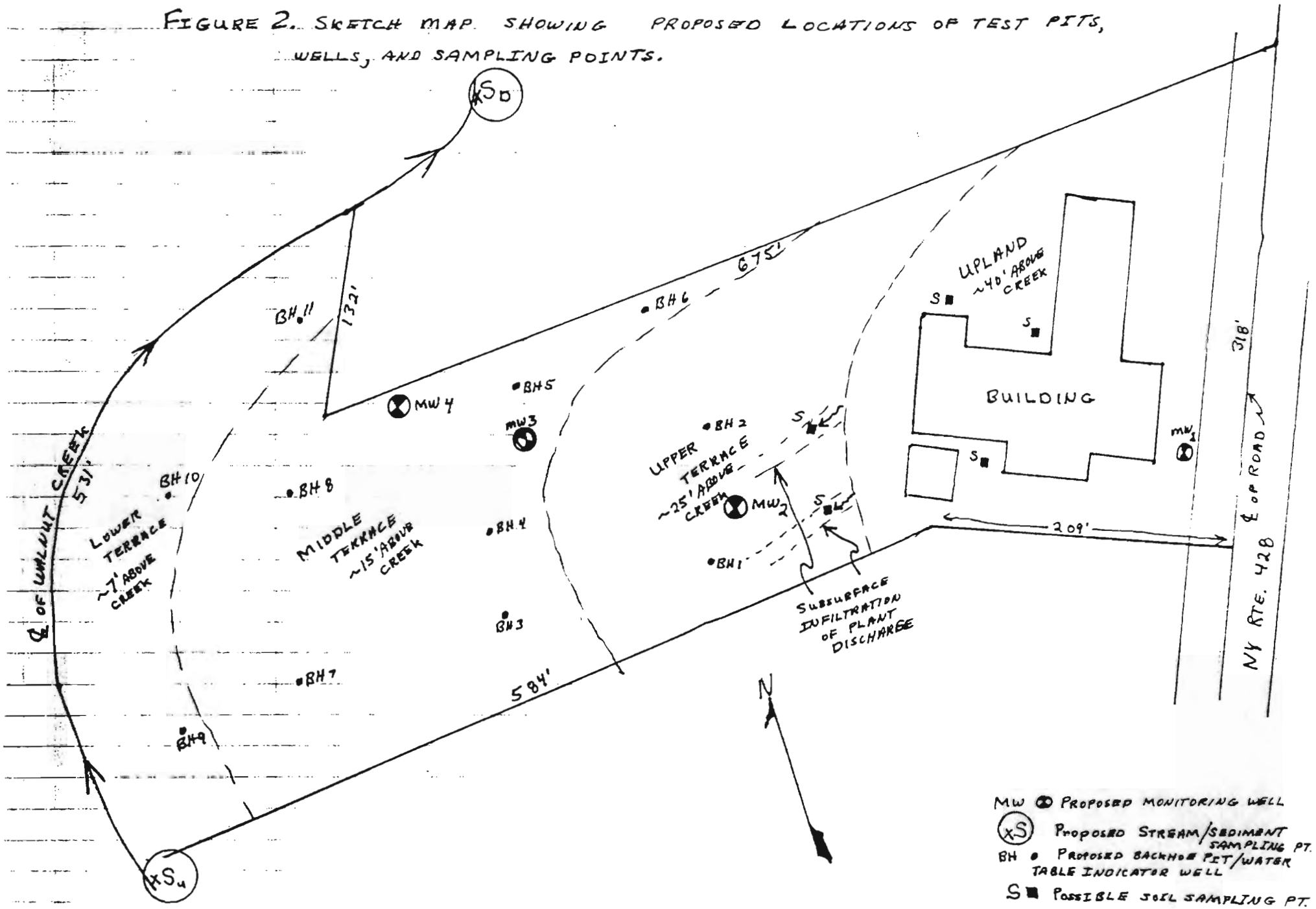
Monitoring Wells:

