APPENDIX 4-B

HISTORICAL WASTE CHARACTERIZATION OF REGULATED UNITS

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Note: The text for this appendix are taken directly from Section C of the 2003 Permit Renewal Application and have not been altered. The referenced tables and figures are included. However, the referenced appendices are not. They can be found in the original 2003 Permit Renewal Application. The referenced appendices are primarily laboratory data reports.

C-4 CROH SANDBEDS

C-4a F019 Waste

The F019 waste was originally dewatered on a series of chromium hydroxide sand drying beds. Treated wastewater from the paintline was placed on these beds where the liquids filtered through the sludge leaving the solids on top of a layer of sand.

The F019 waste was the subject of a delisting petition to the US Environmental Protection Agency. Chemical analyses of this sludge were conducted between 1980 and 1986 for delisting purposes and in 1988 for general plant record information. The sludge was identical to that currently generated. The primary difference is that the CrOH sand bed sludge had a much lower solids content (approximately 11 percent) as compared to the sludge currently generated by the plate and frame filter press (approximately 27 percent). Based on a comparison of results shown in Table C-1, the sludges are chemically identical.

The results of analyses of the CrOH sand bed sludge are shown on Tables C-2 and C-3.

C-4b Debris

Another waste associated with the CrOH sand drying beds is the debris generated in an attempt to clean close this unit. The CrOH sand drying beds were removed in early 1990, and the soil below the beds was excavated. This waste was stored on site pending determination of clean closure. All of this debris was subsequently managed as a hazardous waste and removed from the Newnan plant site.

The debris consisted of the concrete sidewalls of the CrOH sand drying beds, the sand within the beds, soil below the beds, and a small amount of piping associated with the beds. Approximately 1,225 tons of this debris were

generated and subsequently disposed of at a permitted hazardous waste facility. Numerous debris samples (soil) were collected and analyzed. A summary of the results is shown below Table C-4: Summary Of Analytical Results Of Debris Samples (1990).

A discussion of the attempted clean closure and resultant sampling of soil debris is included as Appendix C-1. This discussion was taken from the Closure and Post-closure Plan for the Chromium Hydroxide Sludge Sand Drying Beds (Revised July 1991) approved by the Georgia EPD in October 1991. Laboratory results and the methods of analyses used are included in Appendix L-2.

C-5 CHROMIUM HYDROXIDE (F019) LANDFILL

The chromium hydroxide landfill received F019 waste from the CrOH sand drying beds until November 1989. No analyses of the waste in the landfill have been conducted. Chemical and physical characteristics of the waste in this unit should be similar to those reported in Tables C-2 and C-3.

C-6 SURFACE IMPOUNDMENT WASTE MANAGEMENT UNIT (SETTLING POND/POLISHING POND)

A sketch of Bon L's pre-1992 wastewater treatment system is shown in Figure C-2. The surface impoundment hazardous waste management unit was included in the 1992 application because of previous discharge of filtrate water from the CrOH sand drying beds into the settling pond, which flowed into the polishing pond.

The most rigorous analyses of the wastewater in the settling pond was completed in 1988. The settling pond water was sampled in August 1988, and analyzed for the following constituents:

- total solids
- twelve metals (arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver, nickel, antimony, cobalt, and vanadium),
- EP Toxicity (EPA Method 1310) for the twelve metals
- volatile compounds (Method 8240-GC/MS)
- base/neutral compounds (Method 8270-GC/MS)

A summary of the water analyses is included in Table C-5.

The sludge in the settling pond was also sampled in 1988 and analyzed for the same constituents as the water. Results of both water and sludge analyses are included in Appendix C-2. A summary of the 1988 sludge analysis is included in Table C-6as follows:

Sludge in the settling pond was also sampled in June 1990 to support delisting. Results of the analyses are included in Appendix C-3. Ranges of the 12 samples are shown in Table C-7.