Direct information gained from test pits and indirect information gained from the geophysical work will provide the basis for the final selection of sites for the monitoring wells. One upgradient and three downgradient monitoring wells will be constructed. Assuming that groundwater is found to be flowing from the upland area on which the plant is located toward the lower area along the creek, the upgradient well will be located east of the plant, between the road and the plant. Based on the driller's log from a recently drilled water well adjacent to the east side of the plant, the water table is expected to be approximately 45 ft below ground in very gravelly sediment. The well, which will extend to bedrock or the first aquiclude, will most likely be deeper than 55 ft, as that is the depth of the existing well and it did not penetrate either bedrock or an aquiclude. Attempts will be made to take split spoon samples at 5 ft intervals or at significant changes in lithology. If it is found that the gravel is too coarse to be effectively cored using a split spoon, a suction bailer will be used to collect samples. Although these will be disturbed samples, I have found the suction bailer to be an excellent means of collecting representative samples in coarse sediment, and the driller has extensive experience in collecting samples in this manner. The suction bailer operates by drawing water and unconsolidated sediment from the bottom of the bore hole into a 4-in diameter bailer fitted with a piston and a flap valve, much like a piston pump. I will examine and describe all sediment samples collected during the drilling process, noting approximate grain size,

bedrock depth known near creek, water table flat ∴ depth to bedrock at mw4 not needed

Total depth 62 ft ⇒ screen 55.6 to 60.6 ft

FIGURE 2. SKETCH MAP SHOWING PROPOSED LOCATIONS OF TEST PITS, WELLS, AND SAMPLING POINTS.



sorting, color, and odor (if any).

For MW 2, 3, 4, a backhoe was used to excavate through the bouldery gravel to a depth of ~15' (~4' above w.t.), an 8" pipe was set in the excavated pit, backfilled to within 2ft of surface where 200 lbs of bentonite was spread over the backfill before filling to the surface. The drilling commenced at the 15' depth.

All of the monitoring wells will be drilled using a cable tool rig, which I have found superior for the installation of piezometers and monitoring wells in glaciofluvial and glaciolacustrine sediment. Welded, water-tight casing will be advanced to the total depth of the hole, the well bore will be cleaned out by bailing, and then the monitoring string will be installed in the well bore. Given that the tests required at this site are priority pollutant metals, cyanide, and conductivity, I propose that the monitoring string be comprised of flush-joint, threaded, schedule 40 pvc. The well screens will have .020 inch slots. In the case of the upgradient monitoring well (MW #1), the screened interval will extend from bedrock up to approximately 10 ft above the water table at the time the well is installed. Although the screen is normally only extended (5 ft above the water table, it seems prudent in this case to extend it 10 ft above the static in the well at the time of installation because if the site of MW #1 is an area of recharge, the well casing may act as a piezometer and thus the static in the well bore might be below the water table until the casing is pulled back up exposing the screen.

7/29/87 revised extend from ~10' below w.t. to ~5' above in order not to give false low static readings

At least two centralizers will be installed on the monitoring string. As the steel casing is pulled up to expose the screen, coarse, clean silica sand will be placed in the well to provide a sand pack. The sand pack will be extended roughly 2 ft above the top of the screen. The casing will have been pulled back out of the hole a sufficient amount so as to fully expose the screen. The casing will be cut off roughly two feet above ground level and a locking cap installed (see figure 3). Above the sand pack a tamped bentonite seal approximately 1-ft thick will be installed. A cement seal will be installed around the outside of the casing as shown in figure 3.

SSA JK

A grain size analysis (including hydrometer analysis if)20% of the sample is (200 sieve size) will be conducted on samples representing significant changes in lithology, including the screened interval. In addition, falling head permeameter tests will be conducted on sediment from the screened interval.

need some estimate of K calculate?

no size anal needed SSA JK

Subsequent to installation of the well, the static will be read prior to developing the well. Development will consists of surging and pumping the well until it clears and until the conductivity and the pH stabilize. Because the depth to the water table in MW #1 will be greater than 20 ft, a suction pump can not be used to develop that well, and thus a submersible 1.75-inch diameter pump will be used. Following development a slug test will be run on the well to determine the hydraulic conductivity of the screened interval.