Effluent from the settling pond entered the polishing pond. Most of the solids carried over into the polishing pond settled to the bottom forming a layer of sludge. Sludge accumulated in the polishing pond since its construction in the early 1970s.

Sludge in the polishing pond was sampled in August 1989 for chromium and total solids. Two samples were taken near the upper (northern) portion of the pond. Results are shown in Figure C-3.

The sludge that was in the upper end of the pond was the driest of all sludge in the polishing pond. Therefore, the solids content of approximately seven percent was the highest expected.

Sludge in the polishing pond was sampled in July 1990 to provide data to support a delisting petition. Results of the analyses are included in Appendix C-4. The range of concentrations of the constituents from 54 samples are summarized in Table C-8.

C-7 AlOH LAND APPLICATION (SLUDGE MIXING) AREA

Bon L believes that the ALOH sludge/soil mixing area has immobilized, degraded, and transformed chromium, in the treatment zone. Appendix C-5 is a letter from Law Environmental, Inc. in which the technical/theoretical aspects of chromium behavior are presented. EPD has agreed to allow Bon L to close the unit as a land treatment unit.

Evidence exists to support the conclusion that degradation, transformation, or immobilization has occurred or is occurring. Groundwater downgradient from this unit has been monitored and found free of F019 waste influence. Well 42S has been sampled for RCRA metals four times and found to be below detection limits (BDL) for all RCRA metals including chromium. Fluoride is below the primary drinking water standard. Recently, three additional wells (43S, 44S, and 44D) were installed downgradient of the

unit. Sampling results indicate all RCRA metals are BDL. Results from wells 42S, 43S, 44S, and 44D are included as Appendix C-6.

Sludge from the settling pond was pumped to the AlOH sand drying beds shown in Figure C-2. After dewatering, the sludge was scraped out of the beds and mixed with the soil in the AlOH land application (sludge mixing) area also shown in Figure C-2.

Sludge in the AlOH sand drying beds was sampled in 1987 and subjected to the EP Toxicity tests. Results are shown in the right column of Figure C-4 The maximum results were:

Ni	O.67 ppm
Cr	BDL

The sludge was also sampled in 1988 for chromium. The results (shown in Figure C-5) indicated total chromium at 19.9 ppm and hexavalent chromium at less than 0.02 ppm. Note that the sludge in the AlOH sand beds is the sludge pumped from the settling pond.

The sludge and soil mixture in the sludge mixing area was sampled in June 1990 to provide data to support a delisting petition. Results of these analyses are included in Appendix C-7. Concentrations from the 34 samples taken from the AlOH sand beds and sludge mixing area are summarized in Table C-9.

Additional analyses of the soil in this unit have been conducted. Samples were collected and analyzed for:

- percent moisture (as total solids),
- pH,
- cation exchange capacity,
- specific gravity,
- conductivity,
- alkalinity,
- total organic carbon.

The sampling and analysis was conducted as described in Appendix C-8. The results of the analyses are summarized in Table C-10.