Before MW #1 is drilled and prior to drilling each of the subsequent monitoring wells, the drilling rig and associated tools will be washed with clean water and steam cleaned. All water used for cleaning and drilling will be from the Forestville

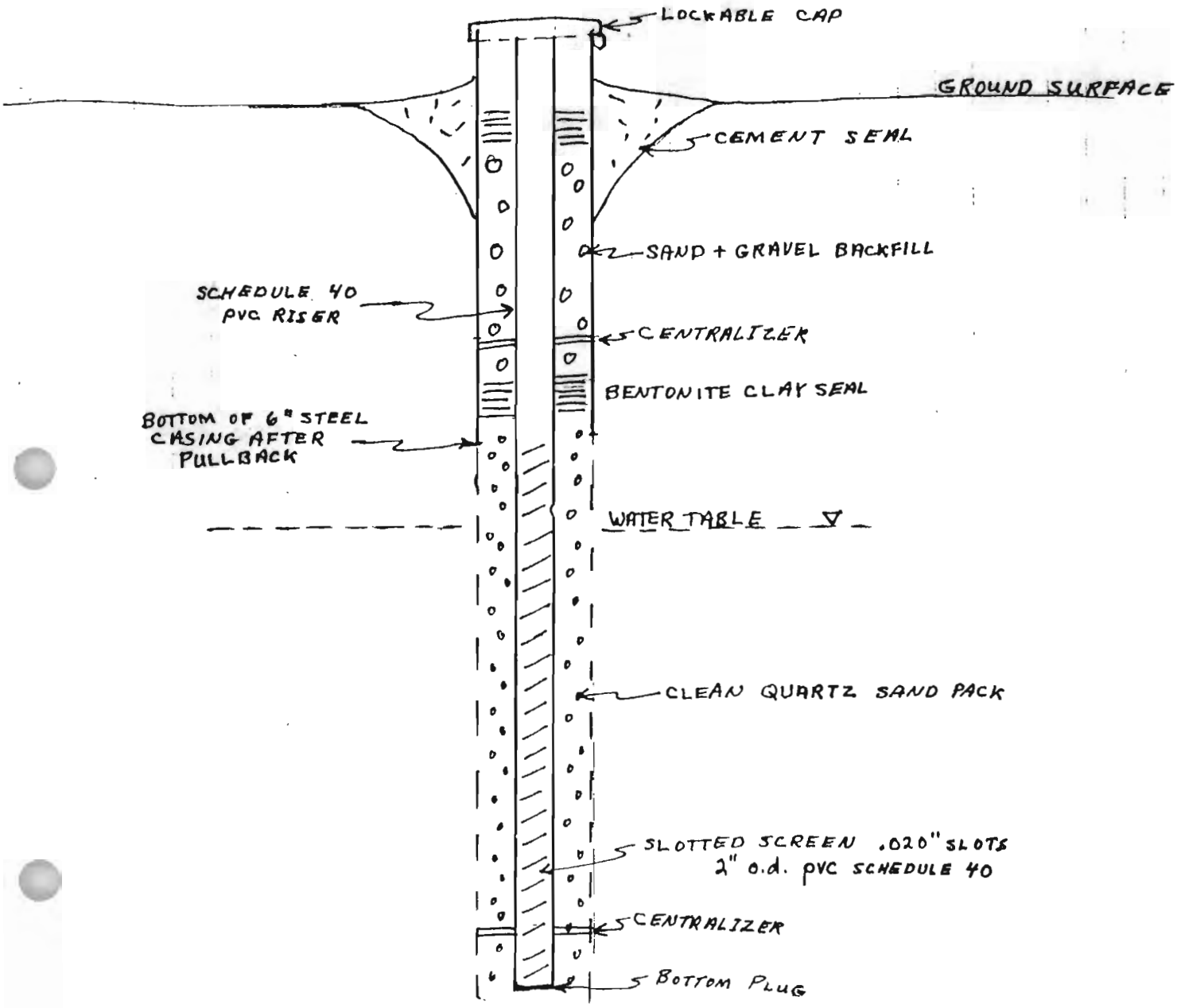


FIGURE 3. SKETCH OF PROPOSED MONITORING WELL. NOT TO SCALE. SEE TEXT FOR DETAILS OF SCREEN LENGTHS.

S.S. HARRISON
6/87

municipal water supply.

Monitoring wells #2, 3, and 4 are to be downgradient wells. Thus, at this site it is anticipated that they will be located on the lower terraces between the plant and Walnut Creek. Based on the information available from the geophysical work and the test pits, MW #2 will be located within the plume and within a few tens of feet of the plant outfall in order to ascertain the degree of contamination that exists (assuming that a contaminant plume is present and traceable).