Figure C-2

ANODIZING WASTEWATER TREATMENT SYSTEM

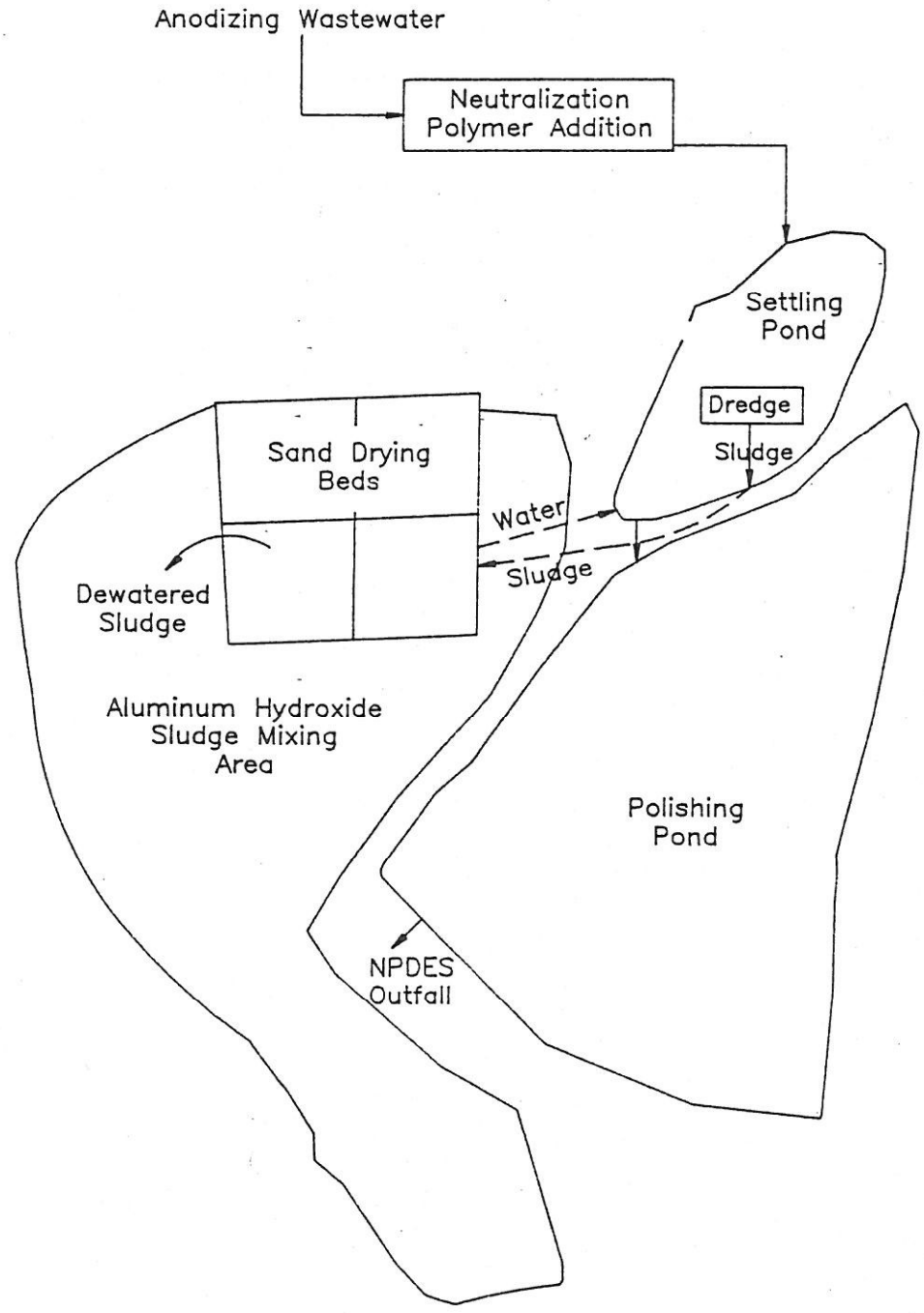

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Figure C-3

LABORATORY REPORT

William L. Bonnell Co. Inc.
P.O. Box 428
Newnan, GA 30264

August 24, 1989

P.O. No. NS 502

Report No. 17114

Attention: Mr. Gary L. Mitchell

Sample: Polishing Pond Sludge Samples, 8/16/89

RESULTS

	Upper	Lower	Detection Limit
Total Chromium (Cr)(mg/l)(EPA 6010).....	14	16	0.1
Hexavalent Chromium (Cr^{+6})(mg/l)(EPA 7196)...	BDL	BDL	0.2
Total Solids (%)(APHA 209-A).....	4.6	6.8	0.1

BDL - Below Detection Limit

Respectfully submitted,

By: F. Denise Sowell

3-8000

TO 1

SERVICE REQUEST FORM
R & D Services Group

Figure C–4.