Monitoring wells # 3 and 4 will be located along the trajectory of the plume (assuming a plume exists and is traceable) in an attempt to determine the longitudinal extent of the plume and the concentration of possible contaminants along the plume axis. These wells are anticipated to range in depth from be approximately 40 ft deep on the upper terrace to 30 ft deep on the middle terrace.

The design of these wells is the same as described for MW #1 and illustrated in Figure 3. A slotted screen will be installed from approximately 2 ft above the water table to 13 ft below the water table. Development of these wells, slug tests, etc., will follow the same procedure described for MW #1.

Upon completion of the wells, a registered surveyor will survey the wells to the nearest .01 ft, as well as several other points on the site. This will enable a topographic map of the site to be constructed (2-ft interval, 1 inch = 50 ft scale) and, along with subsequent readings of water table elevation, a map of the water table and the lateral direction of shallow groundwater flow.

Soil, Sediment, and Surface Water Monitoring Points:

At the time of the first sampling (see below), samples of soil will be collected where there are indications of possible waste disposal (e.g., loading areas, outdoor storage areas). It is anticipated that 4 to 6 such samples will be collected. These samples will be collected using a stainless steel scoop and placed in mason jars and sealed with aluminum foil and screw-on lids for transport to the lab. The scoop and the mason jars will be precleaned in a detergent wash, rinsed in tap water, rinsed in 10% hydrochloric acid, and rinsed with deionized water prior to use. The soil will be analyzed for cyanide and priority pollutant metals.

Surface water samples will be collected from Walnut Creek, the stream which flows along the western border of the site. These samples will be collected at the same time that groundwater samples are collected (see below). The proposed locations of the surface water sampling are shown on Figure 2. Dip sampling will be done along the east bank of the channel. If there is sufficient fine-grained sediment in lower-energy areas of the

channel near these two sampling points, sediment will be collected by wading, following the same procedure described above for soil sampling. One sample of surface water and sediment (if available) will be collected at the upstream and the downstream location at each of the two sampling times. The approximate discharge of the stream (plus or minus 20%) will be measured at the time of sampling in order to provide insight as to the possible influence of dilution on the surface-water analyses. The surface water will be analyzed for priority pollutant metals, cyanide, pH and conductivity and the sediment sample will be analyzed for cyanide and priority pollutant metals.

Groundwater Monitoring, Sampling, and Analyses:

Upon completion of the monitoring wells, the elevation of the water table will be determined using an electronic probe. Prior to purging each well at the time of sampling, the elevation of the water table will also be determined. The probe will be rinsed in 1% hydrocholoric acid followed by a dionized water rinse prior to insertion in each well.

According to the requirements listed for this study (Krajewski, 8/7/86), the monitoring wells are to be sampled twice at times which correlate with seasonal high and low water levels. To this end, it is proposed that the first sampling take place in late August or early September if the investigation is begun in late July of this year. The second sampling will take place in late November or early December, 1987.

During purging and sampling events I will be present at the site to carry out these tasks and to supervise experienced samplers from the laboratory described below.

Prior to collecting a sample from each well, the well will be purged by removing 3 to 5 times the bore volume of water. During pre-sampling purging, the conductivity and pH will be monitored to assure they stabilize before purging is completed. The purging and the subsequent sampling will done by use of a dedicated pvc bailer, which will be left in the well. If problems are caused by the surging action of the bailer, one of two of the following alternative devices will be used. (1) A 1.75-inch diameter Fultz portable submersible pump can be used for purging (with the dedicated bailer still used for sampling). This pump, if used, would be washed in detergent and rinsed in deionized water prior to insertion in each well. (2) An ISCO air-driven teflon and stainless steel bladder pump. This pump would be given detergent and acid washes and a dionized-water rinse prior to use in each well.

Water samples from the wells and the stream will be placed, unfiltered, into 3 separate containers. Samples for conductivity and laboratory pH analysis will be put in a container which contains no preservative (pH will also be determined in the field

during sampling). A sample for metals analysis will be preserved with nitric acid. The cyanide sample will be preserved with sodium hydroxide. Samples will be placed in an ice chest and transported to the lab on the same day , where refrigeration will be maintained. Chain of custody forms will be used. During the testing process, Microbac Labs will follow the requirements for EPA Contract Lab Program Quality Control.

The procedures and instrumentation to be used for the analyses are listed in Table 1 and Appendix D. There are essentially two categories of samples: water (from the wells and the stream) and sediment (from the stream and from suspect surface soil noted in the walkover). The analyses that will be performed have already been agreed to .

The laboratory which will be assisting with the sampling and which will be performing the analyses is Microbac Laboratory, Erie Testing Lab Division, located in Erie, PA. This lab presently has New York certification (#10121) and , at the suggestion of Jack Krajewski, has contacted Mr. John Rankin (DEC in Albany) regarding obtaining "Techical Acceptance" status. As stated in the letter enclosed (Appendix B), it is the understanding of Microbac Labs that Mr. Rankin's office will inspect the Microbac lab facility and, if that can not be scheduled before sampling and analysis for this project begin, they will issue interim approval of the lab.

Task Presentation and Project Team:

A summary of the tasks to be performed is shown in Table 2. Also shown on Table 2 is a proposed time frame which is based on the assumption that the project is approved and underway by the last week of July, 1987. As for the project team assigned to the tasks shown, I will be conducting tasks #1, 2, 3, 4, 5, 6, 8, and 9. There will be some assistance in these tasks from one or two field assistants under my direct supervision. The actual drilling of the monitoring wells (task #5) will be done by Michael Burch, of Erie, PA under my direct supervision. I have been working with Mr. Burch installing monitoring wells and piezometers since 1980. He has drilled more than half of the monitoring wells in the Erie area. A full-time driller, he holds bachelors degrees in geology and in business administration. I will be on site working directly with him during the drilling and installation process.

I will be assisted in the purging of monitoring wells and sampling (task #8) by employees of Microbac Lab. They will work under my direct supervision. Mr. Robert Morgan, Managing Director of Microbac Labs for the past 15 years, will supervise the handling and analyses of samples. He will also assist me in the interpretion of the results of those analyses as I prepare the hydrologic assessment (task #9). I have worked directly

with Mr. Morgan on several investigations and regularly seek his expertise in matters of sampling and analysis procedures and sample interpretation. It is my understanding that Mr. Morgan and Microbac Labs have been conducting analyses for Bailey Manufacturing for the past few years.

The development of the health and safety plan is the responsibility of P. David Shafer, III, principal of CON/ESH Services of Meadville, PA. Should there be any indication of health and safety problems during the conduct of the field investigation, Mr. Shafer will be available at his office for consultation. Mr. Shafer holds a BS in Environmental Biology from the University of Colorado and an MS in Environmental Science from Drexel University. As you can see from his resume (Appendix C), Mr. Shafer has extensive experience in safety program development and in providing training for hazardous-waste investigations.

Surveying (task #7) will be done by a registered surveyor from the Jamestown, NY area.

Health and Safety Plan

Based on data collected from the site, DEC has stipulated that samples be analyzed only for priority pollutant metals , cyanide, pH, and conductivity. Thus, there is no indication of volatile organics, combustible gasses, etc., on the site. Possible health hazards appear to be limited to low levels of metals in the groundwater. The lower portion of the site, which has received the discharge water from the plant operations, has been used for agricultural ppurposes and shows no sign of landfilling. An abandoned grape vinyard now occupies most of this area.

A water well was drilled in the past couple years near the site of the proposed location of the upgradient monitoring well (MW #1). That well is used daily and there is no indication of hazardous substances associated with that well. Thus, monitoring during drilling of MW #1, adjacent to this existing water well, will be limited to a combustible gas indicator. Although there is no indication from previous tests of volatile organics on the downgradient portion of the site where MW # 2, 3, and 4 will be located, an HNU photoionizer will be used to monitor the drilling site for volatile organics along with the combustible gas indicator.

7/29/87 Based on observations in several backhoe pits, no monitoring necessary SSF

Because there is no indication from past history or data that workers will be exposed to health hazards, the investigation will be carried out using Level D protection. If readings above background are detected by the HNU photoionizer or above 25% of the LEL by the combustible gas indicator, the operation will be shut down. At that point P. David Shafer will be brought onto the site and a reassessment of the health hazards at the site will be made and a revised work plan and health and safety plan

developed based on the hazards present.