SERVICE REQUEST NO. (ASSIGNED BY R&D SERVICES) 88-1036 M-160

REQUESTOR'S NAME	DATE	PROJECT NUMBER	DATE RESULTS NEEDED
A. IMMETHUN, PDC	1/13/87	30-38000	When possible

THE REQUESTOR MUST PROVIDE INFORMATION REQUESTED ON THIS FORM. BE SURE TO INCLUDE ANY SPECIAL INFORMATION RELEVANT TO THE SAFETY OF PERSONS WORKING WITH THE SAMPLES. FOR DISPOSAL PURPOSES, UNUSED SAMPLE WILL BE RETURNED TO THE PERSON SUBMITTING THE SAMPLE.

DESCRIBE SAMPLE MATERIAL SUBMITTED, INCLUDING APPROXIMATE COMPOSITION:

EPA Extract from Sludge (Origin Newmont Sand Creek)
100 g Sample each extracted and diluted to 2.0 l with d/d H2O.
Sample adjusted to ~pH 2.00 with dilute HNO3

STATE SAMPLE INFORMATION RELEVANT TO SAFETY IN HANDLING, E.G.: TOXIC, CARCINOGENIC, SUSPECT, SKIN IRRITANT, PYROPHORIC, SENSITIVE TO LIGHT, MOISTURE OR AIR, ACIDIC, CAUSTIC, OR OTHER:

TYPE SERVICE REQUESTED:

SAMPLE IDENTIFICATION	ANALYZE FOR OR DETERMINE	APPROXIMATE RANGE PRESENT OR VALUES	R & D SERVICES RESULTS
E2	Cr	< ~~=~~ 0.5 ppm	<0.05 ppm Cr
	Ni	1.0 ppm	0.55 - Ni
E3	Cr	<0.5 ppm	<0.05 - Cr
	Ni	1.0 ppm	0.67 - Ni
E4	Cr	<0.5 ppm	<0.05 - Cr
	Ni	1.0 ppm	0.53 - Ni
Bl			<0.05 - Cr
			<0.02 - Ni
			Direct aspiration ICP is EPA std. Lgm.

ANALYST							TOTAL	DATE REPORTED	1/14/88
MAN DAYS								NOTEBOOK REF.	1-36 PAI

BR 755 REV 12/78

EXHIBIT C-7

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LABORATORY REPORT

Figure C-5.

William L. Bonnell Company, Inc.
P.O. Box 428
Newnan, GA 30264

May 5, 1988

Attention: Mr. Gary Mitchell

Report No. 11274

Sample: Sludge, 4/26/88

Sludge from #1 Bed - Aluminum Hydroxide sludge

RESULTS

Total Chromium (Cr)(mg/l).....	19.9
Hexavalent Chromium (Cr^{+6})(mg/l).....	*0.02

*None found if present less than

Respectfully submitted,

By: Robert G. O...

3-2700

TABLE C-1: COMPARISON OF 1980 – 1983 F019 SLUDGE WITH 1990 F019 SLUDGE

CONSTITUENT	FIGURE C-1 (1990)	FIGURE C-2 (1980-83)
Total Cyanide	BDL	BDL
Total Cadmium	1.3 ppm	1 ppm (4 samples)
EP Arsenic	N/A	BDL
TCLP Arsenic	BDL	N/A
EP Barium	N/A	BDL
TCLP Barium	BDL	N/A
EP Cadmium	N/A	BDL
TCLP Cadmium	10 ppb	N/A
EP Chromium	N/A	500 ppb
		250 ppb
		300 ppb
TCLP Chromium	540 ppb	N/A
EP Lead	N/A	BDL
TCLP Lead	BDL	N/A
EP Selenium	N/A	BDL
TCLP Selenium	BDL	N/A

TABLE C-2: RESULTS OF 1980 AND 1983 ANALYSES OF CROH SAND DRYING BEDS SLUDGE (F01

1980 SAMPLES			
PARAMETER	**DATE**	**RESULTS**	**UNIT**
EP Toxicty Chromium	3/6/1980	0.5	mg/l
EP Toxicty Chromium	8/14/1980	0.25	mg/l
Total Cyanide	12/2/1980	BDL	mg/l