During the construction of the wells workers will wear coveralls, gloves (rubber or leather), steel-toed and -shanked work shoes, safety glasses, and hard hats. As indicated earlier, the rig and drilling equipment will be washed with water and steam cleaned before drilling each well and after drilling the last well. During monitoring-well purging and sampling operations, workers will wear disposable rubber gloves.

Development of the Health and Safety Plan has been based on the EPA Standard Operating Safety Guide and OSHA regulations. Specific references include the manual from a workshop entitled "Safety at Hazardous Materials Sites" and a "Manual of Recommended Operating Procedures and Guidelines for Water Well Contractors and Pump Installers", both published by the National Water Well Association, and the U. S. Army Corps of Engineers' "Safety and Health Requirements Manual".

Table 1. Analysis and procedure for water and sediment samples. All sampling points will be sampled in late August/early September and in late November/early December, 1987, except the surface soil which will only be sampled in August/September.

Sampling Pt.	No. of Samples	Analyses	Procedure	Instrumentation
WATER				
MW #1, 2, 3, +4	1 set of samples from each location at each sampling event.	1. Priority Pollutant Metals	EPA Method 200.7	Leeman Lab Plasma Spec 2.5 Inductively Coupled Plasma Emmission Spectrophotometer
		1a.-Arsenic	EPA Method 206.3	} Hydride Atomic Absorption Spectrophotometer
Stream (upstream) (downstream)	1 sample will be run in duplicate, 1 spiked sample, 1 reference sample, and 1 interference correction sample will also be run.	1b.- Selenium	EPA method 270.3	
		1c.-Lead	EPA Method 239.2	} Atomic Absorption Furnace
		1d. Thallium	EPA Method 279.2	
		2. Cyanide	EPA Method 33502	Distillation / Colorimetric
		3. Conductivity	APHA method 205	YSI Conductance Meter
		4. pH	EPA Method 150.1 Electrometric	pH Meter
*SEDIMENT				Leeman Lab Plasma Spec 2.5 Inductively Coupled Plasma Emission Spectrophotometer
Stream (upstream)	1 sample from each location.	1. Priority Pollutant Metals	EPA Method 200.7	
(downstream)	1 sample will be run in duplicate, 1 spiked sample, and 1 interference-correction sample will also be run.	1a. Arsenic	EPA Method 206.3	} Hydride Atomic Absorption Spectrophotometer
		1b. Selenium	EPA Method 270.3	
		1c. Lead	EPA Method 239.2	} Atomic Absorption Furnace
Surface Soil (from locations noted in walkover)		1d. Thallium	EPA Method 279.2	
		2. Cyanide	EPA Method 335.2	Distillation / Colorimetric
			*EPA SW846 will be followed for preparation of sediment samples. Total analysis will be run on samples on an as-received basis.	

Table 2. Task Description

Task	Task Description
1. Literature Review	1. Review published geologic & hydrogeologic information dealing with the site.
2. Site Walkover	2. Walk over entire site noting esp. any discharges, disposal or fill areas.
3. Dig Test Pits	3. Using a backhoe, dig test pits in plant discharge area noting lithology, water table, & depth to bedrock if possible. Install standpipe before backfilling if water table intersected.
4. Geophys. Survey	4a. Do depth probes & horizontal traverses in plant discharge area using earth resistivity in an effort to extrapolate bedrock and water table depths from test pits (#3) and to delineate approx. plume boundaries if possible. 4b. Use seismic refraction to try to extrapolate depth to bedrock from test pits in plant discharge area if possible.
5. Drill & Install Mon. Wells	5. Drill wells with cable tool rig. Install sandpacked screen and pull back casing. Seal well internally and externally.
6. Develop Monitoring Wells	6. Develop wells by surging and pumping. Develop until water clears & conductivity & pH stabilize.
7. Survey Site	7. Survey mon. well and sampling locations. Construct 2-ft CI topo map of site.
8. Monitor water table. Purge & sample wells.	8. Measure depth to water table in wells. Purge & sample monitoring wells. Sample stream & sediment. Sample soils at possible disposal and surface discharge sites noted in walkover (#3).
9. Prepare Hydrogeo. Assessmnt.	9. Prepare report, including lithology, direction of groundwater flow, plume extent, water & soil chemistry.