1983 SAMPLES	SAMPLE 1	SAMPLE 2	SAMPLE 3	SAMPLE 4	SAMPLE 4
PARAMETER	**9/26/1983**	**10/8/1983**	**10/10/1983**	**10/17/1983**	**EP RESULTS**
Arsenic	BDL	BDL	BDL	BDL	BDL
Barium	34	30	21	14	BDL
Cadmium	BDL	BDL	BDL	BDL	BDL
Chromium	4100	4000	3000	3500	0.3
Lead	2	BDL	BDL	BDL	BDL
Mercury	2	BDL	BDL	BDL	0.1
Selenium	BDL	BDL	BDL	BDL	BDL
Silver	BDL	BDL	BDL	BDL	0.4
Nickel	30	3	2	6	0.1
Oil & Grease	1800	1200	1600	2300	N/A

TABLE C-3: RESULTS OF 1986 AND 1988 ANALYSES OF CROH SAND DRYING BEDS SLUDGE (F019)

1986 SAMPLES		
PARAMETER	**RESULTS**	**UNIT**
Total Mercury	0.02	mg/kg
Water Soluble Fluoride	80	mg/kg
Total Solids	11.6	%

1988 SAMPLES			
PARAMETER	**DATE**	**RESULTS**	**UNIT**
Total Solids	5/2/1988	10.9	%
Total Solids	5/10/1988	35.1	%
Total Chromium	5/2/1988	8350	ppm
Total Chromium	5/10/1988	7130	ppm
Hexavalent Chromium	5/2/1988	BDL	ppm
Hexavalent Chromium	5/10/1988	BDL	ppm

Table C-4: SUMMARY OF ANALYTICAL RESULTS OF DEBRIS SAMPLES (1990)

CONSTITUENT	APPROXIMATE NUMBER OF SAMPLES	RANGE OF RESULTS		
				UNITS
Total Chromium	131	BDL	8210	mg/l
Hex Chromium	4	BDL	BDL	mg/l
EP Tox Chromium	23	BDL	0.7	mg/l
Fluoride	60	BDL	5.5	mg/l
pH	60	5.1	12.4	mg/l

TABLE C-5: SUMMARY OF 1988 ANALYTICAL RESULTS FOR SETTLING POND WATER

PARAMETER	TOTAL	EP TOXICITY	UNITS
Cadmium	BDL	0.01	mg/l
Chromium	0.1	0.45	mg/l
Lead	BDL	0.23	mg/l
Nickel	0.07	0.11	mg/l

TABLE C-6: SUMMARY OF 1988 ANALYTICAL RESULTS FOR SETTLING POND SLUDGE

PARAMETER	TOTAL RANGE			TCLP RANGE		
			UNITS			UNITS
Cadmium	0.28	0.8	mg/kg	BDL	0.02	mg/l
Chromium	34	335	mg/kg	0.04	0.13	mg/l
Lead	12	1800	mg/kg	0.08	0.27	mg/l
Nickel	25	151	mg/kg	0.16	0.29	mg/l
Ethylbenzene	BDL	83	ug/kg	Not Analyzed	Not Analyzed	
Toluene	BDL	45	mg/kg	Not Analyzed	Not Analyzed	
Other 8260 Compounds	BDL	BDL	ug/kg	Not Analyzed	Not Analyzed	
Acid Compounds	BDL	BDL	mg/kg	Not Analyzed	Not Analyzed	
Base/neutral Compounds	BDL	BDL	ug/kg	Not Analyzed	Not Analyzed	
Total Solids	5.5	37	%	Not Analyzed	Not Analyzed	
Oil and Grease	0.08	0.42	%	Not Analyzed	Not Analyzed	

TABLE C-7: SUMMARY OF 1990 ANALYTICAL RESULTS FOR SETTLING POND WATER

PARAMETER	TOTAL RANGE			TCLP RANGE		
			UNITS			UNITS
Barium	12.5	48.5	mg/kg	0.1	2.52	mg/l
Cadmium	0.78	3.5	mg/kg	BDL	0.1	mg/l
Chromium	4.42	177	mg/kg	BDL	0.12	mg/l
Lead	32.1	218	mg/kg	BDL	0.04	mg/l
Nickel	7.27	106	mg/kg	0.02	0.77	mg/l
Ethylbenzene	BDL	90	ug/kg	Not Analyzed	Not Analyzed	
Tetrachloroethene	BDL	560	ug/kg	Not Analyzed	Not Analyzed	
Toluene	BDL	13	ug/kg	Not Analyzed	Not Analyzed	
Trichloroethene	BDL	25	ug/kg	Not Analyzed	Not Analyzed	
Total Xylene	BDL	374	ug/kg	Not Analyzed	Not Analyzed	
Other 8260 Organics	BDL	BDL	ug/kg	Not Analyzed	Not Analyzed	

TABLE C-8: SUMMARY OF JULY 1990 POLISHING POND ANALYTICAL RESULTS

PARAMETER	TOTAL RANGE			TCLP RANGE		
			UNITS			UNITS
Total Barium	2.77	57.7	mg/kg	0.01	0.22	mg/l
Total Cadmium	BDL	0.5	mg/kg	BDL	0.02	mg/l
Total Chromium	7.52	231	mg/kg	BDL	0.13	mg/l
Total Lead	BDL	2.03	mg/kg	BDL	0.03	mg/l
Total Nickel	8.47		mg/kg	BDL	0.67	mg/l
Ethylbenzene	BDL	6	ug/kg	Not Analyzed	Not Analyzed	
Tetrachloroethene	BDL	18	ug/kg	Not Analyzed	Not Analyzed	
Toluene	BDL	15	ug/kg	Not Analyzed	Not Analyzed	
Trichloroethene	BDL	11	ug/kg	Not Analyzed	Not Analyzed	
Total Xylene	BDL	12	ug/kg	Not Analyzed	Not Analyzed	
Other 8260 VOCs	BDL	BDL	ug/kg	Not Analyzed	Not Analyzed	

TABLE C-9: SUMMARY OF JUNE 1990 AIOH LAND TREATMENT UNIT ANALYTICAL RESULTS

PARAMETER	TOTAL RANGE			TCLP RANGE		
			UNITS			UNITS
Barium	18	126	mg/kg	0.01	0.38	mg/l
Cadmium	BDL	1.5	mg/kg	BDL	0.01	mg/l
Chromium	8.28	62	mg/kg	BDL	0.05	mg/l
Lead	BDL	38	mg/kg	BDL	BDL	mg/l
Nickel	6.14	810	mg/kg	BDL	0.44	mg/l
Ethylbenzene	BDL	140	ug/kg	Not Analyzed	Not Analyzed	
Toluene	BDL	10	ug/kg	Not Analyzed	Not Analyzed	
Total Xylenes	BDL	521	ug/kg	Not Analyzed	Not Analyzed	
Other 8260 Organics	BDL	BDL	ug/kg	Not Analyzed	Not Analyzed	

TABLE C-10: SUMMARY OF 1990 ANALYTICAL RESULTS

Parameter	Soil Sample Site Number						
	1	2	3	4	5	6	Avg.
Total Solids (%)	72.5	72.5	72.1	71.5	73.2	72.6	72.4
Specific Gravity	1.75	1.83	1.75	1.8	1.81	1.83	1.8
SC (umhos/cm @ 25 C	420	720	530	800	710	610	632
CaCO3 Alk (Mg/Kg)	320	130	160	160	150	140	177
TOC (%)	0.33	0.23	0.2	0.22	0.27	0.25	0.25
pH	10.4	8.44	7.92	7.76	7.55	7.51	8.26
CEC (meq/100g)	22.5	30.7	34.3	53.2	40	39.5	36.7